

Chapter 3

Linking Biocultural Memory Conservation and Human Well-Being in Indigenous Socio-Ecological Production Landscapes in the Colombian Pacific Region



Andrés Quintero-Angel, Andrés López-Rosada, Mauricio Quintero-Angel, David Quintero-Angel, Diana Mendoza-Salazar, Sara Catalina Rodríguez-Díaz, and Sebastian Orjuela-Salazar

Abstract The Colombian Pacific region is one of the most biodiverse areas in the world; however, it is severely threatened by anthropogenic pressures. In addition, armed conflict and poverty are compounding factors causing the loss of biodiversity and cultural identity. In response to this situation, the *Wounaan-Nonam* original people of Puerto Pizarro and Santa Rosa de Guayacán declared five Indigenous Protected Areas (IPA) in 2008. We conducted a study to highlight the link between the conservation of biocultural memory and contributions to human well-being, particularly to human health, in indigenous socio-ecological production landscapes and seascapes (SEPLS). Since 2013, the research-action-participation methodology has been applied to recover ecological traditional knowledge on how ancestors managed nature and elements associated with their cosmovision. Following the TNC conservation of areas methodology, eight biological and cultural conservation values were identified for the IPAs and 5-year management plans for conservation were formulated. As a result of this process, we created a tool that involves traditional knowledge to administer the total 1850 hectares covered by the five

A. Quintero-Angel (✉)

Corporación Ambiental y Forestal del Pacifico—CORFOPAL, Cali, Valle del Cauca, Colombia

Asociación de Cabildos Indígenas del Valle del Cauca ACIVA-RP., Buenaventura, Valle del Cauca, Colombia

e-mail: direccioncientifica@corfopal.org

A. López-Rosada

Asociación de Cabildos Indígenas del Valle del Cauca ACIVA-RP., Buenaventura, Valle del Cauca, Colombia

M. Quintero-Angel · D. Mendoza-Salazar

Universidad del Valle, sede Palmira, Palmira, Valle del Cauca, Colombia

D. Quintero-Angel · S. C. Rodríguez-Díaz · S. Orjuela-Salazar

Corporación Ambiental y Forestal del Pacifico—CORFOPAL, Cali, Valle del Cauca, Colombia

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IPAs. We also found that the main challenges faced by indigenous communities in the management of IPAs as an integral part of the indigenous SEPLS are associated with weak organisational and governance processes. Additionally, we identified the main opportunities ecosystem services offer in the IPAs, which enhance the quality of life and health of the original peoples and ecosystems at a regional level. Finally, the making of handicrafts is identified as an opportunity in these SELPS, as it represents an alternative for generating income through sustainable productive chains in biotrade strategies.

Keywords Biocultural memory · Human health · Indigenous Protected Areas · SEPLS · Heritage conservation

1 Introduction

When considering that humans are just one species among the vast natural diversity of the planet, Toledo and Barrera (2008) state that the success of human survival lies in ecological factors such as population size, evolutionary processes, brain capacity, and, with it, memory. These elements have made it possible to achieve different cultural processes of “biological, genetic, linguistic, cognitive, agricultural, and landscape” diversification (Toledo & Barrera, 2008, p. 25), based on a necessary recognition and appropriation of nature. Thanks to human capability and as a socio-historical process, communities around the world have taken advantage of the particularities of varying landscapes in their local environments according to their material and spiritual needs (Lindholm & Ekblom, 2019; Ekblom et al., 2019; Toledo et al., 2019).

In this context, Toledo and Barrera (2008) point out that indigenous peoples¹ maintain and/or possess at least 80% of the planet’s cultural diversity. They also posit that the presence, permanence, and resistance of these communities in ancestral territories have been fundamental for the conservation of ecosystems. These indigenous territories can be considered socio-ecological production landscapes and seasapes (SEPLS) as they allow for a socio-ecological balance in the productive use of landscapes based on biocultural memory.² These types of SEPLS are present

¹Indigenous people are composed of communities which “. . . having a historical continuity with pre-invasion and pre-colonial societies that developed on their territories, consider themselves distinct from other sectors of the societies now prevailing on those territories, or parts of them. They form at present non-dominant sectors of society and are determined to preserve, develop and transmit to future generations their ancestral territories, and their ethnic identity, as the basis of their continued existence as peoples, in accordance with their own cultural patterns, social institutions and legal system” (United Nations, 2004: 2). However, by their own identification, they are now referred to in Latin America as “original people” (*pueblos originarios*).

²“The concept of biocultural memory has been used as a synonym of accumulated ecological knowledge or social-ecological memory, referring to ecological knowledge and practices that are regenerated, retained, and revived through collective memory by communities of users” (Garavito-Bermúdez, 2020, p. 4–5).

in the Pacific region of Western Colombia, where numerous ethnic groups live (Departamento Administrativo Nacional de Estadística (DANE), 2019) in one of the most biodiverse areas in the world (Losos & Leigh, 2004; Plotkin et al., 2000; Rangel et al., 2004).

As a product of biocultural memory, the original people of the Colombian Pacific region, such as the *Wounaan-Nonam*, maintain a holistic vision of their territorial heritage, whereby any environmental problem or conflict is considered as an imbalance and illness of Mother Earth (or *Pachamama*). In this regard, the concept of health extends to animal, plant, and human health. Hence, various sustainable practices associated with local ancestral knowledge for healthcare and well-being endure, for example, the implementation of harmonisation rites for the use of natural resources to maintain the ecosystem balance, spiritual cleansing with sacred plants, and healing rituals. For these original people, well-being is synonymous with health; for this reason, well-being (or *Sumak Kawsay* as it is called in other Andean indigenous communities) is sought in all aspects of life, and maintaining a communal state of well-being means enjoying harmony and health.

Despite its great biological and cultural diversity, the Colombian Pacific region is threatened by a trend towards agro-industrial modernisation (Quintero-Angel et al., 2020) and pressures from illegal armed groups and drug trafficking, which have put the survival of different ethnic groups at risk (Vélez et al., 2020; Defensoría del Pueblo, 2018; Ministerio de Justicia & UNDOC, 2013). Particularly, the *Wounaan-Nonam* of Puerto Pizarío's reservations, located on the banks of the San Juan River, and of Santa Rosa de Guayacán on the Calima River Basin, face these tensions and are trying to conserve the biocultural memory of their territories. One of the strategies employed for the conservation of *Wounaan-Nonam* territories, which are traditionally managed as SEPLS, has been the declaration of Indigenous Protected Areas (IPAs). In this context, the present case study aims to demonstrate the link between conservation of biocultural memory and its contributions to human well-being and health, taking as an example the *Wounaan-Nonam* SEPLS. In this sense, we claim that this case study is a joint construction with the indigenous authorities of these reservations. All information presented has been reviewed and endorsed by them with their prior, informed consent, and more detailed quantitative data on these SEPLS, as well as their properties and uses, remains the confidential information of the indigenous communities.

1.1 Current Situation of the Original People of Colombia and the Wounaan-Nonam Indigenous Communities

Since the beginning of the twenty-first century, Colombia has recognised the historical exclusion and vulnerability in which original people have lived, to the extent that today they are at risk of physical and cultural extermination (Decision

T-025 of 2004). In Colombia there are 115 original peoples with an approximate population of 1,905,617, grouped in 710 reservations³ in the national territory, where 65 native languages are spoken (Departamento Administrativo Nacional de Estadística (DANE), 2019). Original people in Colombia live in extreme conditions of human right violations due to armed conflict, which has generated forced displacement migrations, along with the deterioration of natural resources and severe social exclusion (Mamo, 2020); these reasons explain why diverse ethnic groups are currently dispersed in areas far from their original settings.

These difficult living conditions of original people in Colombia, and around the world, are directly related to environmental conflicts with the state, individuals, multinational corporations, and megaprojects that intervene in their territories by means of using their soil for illicit crops and subsoil for mining activities, dam construction, or agro-industrial activities (Semana Sostenible, 2019). In the Colombian context, illicit crops and drug trafficking are additional factors that come into play. Consequently, these communities have called for the joint design of strategies originated within indigenous communities (Ministerio de Cultura, 2009), to document and execute their Life Plans⁴ and Safeguard Plan⁵ and to generate studies and research to recover and strengthen the ancestral traditional ecological knowledge (TEK) of each indigenous community.

The *Wounaan-Nonam* community is composed of approximately 14,825 people (Departamento Administrativo Nacional de Estadística (DANE), 2019). Its original territory was located next to the San Juan River, between the Chocó and Valle del Cauca departments, a forested piedmont they share with the *Embera* and *Kuna* ethnic groups. Unfortunately, the *Wounaan-Nonam* people are one of the 34 original peoples at risk of disappearing due to forced displacement caused by armed conflict in Colombia. A decision of the Constitutional Court, Auto 004 of 2009, recognised this reason for the dispersal across the country far from their ancestral territories (Organización Nacional Indígena de Colombia, 2018). The fundamental individual and collective rights of the people have been taken away, affecting their cultural autonomy and identity, and putting them at risk of physical and cultural extinction.

³“Reservations are legal institutions of sociopolitical special character, composed of one or more indigenous communities which have a collective property title with the same guarantees of private property, they have their territory, and they manage it and their internal life by an autonomous organisation covered by the indigenous status and their own normative system” (Decree 2164 of 1995, art. 21).

⁴Planning instrument which involves a document with diagnostic information to deal with the necessities and challenges of each indigenous community from their own cosmovision, facilitating dialogue with local and national governments to address inclusion and governance processes.

⁵The Safeguard Plan is defined as a social and administrative agreement that establishes directions, recommendations, and actions to guarantee and safeguard the intangible cultural heritage and national patrimony (Ministerio de Cultura, 2009).

1.2 Study Area: Indigenous Reservations of Puerto Pizarro and Santa Rosa de Guayacán

The indigenous reservations of Puerto Pizarro and Santa Rosa de Guayacán are located in the Pacific region of Colombia, in the basins of two large rivers, the San Juan (Valle del Cauca and Chocó departments) and Calima (Valle del Cauca department), respectively (Fig. 3.1, Table 3.1).

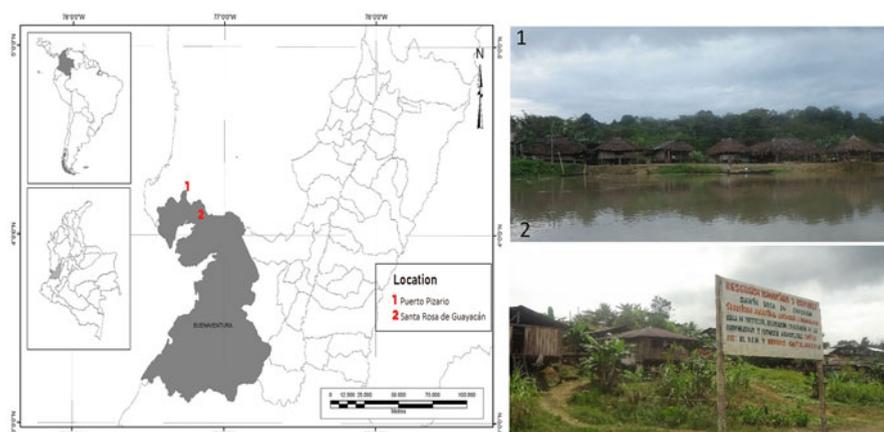


Fig. 3.1 Location of (1) Puerto Pizarro and (2) Santa Rosa de Guayacán indigenous reservations. Photo credits and map by López-Rosada

Table 3.1 Basic information on the study area

| Study site | Puerto pizarro indigenous reservation | Santa Rosa de Guayacán indigenous reservation |
|--|---|---|
| Country | Colombia | |
| Province | Chocó/Valle del Cauca | Valle del Cauca |
| Municipality | Litoral del San Juan/Special District of Buenaventura | Special District of Buenaventura |
| Dominant ethnicity, if appropriate | Indigenous and Afro-Colombian communities | |
| Case study/project area size (hectare) | 2920 | 236 |
| Number of direct beneficiaries | 789 | 155 |
| Dominant ethnicity in the project area | Wounaan-Nonam indigenous ethnicity | |
| Geographic coordinates (latitude, longitude) | 4°13'31.16" N 77°15'18.78" W | 4°6'55.79" N 77°8'36.50" W |

Indigenous Reservation of Puerto Pizarro

The settlement was founded in 1975 and declared an Indigenous Reservation with Resolution No. 013 of 1983 from the Instituto Colombiano de Reforma Agraria (INCORA). It is located on both banks of the San Juan River and covers 2920 ha, of which the largest part is in the Chocó department. It is a terrain dominated by hills and dense humid rainforest, and home to 789 *Wounaan-Nonam* inhabitants, who have declared three IPAs since 2008 (Fig. 3.2a, Table 3.2).

Humanitarian and Biodiverse Indigenous Reservation of Santa Rosa de Guayacán

The settlement was established in 1979. It became a reservation through the INCORA Resolution No. 054 of 1989 a decade later. It extends for 236 ha, is inhabited by 155 *Wounaan-Nonam*, and contains two IPAs, declared in 2008. It acquired its humanitarian and biodiverse reservation status when the territory was returned to the original people on 14 August 2010, prior to which they had become victims of forced displacement. This should be highlighted as a form of resistance to the threats of armed conflict and the struggle to maintain their lifestyle and ancestral customs (Fig. 3.2B, Table 3.2).

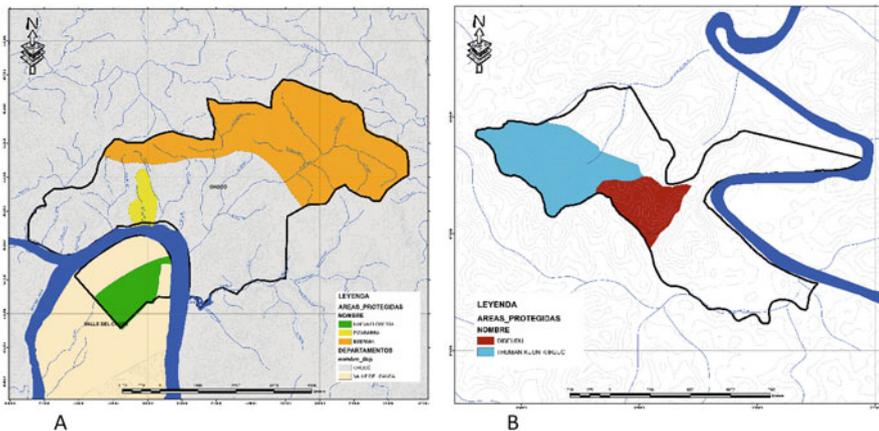


Fig. 3.2 (a) Location of the Indigenous Protected Areas of Puerto Pizarro and (b) Santa Rosa de Guayacán reservations. Maps by López-Rosada based on Quintero-Ángel et al., 2015

Table 3.2 Description of the Indigenous Protected Areas of Puerto Pizarro and Santa Rosa de Guayacán reservations

| IPA name | Indigenous reservation | Area (ha) | Location | Description |
|---|------------------------|-----------|-----------------|--|
| Nueva Floresta | Puerto Pizarro | 212 | Valle del Cauca | Flat zone, occasionally flooded by the San Juan River, with some human interventions such as selective wood extraction. Some big native trees remain, and some species of fauna are used by communities as protein sources |
| Pizabarra | Puerto Pizarro | 103 | Chocó | Covers the Pizabarra watershed, from its source to the San Juan River outlet. There is slight intervention in the lower part by logging and extraction of handicraft materials. The conservation status of the rest of the watershed is considered good |
| <i>Beermia</i> Native language meaning: “white-collared peccary spirit (<i>Pecari tajacu</i>)” | Puerto Pizarro | 1446 | Chocó | Equivalent to 32% of the reservation, it covers the higher part of the area and is the source of the Cuellar, Medio, Llano, and Dupurma streams. It is in very good conservation status. It has a high quantity of flora and fauna highlighted by the presence of white-collared peccaries (<i>Pecari tajacu</i>), jaguars (<i>Panthera onca</i>), and deer (<i>Mazama americana</i>), as well as timber species that are less common in other areas |
| <i>Dibeeudu</i> Native language meaning: “place of many chonta palms” | Santa Rosa de Guayacán | 23.4 | Valle del Cauca | Corresponds to the Micurero watershed. It is characterised by steep slopes and forests in good conservation status. It borders family productive areas in the lower part |
| <i>Thumaan Kuun Khirjug</i> Native language meaning: “collective thinking” | Santa Rosa de Guayacán | 57 | Valle del Cauca | Located in the upper part of the Cienaga and Cienagueta watersheds. The area is covered by well-preserved forests, except for the area adjacent to the road that goes to the Bahía Málaga Naval Base, where foreigners have been logging and poaching |

2 Methodology

The methodology was developed in five phases (Fig. 3.3) throughout 2013 by implementing specific actions in Spanish and the native language, including (1) key informant interviews (Geilfus, 2002); (2) participant observation (Kawulich, 2005); (3) focus groups of men, women, youth, and children (Geilfus, 2002); (4) social cartography (Geilfus, 2002); and (5) exchange of knowledge (PRATEC, 2012) (Fig. 3.4). These actions were developed during several meetings and workshops with the communities, where they shared their ancestral knowledge, recovering and documenting wisdom on how their ancestors managed nature, agricultural practices, and innovations to improve food security, heirloom practices of traditional medicine, health status of the community and the environment, handicraft fabrication, and elements associated with indigenous spirituality⁶ and cosmovision.

Finally, through the research-action-participation methodology, exchange of knowledge (PRATEC, 2012) and analytical triangulation (Rodríguez-Sabiote et al., 2006) were carried out to establish the planning of Indigenous Protected Areas in each reservation. In order to do this, the planning for conservation of areas methodology was also followed (Granizo et al., 2006), and biological and cultural objects of conservation were identified and prioritised. A viability analysis was conducted, and management plans for conservation were formulated, which include monitoring and follow-up indicators for 5 years in each of the areas with each indigenous community.

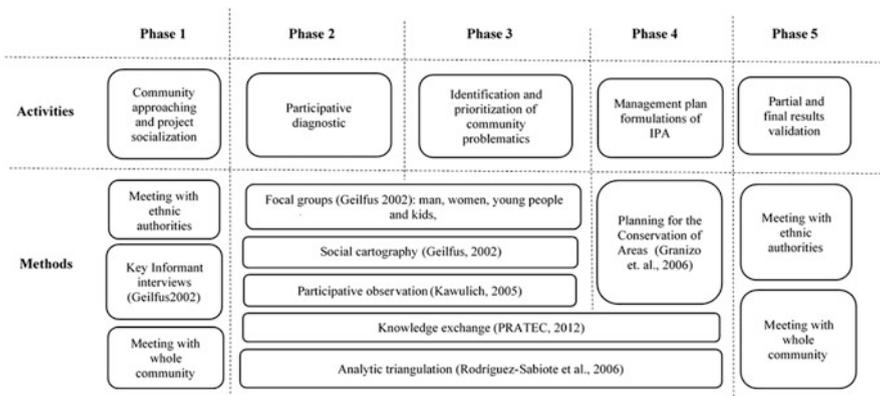


Fig. 3.3 Visual presentation of methods and activities (prepared by authors)

⁶Indigenous spiritual practices are the belief in something beyond an individual connection to others and to the world and their close relationship with a higher power. They are part of the resistance to the effects of colonialism (Consejo Regional Indígena del Cauca (CRIC), n.d.).



Fig. 3.4 (a) A team member working with a focus group of kids on the fauna present in Santa Rosa de Guayacán; (b) original people from Puerto Pizarío explaining the results of social cartography; (c) knowledge exchange exercise in Santa Rosa de Guayacán; (d) socialisation of knowledge exchange exercise in Puerto Pizarío (photo credits: A. Quintero-Angel 2014)

3 Results and Discussion

3.1 *Cosmovision and Relationship with Nature of Wounaan-Nonam Indigenous Communities*

Inside of the *Wounaan-Nonam* cosmovision, natural elements such as water, movement, and earth are the principles of the Origin Law⁷ that give life to “*Maach Aai*” (elderly father-God) and to all the spiritual elements, gods, male and female principles,⁸ sacred sites, material goods, and natural richness. Initiation and life rituals revolve around traditional elements such as body paintings with organic dyes,

⁷Origin Law are the laws for cultural identity of indigenous peoples, ancestral laws, and fundamentals (Consejo Superior de la Judicatura (ONIC), 2011, pp. 256–259).

⁸Inside this culture women are highlighted and have an important role as they are in charge of oral passing on of custom, stories, fabrics, spirituality, and socialisation of children in the communities.



Fig. 3.5 Wounaan-Nonam handicraft sample made from Mocora palm (*Astrocaryum standleyanum*) and natural dyes (photo credits: López-Rosada, 2016)

fabrics made from natural materials, dances, and songs. These express the cosmovision and religion of this ethnic group and its close relation with nature (Ministerio de Cultura, 2010; Ministerio del Interior, 2012).

In Wounaan-Nonam cosmogony, the whole ecosystem relates to the spiritual component through “*Chimias*” (a spirit present in all living and nonliving things) and consequently, all the territory is related to spirituality, health, and human well-being. The ancestral link between the community and natural resources makes many species an important part of the traditional knowledge of the Wounaan-Nonam biocultural diversity because the diversity of medicinal plants and animals used can strengthen the spirits of human beings. Therefore, it is important to maintain the spirits (*Chimias*) of all the different species who live inside the territory. Moreover, these fauna and flora are also used in cultural practices that benefit the community (e.g. natural dye is used both in textile handicrafts and in body painting).

Wounaan-Nonam original people have maintained a harmonious relationship with nature due to their small population size and level of understanding of their natural surroundings, including the forest (e.g. meat, fruits, materials), river (e.g. fishing, transport, water), and small swidden agriculture. Although these communities live off a subsistence economy based on crops and small-scale production, unlike other ethnic groups, handicrafts with “*werregue*” Mocora palm (*Astrocaryum standleyanum*) (Fig. 3.5) and use of natural dyes such as “*achiote*” (*Bixa orellana*) have developed more at the productive level due to high commercial acceptance, which could become an alternative to generate income (Reyes-Ardila, 2019). However, the production and commercialisation of such goods must be done through sustainable production chains based on fair biotrade strategies. In addition to being a potential income source, these practices contribute to the conservation of biocultural memory, given that stories of mythical characters, animals, and situations of daily life are captured in them.

The use of a broad list of species implies an ancestral knowledge of land use that ranges from crop rotation to leaving land fallow, and land-clearing practices that leave a good number of trees standing, where the planting of banana (*Musa acuminata*), maize (*Zea mays*), manioc (*Manihot esculenta*), and sugar cane (*Saccharum officinarum*) stands out. Hunting is restricted to what is necessary, without overexploiting resources; however, population growth within the

reservations and foreign intrusion threaten the permanence of some species used by the communities in the reservations. In general, the records of fauna and flora species provided by the communities are biased towards the species that are used or have a direct relationship with the communities. For example, the species recorded, such as Baudo guan (*Penelope ortonii*), yellow-throated toucan (*Ramphastos swainsonii*), collared aracari (*Pteroglossus sanguineus*), and great curassow (*Crax rubra*) for birds, and white-lipped peccary (*Tayassu pecari*), red brocket deer (*Mazama americana*), paca (*Cuniculus paca*), and white-collared peccary (*Pecari tajacu*) for mammals, correspond to those that could be used as food sources or that are common in settlements, along the riverbanks, or in crop areas. Species that are either less often seen or very small, such as amphibians and reptiles, are not given special names, which makes identification difficult.

In these original people communities, the health of inhabitants has customarily been the result of harmonious relationships established in the use of natural resources by their medical authorities to provide solutions for deficiencies of body and spirit. For example, there are diseases caused by imbalance in the spiritual world due to the absence or presence of bad or good *Chimias*, which must be treated through spiritual practices such as prayers, songs, and rituals. Likewise, physical diseases caused by the environment, such as stomach problems caused by parasites, are treated with medicinal plants. Therefore, the *Wounaan-Nonam* people contemplate environmental health under the principle of harmony of individuals and communities with Mother Earth (*Pachamama*). Certain unbalances with regard to this harmony are treated by doctors or wise persons possessing the knowledge of traditional medicines that heal both soul and body. Biodiversity and well-being interconnect with the multiple dimensions of health (e.g. physical, mental, and spiritual) through wisdom, knowledge, ancestral memory, spirituality, and relationship with Mother Earth. These elements represent the use of interculturality as a tool for the management of indigenous SEPLS and converge in indigenous thinking through the concepts of Origin Law, self-government,⁹ and Greater Right¹⁰ (Walsh, 2008). This is evidenced in the particularities of the different roles of each of the traditional spiritual authorities (Table 3.3), which transcend the established Western rationality and blur gender lines, but are fundamental for the better understanding of their world view and cosmogony.

⁹The United Nations Declaration on the Rights of Indigenous Peoples (United Nations, 2007) stipulates their right to autonomy or self-government in matters relating to their internal and local affairs, as well as to provide the necessary means for financing their autonomous functions (Art. 4). Therefore, the concept of autonomy also includes the relationship with the state, and how to obtain economic resources through revenue sharing.

¹⁰The Greater Right or *Derecho mayor* (in Spanish) is a right associated with the heritage of ancestors who lived in certain territories centuries ago. Therefore, it is important to describe this notion keeping in mind that it is essentially the right to a territory and its management by a people's own laws (Flórez-Vargas, 2016).

Table 3.3 Medical and spiritual authorities that stand out in the *Wounaan-Nonam* communities (source: prepared by author)

| Traditional spiritual authorities (spiritual medics or shamans) | Description |
|---|--|
| <i>Benkhuum</i> | The highest medical and spiritual authority, his knowledge of their territory and resources (animals and plants) allows him to make corporal treatments, and his knowledge of the spiritual world and the handling of <i>Chimias</i> allows spiritual treatments |
| <i>Pildezero or Tonguero</i> | He diagnoses illnesses of the body and spirit by consuming plants such as Pildé (<i>Banisteriopsis caapi</i>) whose properties give him the power to transcend materiality and know the patient's condition |
| <i>Yerbatero</i> | Has the features of a botanist, i.e. specialises in the knowledge of plants' potentialities and the treatments that should be carried out using them |
| <i>Sobandero</i> | Has knowledge about the functioning of bones and muscles in the human body, and thus the ability to treat and rehabilitate traumas |

3.2 *Latent Threats to the Biocultural Memory of Wounaan-Nonam Original People*

Wounaan-Nonam territories constitute strategic corridors for illegal armed groups as well as for planting, processing, and transportation of illicit crops. These illegal armed groups have inflicted harm on the health of the environment by imposing certain limits to the indigenous territory and preventing the free movement of people and within it, by limiting the access to certain foodstuff, and through the implementation of some foreign agricultural practices. The productive activities are restricted by the presence of dangerous anti-personnel mines in the soils for crops, hunting, and fishing areas (Defensoría del Pueblo, 2018; Ministerio de Justicia & UNDOC, 2013). Additionally, several environmental changes are associated with the El Niño Southern Oscillation (ENSO), as well as with the effects of mining, logging, and river pollution. Moreover, glyphosate spraying in the eradication programmes of illicit crops affects the soil and water and threatens their food and access to a balanced diet, as they are restricted mainly to rice and plantains. As a result, the original people have lost food autonomy¹¹ and they now depend on imported rice, a staple they do not produce in their territory. Consequently, in recent years food insecurity has been a critical factor for the *Wounaan-Nonam* people, with 93% of the inhabitants considering their diet as fair or poor. This is oxymoronic in the context of great biodiversity, and therefore, agrodiversity could contribute to food security and sovereignty (Burlingame et al., 2012), as well as good health.

¹¹ Food autonomy is defined by Morales (2012, p. 3) as the “right that assists each community, people or human collective, member of a nation, to autonomously control their own food process according to their traditions, uses, customs, needs and strategic perspectives, and in harmony with other human groups, the environment and future generations”.

These latent threats in the territory also affect their survival as an ancient culture, their traditional medicine, customary practices, human rights guarantees (Ministerio del Interior, 2012), and biocultural memory. According to Ministerio del Interior (2012), at least 79% of inhabitants of the *Wounaan-Nonam* communities consider that their traditional medicine has been affected by threats to the lives of traditional doctors and the restrictions within the territories that prevent access to medicinal and sacred plants (Ministerio del Interior, 2012). In this sense, it is important to promote practices and incentives to support the conservation of biocultural memory in these communities, given that the loss of cultural values is linked to the degradation of natural resources (Lopez-Maldonado & Berkes, 2017; Toledo & Barrera, 2008).

Another important element to the conservation of biocultural memory is language. The majority of the *Wounaan-Nonam* are multilingual, using the native language “*Woun meu*” (belonging to the lingual family of Chocó) and Spanish. The absence of an indigenous educational system (SEIP) after primary school, generational change, and outmigration are aspects that have slowly influenced the loss of their language; in Colombia alone, indigenous language loss is higher than 50% (Departamento Administrativo Nacional de Estadística (DANE), 2019).

Despite this trend, since 2009, in the frame of the *Wounaan-Nonam* People Congress, language has been highlighted as an identity element that allows the development of resistance and community cohesion strategies and has been deemed as a priority for these people (Ministerio de Cultura, 2011). The *Wounaan-Nonam* people, like other original people in the country that preserve their native language, consider language as an essential element in terms of culture, representation, and identity, as it enables the intergenerational passing of their ancestral knowledge on environmental health as biocultural memory.¹²

Overall, armed conflict and contact with other populations have generated a cultural fragmentation process, which gravely endangers traditional management of natural resources. Additionally, lack of intergenerational communication and transmission of traditional knowledge for risk management of the SEPLS has hindered effective conservation processes in these territories. Therefore, several urgent actions are required from the Colombian Government to conserve the biocultural memory of these original people and to promote actions in accordance with their precarious conditions, cultural expectations, and survival needs. Furthermore, an improvement in equity, empowerment, and good governance of these communities and their traditional authorities (self-government and indigenous guard¹³) are fundamental in these SEPLS, given the importance of these factors

¹²Since the 1950s, there have been studies conducted on the *Woun meu* language that allowed the *Wounaan-Nonam* to go from oral language to a writing system. See Mejía, 2000.

¹³The Indigenous Guard is conceived as an ancestral organism and an instrument of resistance, unity, and autonomy to defend the territory and way of life for indigenous communities. It is not a police force, but a humanitarian and civil resistance mechanism. It aims to protect and disseminate ancestral culture and exercise their own rights. Its mandate is derived from their own meetings; therefore, it depends directly on indigenous authorities. Members of the Indigenous Guard rise to defend the communities from other stakeholders who may attack their people, but their only defense

for biocultural heritage conservation (Oldekop et al., 2016; Sarmiento & Viteri, 2015; Speelman et al., 2014).

3.3 Implemented Actions for the Conservation of Biocultural Memory in Indigenous Protected Areas of the Wounaan-Nonam

Despite the great threats to the biocultural memory of the *Wounaan-Nonam*, multiple cultural practices associated with ancestral knowledge (e.g. personal health, handicrafts, body painting, language, and clothes, among others) are found throughout their territory thanks to the management of the SEPLS, which has been developed in the search for harmony with nature. Therefore, the IPAs in their territory are key elements for biocultural memory conservation and a framework for improving human well-being through ecosystem-based management. They serve as reservoirs of important ecological and cultural services such as medicinal and/or spiritual plants, raw materials for handicrafts, construction materials for housing, firewood (for domestic consumption), animal species (i.e. protein sources), and fish, a central element of these communities' diet which is sometimes associated with sacred sites.¹⁴ These sites increase protection and offer conservation opportunities (eds. Sarmiento & Hitchner, 2019; Dudley et al., 2009), as evidenced inside the Pizabarra IPA where the community cemetery is considered a sacred site as the resting place of their ancestors.

Considering the tight-knit relationship these communities share with nature due to their cosmogony, and the importance of their native language, during workshops and knowledge exchange sessions, emphasis was placed on recovering the vernacular names of fauna and flora species and the cultural elements present in both communities. In all, we were able to recover traditional knowledge on 122 species of fauna, 144 flora species, and 40 cultural elements, all associated with customary ways of life and ancestral use of these indigenous SEPLS. In order to disseminate this knowledge to the youth of the Puerto Pizarro and Santa Rosa de Guayacán communities, a pedagogical tool was developed, which through a simple game allows the exchange of knowledge and contributes to the conservation of the Indigenous Protected Areas declared in these territories.¹⁵

is their baton, or “*chonta*” (maximum symbol of indigenous leadership), which gives a symbolic value to the guard (Consejo Regional Indígena del Cauca (CRIC), n.d.).

¹⁴Sacred sites are areas of land or water that have a special spiritual meaning for indigenous communities. They can include mountains, hills, forests, woods, rivers, lakes, islands, mangroves, streams, and caves (Oviedo & Jeanrenaud, 2007; Wild & McLeod, 2008).

¹⁵For detailed information about the species of fauna and flora and cultural elements recovered and used in the pedagogic tool, please see Quintero-Ángel et al. (2015).

Additionally, together with the indigenous communities, the conservation objectives of the IPAs were prioritised based on the system of protected areas in departmental planning (Corporación Autónoma Regional del Valle del Cauca (CVC), 2007). Then, we proceeded to select the tangible and intangible values of conservation objects, although due to the high biological and cultural diversity in these territories, a wide-ranging list of the possible values of conservation objects was identified (73 biological and 16 cultural). Hence, a prioritisation analysis was carried out following Granizo et al.'s (2006) approach, resulting in the selection of eight cultural and biological conservation objects for the IPAs (Table 3.4, Fig. 3.6).

Based on the selection of these values of conservation objects and following the guidelines set forth by Borrini-Feyerabend et al. (2004), a management plan for these areas was developed in a technical document with six interrelated components: (1) characterisation of the communities of Puerto Pizarro and Santa Rosa de Guayacán, including their socio-economic activities; (2) participatory diagnostic of the territory (biophysical aspects); (3) administrative structure of self-government; (4) rules and safeguards of ancestral territory; (5) indicators for follow-up and monitoring; and (6) strategic planning and monitoring establishing goals to be achieved between 2014 and 2019. These goals address the following issues: conservation and restoration, ancestral use and management of biodiversity with its ecosystem services, traditional knowledge, scientific research articulated with knowledge exchanges, and empowerment. The components are articulated within a legal and conceptual framework protected by the Law of Origin, the Major Indigenous Law, and the Law 21 of 1991 which ratified for Colombia the International Labour Organisation (ILO) Convention 169 of 1989 concerning indigenous and tribal peoples in independent countries.

The establishment of IPAs administered under management plans not only is beneficial for biodiversity conservation, but can also have positive effects on various aspects of human well-being, including physical and mental health benefits associated with the relationship indigenous communities have with nature. IPAs also provide important ecosystem services such as food provisioning or medicinal resources, regulation services (e.g. pest and disease control), and aesthetic and spiritual services that favour the well-being of these communities.

4 Key Aspects of Biocultural Memory Conservation and Relationship with Health and Human Welfare

The concept of biocultural memory refers to the collective construction of knowledge associated with nature, its conservation, and intergenerational transmission, whose axis is the cosmivision and cultural representation present in each original people. In southwestern Colombia, the *Wounaan-Nonam* original people seek to maintain a balanced relationship with nature, and this is represented in spiritual and physical harmony; any imbalance is considered a disease in human beings,

Table 3.4 Conservation object values prioritised in environmental management plan

| Conservation objectives | Specific objectives | Type of object | Values of conservation objects | Justification |
|---|--|----------------|--|--|
| | “Preserve and restore the natural condition of spaces that represent Colombian ecosystems or characteristic combinations of them” | | Ecosystems (warm pluvial forest in fluvial-marine plain (BOCPLRY)) | This ecosystem has zero representation in protected areas in the Valle del Cauca department. Its extension is 10,838.5 ha, which represents 0.5% of the total area of Valle del Cauca, making it an important value of conservation object (Corporación Autónoma Regional del Valle del Cauca (CVC) and Fundación Agua Viva (FUNAGUA), 2010) |
| | | | Fine timber: Carrá (<i>Huberodendrom patinoi</i>), Chachajo (<i>Aniba perutilis</i>), Chanul (<i>Humiriastrum procerum</i>) | Selected due to the high pressure these species are under in IPAs and in general in the Colombian Pacific due to their high commercial value (eds. Cárdenas & Salinas, 2007) |
| “Ensure the continuity of ecological and evolutionary processes to maintain biological diversity” | “Preserve populations and habitats necessary for the survival of wild species or sets of species that present particular conditions of special interest for the conservation of biodiversity, with emphasis on those of restricted distribution” | Biological | Large mammals: White-lipped peccary (<i>Tayassu pecari</i>), red brocket deer (<i>Mazama americana</i>), paca (<i>Cuniculus paca</i>), white-collared peccary (<i>Pecari tajacu</i>), and jaguar (<i>Panthera onca</i>) | Group of a large number of species of high ecological importance for the ecosystems and for the community, due to the protein contribution that these species provide in the diet of the indigenous communities. Large mammals are defined as all species with a body weight greater than 10 kg (Emmons, 1997). The jaguar is included due to its ecological and spiritual importance as it is one of the strongest <i>Chimias</i> necessary for natural and spiritual balance |
| | | | Large frugivorous birds: Baudo guan (<i>Penelope ortoni</i>), yellow-throated toucan (<i>Ramphastos swainsonii</i>), collared aracari (<i>Pteroglossus sanguineus</i>), great curassow (<i>Crax rubra</i>) | Selected for two main reasons: (1) They populate a given area and perform fundamental ecological functions (Montaldo, 2005). These species maintain ecological interactions of mutualism with plants, as they feed on their fruits and disperse their seeds, thus guaranteeing the natural regeneration of the forest. With the disappearance of this group, these ecological interactions also disappear (Montaldo, 2005). (2) These are species of interest for the communities as food and pets |
| | | | Raw material for handicrafts: Mocora palm (Guerregue, <i>Astrocaryum standleyanum</i>), orange beads (Tetera, <i>Stromanthe lutea</i>), Chocolatillo (<i>Ischnosiphon arouma</i>), Puchama/Puchicama (<i>Arrabidaea chica</i>), Quitasol (<i>Mauritiella pacifica</i>) | Selected as a set of promising species that make the forest provide non-timber economic alternatives and provide income to indigenous communities. They are also closely related to ethnic cultural aspects of the <i>Wounaan-Nonam</i> ethnic group, and thus are under high pressure due to use |

(continued)

Table 3.4 (continued)

| | | | | |
|---|--|-----------------|--|--|
| <p>“Guarantee the permanence of the natural environment or of some of its components, as a base for the maintenance of the cultural diversity of the country and the social appreciation of nature”</p> | <p>“Conserve natural spaces associated with material or immaterial cultural elements of ethnic groups”</p> | <p>Cultural</p> | <p>Spiritual elements: <i>Chimias</i>, <i>Dichardi</i>,^a traditional medicine</p> | <p>Selected for two fundamental factors: (1) the close relationship between spirituality (cosmogony and cosmovision) of this culture and nature, and (2) they seek to rescue traditional elements of the culture that can show the road to reconnecting as an original people with nature and developing a new identity in accordance with the current needs and expectations of the communities, and thus generating guidelines to live harmoniously in the territory in an autonomous and environmentally sustainable manner</p> |
| | <p>Artistic elements: handicrafts, dances, corporal painting</p> | | <p>Selected because there are a series of artistic practices such as the production of handicrafts, songs, dances, and body painting strongly associated with natural elements (flora and fauna species) that are part of the cultural identity of the <i>Woumaan-Nonam</i> ethnic group and are therefore the ancestral link between the community and natural resources</p> | |
| | <p>Mother language “<i>Woumeu</i>”</p> | | <p>Selected due to the close relationship between biological and linguistic diversity that undoubtedly allows understanding of the historical relationship that man has had with nature, given the domestication and use of diverse plants and animals present in these areas, which made it necessary to create new terms to explain nature. This allowed the construction of a directly proportional relationship between natural and linguistic diversity through generations. The loss of either of these components would result in the disappearance of the other (Toledo & Barrera, 2008)</p> | |

^a *Dichardi* is a sacred building where everyone meets and has the power of spirituality, in which knowledge is transmitted and the community is woven

non-human beings, and abiotic elements present in the environment. In this way, there is a systemic and integral vision regarding the relationship between wellness, health, and the environment. The wisdom of spiritual medics or shamans is called upon, who through their ancestral knowledge about nature and natural practices and rituals manage to heal diseases to restore a state of balance and harmony.

In this context, the territory is the space where culture, traditions, beliefs, feasts, and language can develop. Consequently, the environmental equilibrium of their territories is directly related to physical and mental health and to the development of their life plans. However, it is necessary to generate a correct articulation of the ancestral forms of traditional authority and the state, represented in the territorial entities (municipalities and governorate) and institutions, to consolidate a co-management strategy for the territory that eliminates or restricts the threats related to the presence of illegal armed groups and illicit activities.

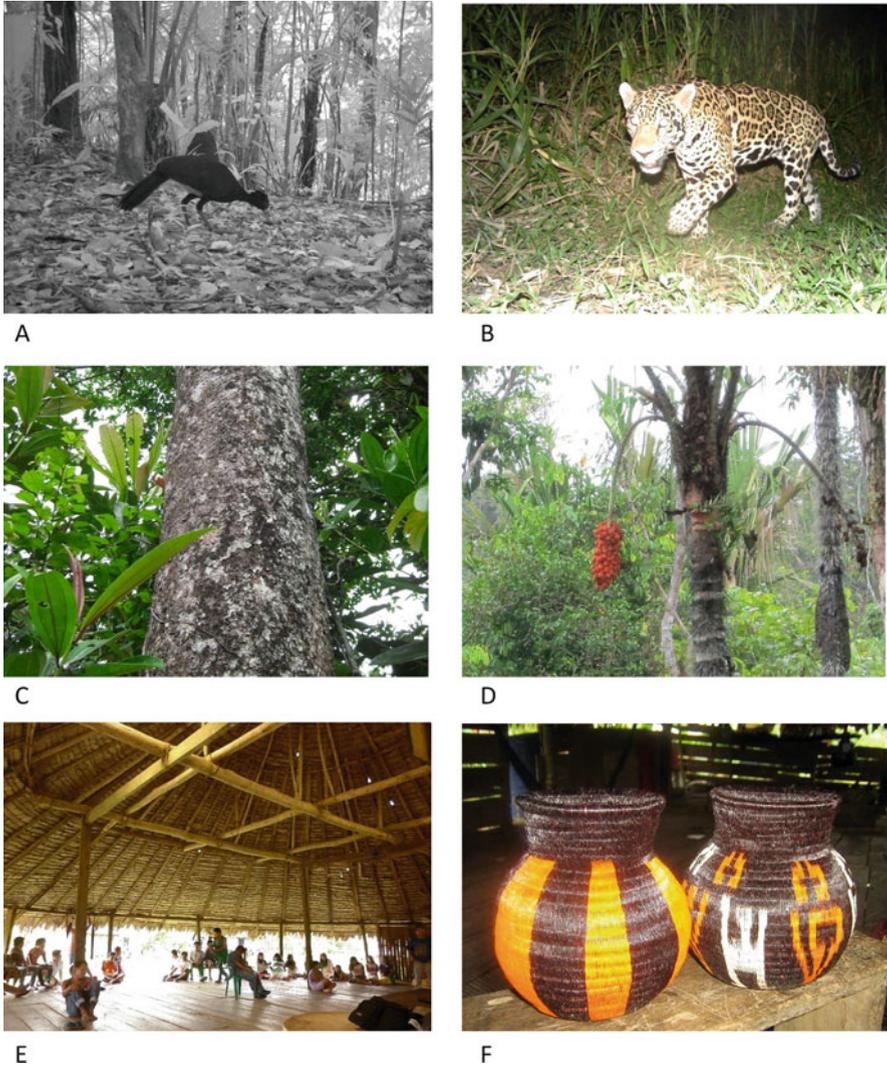


Fig. 3.6 Examples of the biological and cultural values of conservation objects selected for the IPAs. (a) Large frugivorous birds: great curassow (*Crax rubra*); (b) large mammals: jaguar (*Panthera onca*); (c) fine timber: Chanul (*Humiriastrum procerum*); (d) raw material for handicrafts (Mocora palm (*Astrocaryum standleyanum*)); (e) spiritual elements: *Dichardi* seen from the inside in a meeting with the community of Puerto Pizarro; (f) artistic elements: Mocora palm handicrafts. (Photo credits: a, b, d by A. Quintero-Angel, 2016; c by A. Giraldo, 2017; and e, f by A. López-Rosada, 2016)

It is also important that the communities and the state ensure the implementation of ethno-development models in the *Wounaan-Nonam* territories, which would contribute to the survival of the people and, with them, the ancestral management

and heirloom conservation practices. These practices have positive impacts on the health of the populations, from their intimate spiritual relationship with their environment to the use of biodiversity for the making of medicines, rituals, foodstuffs, and handicrafts, among others.

The ancestral link between the community and natural resources makes many species an important part of the traditional knowledge of the *Wounaan-Nonam* culture. Examples include medicinal plants and animal species used to strengthen human energy and maintain the spirits (*Chimias*) within the territory. Other examples are cultural practices such as handicrafts and body painting, which use natural inks. These communities recognise a decrease in the number of these species used in health and cultural practices. This favours the establishment of joint actions between the environmental authorities and the indigenous communities for biodiversity conservation. Consequently, it is essential to encourage the sustainable use of elements and raw materials associated with biodiversity, complemented by the implementation of enrichment programmes for species under greater pressure in the communities.

For the *Wounaan-Nonam* culture, all plants in nature are medicinal. The specific use of each plant and its information is handled exclusively by the traditional authority (i.e. spiritual medics or shamans). For this reason, this information could not be documented. Nonetheless, these communities recognise and use with frequency about 146 species of plants belonging to 47 families. Some examples of plants used to cure minor spiritual ailments, ward off evil *Chimias*, and attract good luck are palo de agua o nacedero (*Trichanthera gigantea*), Canilla de Venado (*Piper tricuspe*), Venezuelan pokeweed (*Phytolacca rivinoides*), neotropical snakefern (*Microgramma reptans*), and mouse tail (*Peperomia sp.*).

Even though the number of species used by the indigenous people is ample, it leaves out numerous species present in the region, catalogued as one of the richest and most diverse areas on the planet in terms of flora (Rangel et al., 2004). In addition, it is important to highlight that this knowledge of traditional plants is being lost due to the fact that new generations suffer from a loss of cultural identity, making it more difficult to pass on ancestral traditions. It is crucial to recover this ancestral medicinal knowledge as it has sociocultural implications and impacts the health of these communities, which in most cases only have traditional doctors for healthcare. Conventional health centres (i.e. Western medicine) are usually located several hours away by boat in towns or cities far away from the communities, and are too expensive to turn to.

The foodscape of the original people is also linked to the environment, and strengthened management of the territory, such as IPAs, contributes directly to the enhancement of their food hubs and nutritional security, along with improvement in health indicators. Although the dynamics of armed conflict hamper the free movement of community members through the environment, limiting food diversity, the sustainable use of the territory can be promoted so that internal regulations are established for use and exploitation of species associated with food security. Nevertheless, it is necessary to implement programmes to reinforce ancestral crops and

cultural practices that contribute to the food sovereignty of these populations and to control the invasiveness of exotic species.

A key element for the conservation of the biocultural memory of the *Wounaan-Nonam* people is the conservation of the native language and ancestral cultural practices, which are also at risk of disappearing. Many of the words and names that the *Wounaan-Nonam* language uses to refer to elements associated with biodiversity could be at risk of disappearing or falling into disuse, due to factors such as isolation and state neglect that have undermined their cultural identity (Agencia de Noticias U. Nacional, 2014). Elements of their language are also used in practices associated with spiritual health in healing rituals. Likewise, these communities in recent years have experienced an accelerated process of acculturation, given the permanent interaction with other populations such as Afro-descendants and mestizos. Therefore, as stated in Sect. 3.2, the survival of ancestral cultural practices such as dance, handicrafts, or body painting is increasingly at risk. This highlights the urgent need for support of the indigenous education model so that the new generations perpetuate the use of the language in their daily life and appreciate and maintain cultural practices. In addition, the use of these artistic elements in spiritual and healing rituals contributes to the mental and spiritual well-being of these communities.

Given the increasing presence of illegal armed groups and forced interactions with the dominant society that accelerates the acculturation processes, a major effort to maintain the culture of the *Wounaan-Nonam* people is imperative. The fading of their biocultural memory has implications not only for the health and well-being of the indigenous population, but also for the degradation of ecosystems, which are in a good state of conservation within the IPAs, including the presence of highly threatened species of fauna and flora in the biogeographic Chocó region.

The survival of beliefs such as the *Chimias* has benefited conservation efforts as original people see nature as part of their spiritual world. This is evident in the case of timber species, which are conserved in indigenous territories because of their importance in spiritual terms, but are overexploited outside their territories because other communities (non-believers) only consider their commercial value (e.g. *Toxicodendron striatum*, or “aluvillo”, and *Ceiba pentandra*, or “balsa”). The cosmivision of original peoples has, therefore, important and visible benefits for environmental health. However, a more decisive role on the part of the state and Colombian society is imperative, so that the processes of self-education and the conservation of biocultural memory may be favoured.

5 Conclusions and Lessons Learned

Historically, indigenous communities have had a mythological and spiritual relationship with natural resources, interacting with them not only as living beings, but also as spiritual entities, important for their survival and physical, mental, and spiritual well-being. Therefore, well-being is an integral part of the health of these

original people. Accordingly, in situ conservation strategies, such as the IPAs, directly contribute to the livelihoods of these communities, improve management in their SEPLS, and promote conservation of their biocultural memory. IPAs have become a strategy to enrich the supply of indigenous families, because its biodiversity is directly related to the diets and eating habits, ancestral practices of traditional medicine, fashioning of handicrafts, and elements associated with spirituality and indigenous cosmogony.

The benefits of the efforts associated with biocultural memory conservation and the management of indigenous SEPLS that are shown in this case study have the potential to be replicated in the 115 original people communities in Colombia and in other ethnic communities around the world. The implemented actions of sustainable use of biodiversity and natural resources are reflected in the improvement of the fauna and flora populations (quality and quantity) inhabiting these areas, thus contributing to the nearby communities' quality of life (not only indigenous but also peasants, Afro-descendants, and recent mestizo settlers).

Consequently, IPAs serve as a conservation and resistance strategy, especially in ensuring the autonomy of the food hubs of the communities and a decrease in dependence on external inputs (i.e. food, supplies, goods), whose circulation is not allowed on many occasions due to the dynamics of the armed conflict. Likewise, by developing participatory inventories and exchanging knowledge on fauna and flora, traditional knowledge on foodstuff diversity is maintained.

In biocultural diversity conservation processes with indigenous communities, it is essential to assimilate the concepts of memory, symbolism, and myth, as they facilitate our understanding of their own knowledge by decoding their way of relating to natural resources. Only through the understanding of the relationship that indigenous women and men (i.e. gender perspective) have with their environment is any proposal for joint action for conservation of biocultural memory viable.

These issues, identified through this experience, are only the visible environmental phenomenon; they are the product of a nuanced matrix, or a set of interconnected cycling social problems such as forced displacement, cultural fragmentation, armed conflict, and poverty, among others. Only by reading the complexity of the context in the indigenous communities, or historicity, would it be possible to build effective participatory strategies to mitigate and/or solve specific conflicts associated with environmental health.

Although there is a legal framework recognising Colombia as a multiethnic and multicultural country, it is necessary to promote public practices of multiculturalism, especially when they relate to indigenous SEPLS. Similarly, joint efforts for understanding state functioning and the logic of original people are needed in order to potentiate conservation strategies of biocultural memory and community governance.

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