

International Journal of Engineering Sciences & Research Technology

(A Peer Reviewed Online Journal)
Impact Factor: 5.164



Chief Editor
Dr. J.B. Helonde

Executive Editor
Mr. Somil Mayur Shah

**INTERNATIONAL JOURNAL OF ENGINEERING SCIENCES & RESEARCH
TECHNOLOGY****LIMONCOCHA BIOLOGICAL RESERVE, LAGOON: MEANINGS FROM AN
ANTHROPIC PERSPECTIVE****Carlos Mestanza Ramón¹, Magali Uvidia Vilema^{*1}, Hilter Figueroa Saavedra¹, Santiago
Logroño Naranjo¹, Edison Pozo Calderon¹ & Marco Vizuete Montero²**¹Escuela Superior Politécnica de Chimborazo, Extensión Norte Amazónica, Facultad de Recursos
Naturales, Puerto Francisco de Orellana, Orellana 51002, Ecuador;²Universidad de Antioquia, Facultad de Ciencias Agrarias, Doctorado en Agroecología, Apartado
Aéreo 1226, Medellín, Colombia

DOI: 10.5281/zenodo.3255944

ABSTRACT

This article seeks to understand and deepen the main meanings of the Limoncocha lagoon for the Kichwa community of Limoncocha, located in the buffer zone of the Limoncocha Biological Reserve (RBL), province of Sucumbíos, Ecuadorian Amazonian north. The research was ethnobiological and transdisciplinary, oriented from two theoretical approaches: Political Ecology and Ecological Anthropology. The fieldwork was carried out from January to June 2019. The meanings were presented in eleven categories: the symbol of collective identity, living being, part of the territory, means of livelihood, transport route, a place to fish, ancestral wisdom, sacred and vital, tourism and recreation site, environmental education and conservation, and changes have emerged. Finally, the need to consider the meanings and values of the environment of local communities for the construction of more inclusive forms of management in protected areas is supported.

KEYWORDS: Meanings, Limoncocha Lagoon, wetland, Kichwa community, protected area**1. INTRODUCTION**

Ecuador is one of the most beautiful and biologically diverse countries in the world. Fortunately your countless natural wonders are protected in more than 20 national parks and reserves. In these areas there are unparalleled scenarios that house an incredible variety of wildlife [1,2,3]. The same thing wrapped in the mist of a cloud forest reserve that navigating among the mangroves of the Coast, or on top of one of the highest active volcanoes on the planet, the visitor can discover for himself why Ecuador is considered as one of the most popular destinations in South America for outdoor adventures[4,5,6].

In accordance with the international legal framework, the Constitution of the Republic of Ecuador (2008) recognizes and guarantees indigenous peoples, Afro-Ecuadorians and Montubios their collective rights, such as land and territory tenure, to administer and manage resources renewable natural resources that are in them, recognizes their management systems and use, as well as the special relationship they have with nature (Article 57, numerals 5, 6, 8, 12) [7,8,9,10]. However, in protected areas that overlap with the territory of indigenous communities, peoples and nationalities, the environmental management of ecosystems and their resources constitutes a great challenge due to the contrast of different interests [10,11]. Normally, ideas prevail that strict government regulation and / or privatization are the only solution to overexploitation of common goods (Chapman 2008, 22), even if there are customary forms of management. In this context, the economic, social and cultural logics, as well as the environmental rationalities and meanings that each group assigns to their environment, are different, since they often coexist and often overlap [12,13]. The great challenge is to find a balance between the conservation of ecosystems and the exercise of collective rights over the common goods and subsistence activities of the local population. Due to the level of complexity of this type of scenario, internal tensions and / or conflicts may arise between different actors that interact within the territory [14,15,16].

This investigation took as a case study the Kichwa community of Limoncocha, possessing collective territories imbricated by the Limoncocha Biological Reserve (RBL), located in the province of Sucumbíos, in the northern



Amazon of Ecuador. Within this are common goods used by the community, which are under the administration of the Protected Area Headquarters articulated to the Ministry of Environment (MAE), which establishes environmental regulations and restricts the forms of use and management of resources of the reservation and Limoncocha Lagoon [17,18]. The results presented are framed in the general hypothesis of the research that stated that the encounter / disagreement between different environmental rationalities can enhance socio-environmental conflicts with respect to aquatic ecosystems and mechanisms of regulation, management and use of freshwater fishery resources in the RBI [19,20,21].

The objective of the article is to understand and deepen the main meanings of the Limoncocha Lagoon, as the most important nucleus of the local water system, from a community perspective. The importance of the subject lies in the fact that, based on the study of meanings, an attempt is made to explain the incidence of environmental rationalities in the management and conservation of aquatic ecosystems [21,22,23]. Within the environmental policies and Environmental Management Plans (EMP), the transcendence of ontologies, local knowledge and their transformations are aspects that have not been evaluated. Likewise, the results of this article would serve, in part, to the search for more inclusive management alternatives, which tend to co-management based on the dialogue of knowledge and underpin the link between biological and cultural diversity in protected areas [24,25,26].

2. MATERIALS AND METHODS

Study area

The Limoncocha Biological Reserve is located in Shushufindi, Sucumbíos, the Limoncocha Biological Reserve has 4,613 hectares full of tropical humid forest where you can take walks. Its abundant fauna and flora has attracted the interest of scientists and tourists. In 1998, 100% of the area was declared a Ramsar Wetland. While in 1985 it was declared a protected area. It is composed mainly of the Limoncocha lagoon, formerly called Capucuy, and the Negra or Yanacocha lagoon. In a temperature that oscillates 25 °C, the globetrotters will enjoy a varied fauna that includes palms such as chambira and ungurahua, timber trees, epiphytes, cat's claw, bromeliads, orchids, mosses and lianas. In addition, it has a secondary forest of ceibo and cedar. In the area 53 species of mammals, 144 of birds, 92 of amphibians and reptiles and 93 of fish have been counted. Throughout the area, jaguars and tigrillos abound, as well as bats. On the El Cayman trail and around Yanacocha you can see tapirs, deer and monkeys; also amphibians such as frogs, toads and salamanders, and reptiles such as lizards, blind shingles, alligators, snakes and turtles. The area is also the habitat of thousands of birds. Some of the species are kingfishers, garrapateros, herons, hoatzin, parrots, macaws and red and yellow head buzzards. The Napo River, the Capucuy River and the Interpretation Center Limoncocha are other attractions in the area.

Methodology

The field investigation was conducted between January to June 2019, during those months he lived in the Kichwa community of Limoncocha. The actors involved were the members of the community (families, men and women of different age group and economic activity), mainly those related to subsistence activities, including artisanal or commercial fishing. Community and parochial leaders and leaders collaborated as interlocutors. The information gathered was derived from the research variable called environmental rationalities, perceptions, values and knowledge of the environment. For the collection of information, the following investigation techniques were applied: a) Documentary review; b) Observation located and participating in the community; c) Open interviews; d) Semistructured interviews with family groups; e) In-depth interviews with key informants; and, f) Conferences in the Bilingual Intercultural Community Education Unit Abg. Martha Bucaram of Roldós (UECIB), aimed at children and young people of the community, in which they also made drawings of aquatic ecosystems. From the analysis of the data, categories were created that encompass the meanings of the Limoncocha Lagoon. It should be noted that the categories are methodological constructions that propose the explanation of reality and discourses in a structured and simplified manner. The thematic axes that were included to interpret, analyze and deepen the topic correspond to: a) environmental rationalities, meanings and perceptions of the environment; and b) territory and territoriality.

3. RESULTS AND DISCUSSION



Findings

The meanings of the Limoncocha Lagoon. The population of Limoncocha maintains a relationship of belonging to the territory crossed by dynamics of the communal and family group, which coexist and mark different multiterritorialities among the Kichwa. The partners detail which rivers, streams and lagoons are part of the communal territories, as well as those located near or across the family farms.

1. *Symbol of collective identity*

The Laguna de Limoncocha forms the main identity axis of the community and represents it symbolically, is associated with its history, its experiences and forms a link between present and future generations. To delve into this meaning, the following subcategories are broken down: We feel like owners, a letter of introduction to the community, a link between generations.

2. *Being alive*

The lagoon is understood as a being with a life of its own, character and attributes, just like human beings. In this way, the lagoon and the beings that inhabit it have a spiritual principle. To delve into this meaning, it was divided into the following subcategories: i) Our mother, ii) she cares and protects us, but she can also punish, iii) Origin of life: "Where there is a gap, there is life".

3. *Part of the territory*

Although the political limits indicate that the Limoncocha Lagoon is within the territory of the RBL, the Kichwa of the ASOKILC feel that the lagoon is part of the community territory and is used as a common good. For the indigenous the perception and experience of the space includes multiple dimensions, which are not compatible with the modern western conceptions of the territory. The grandparents settled in it, from then on, many indigenous were born and lived in Limoncocha, consequently they have strong ties of belonging, appropriation, affection, construction of their community and cultural identity around their territory, of which the lagoon.

4. *Life between the reflection of the lagoon: a way of life*

The Limoncocha lagoon, as a means of life for the Kichwa families, allows to ensure vital needs such as the supply of food, it is a natural fish reserve, it generates income and employment derived from the tourism sector. Although not all families depend on the lagoon, it guarantees the food sovereignty of the partners and the Kichwa way of life for future generations.

5. *Transport route*

The rivers, streams, lagoons have traditionally represented the main transport routes of the Amazonian settlers. Well, the indigenous peoples or we, the nationalities, most of all live, we live until now on the banks of the rivers and the lagoon. The one because it is like our family, the rivers, the lagoon, are part because they give us food there. The other is the means of transport where we can navigate and live with the lagoons and all these things (Interview EA05 2015).

6. *Place to fish*

The meaning of the lagoon as a place to fish presents different nuances among the Limoncocha Kichwa. Although part of the population depends on fishing as a means of livelihood, not everyone enjoys doing these activities. For men, fishing is a traditional activity through which they build their gender identity, while creating links with the territory, aquatic ecosystems and between the community and the family. Another type of practices associated with tourism activities are recreational and exhibition fishing. The recreational fishing of piranhas is done with fishing rods or hooks, is aimed at the enjoyment of foreign and national tourists, who are curious about the reputation of these fish. Occasionally, demonstration fishing is done, which focuses on exhibiting certain species of fish, or observing local fishing activities. The indigenous allow tourists to carry out these activities; however, these practices contradict environmental regulations, which prohibit anyone from fishing in a protected area, except for the local population for the purpose of subsistence.

7. *Ancestral wisdom*





Many of the meanings of the Limoncocha Lagoon originate from the Kichwa worldview and local knowledge, built based on their own perception of the environment and local model of nature. This is derived from their own languages, rituals, models of classification of environments (Escobar 2010, 25). In this category the meanings derived from the ancestral knowledge will be superficially exposed: i) The lagoon is a city, ii) It was enchanted, iii) Place of experiences and learning.

8. Sacred and vital

For the Kichwa of ASOKILC, the lagoon is important both in the physical and spiritual world, for this reason it is vital and they are grateful to it. Each sacred site has its own way of life. According to the Kichwa worldview, the lagoon represents a sacred place for the human being, for the indigenous people and before whom they must show respect at all times. Expressions of respect and deep gratitude towards the Limoncocha Lagoon are materialized in the different practices, forms of use and use made by the Kichwa settlers. The interviewee ES07 explained: For me the lagoon means a lot because thanks to the lagoon we have food, thanks to the lagoon we have tourism, thanks to the lagoon we also have the ministry [Head of area] that helps us conserve the lagoon, to take care of it, to protect it from those who cut a lot, the cutting of the forest also helps us not to cut down, but also to reforest so that plants and animals are not lost so much, birds that are not hunted (Interview ES07 2015).

9. Tourist and recreation site

The Limoncocha Lagoon is considered a tourist attraction, a landscape of great beauty. The interviewee ES22 (2015) points out that the lagoon is important "to live, to live fishing the animals, the fish and then there to visit with the family, to walk through the lagoon, sometimes we spend in the house as slaves, then sometimes we went to visit there." Community members also enjoy recreational activities in the lagoon. The children express that they like to go, walk and explore, enjoy watching animals and fishing. On the other hand, tourism activities become counterproductive to the community, to the extent that it is accepted to accommodate all requests from visitors, even carrying out prohibited or unsustainable activities. For example, guides and / or community members make repeated attempts to observe alligators at any time, including breaking into their habitats, which contributes to the deterioration of these ecosystems.

10. Environmental education and conservation

Several external actors have intervened and executed projects with conservationist approaches in Limoncocha, although the one with the greatest influence is the RBL. One of the programs executed by its Area Headquarters is Communication, Education and Environmental Participation. For four years now, the reserve has been working on this program at the UECIB, which has environmental conservation as its main theme and focuses on the importance of the sustainable use of natural resources. Currently, young people explain that the lagoon is important because of its biodiversity and the ecological functions that it fulfills. They also point out that for these reasons it should be taken care of and protected; in many cases, they state that they should not be contaminated, nor engage in fishing or hunting activities.

11. Changes have arisen

The lagoon has experienced drastic changes, both in its environmental quality as well as in the forms of access and use of their resources. The indigenous show concern and seek solutions to these situations, although not all the population is aware of these changes.

4. CONCLUSION

The construction of the realities and subjectivities of the comuneros is shown as a complex network of relationships with their territory, history, experience and ethnic identity. In short, the lagoon is the product of social practices and the way of conceiving and experiencing the world of this human group. That is to say, that from the meanings derive the different practices, forms of use and use of the inhabitants. The lagoon is a way of life, it is the most representative and ingrained meaning among the population, mainly because it is a source of food and a potential reserve of resources. In addition, young men¹² highlight the meanings of environmental conservation, collective identity such as links with grandparents and stories of the place; while among adult men¹³ the meaning of a source of economic income, a place of experiences and learning, prevails. The adult women emphasize the meaning of tourist center and of recreation; while young women indicate the meanings of

environmental conservation, tourist center, and those associated with the construction of community identity and





its link with the Kichwa culture. Men and women expressed meanings in the category where changes have arisen, because these transformations forged their conceptions and perceptions of the gap. It is worth mentioning that the meanings of this are not limited to those presented in this article, because they are dynamic, since they are they incorporate and adapt to the intersocietal, interethnic dynamics and the ontological influences of Western society. In this case, the meanings and relationships established with the lagoon are being resignified and reinforced through the activities of community tourism, conservation and environmental care, especially among children and young people. It was identified that the variables gender, economic activity and / or subsistence, guide the culturally assigned valuations to the Limoncocha lagoon of the Kichwa; nevertheless, the activity to which they dedicate themselves is more influential than the genre of the comuneros. Tension assessments among community members are also discernible, especially among those who expose the importance of the lagoon as a means of living in contrast to those of tourism and recreation, although there are greater divergences between community valuations and valuations. the environmental authority and its non-Kichwa officials.

In order to elaborate more inclusive management alternatives, factors such as environmental rationality, environmental conceptions, institutional changes as well as the ways in which a diversity of actors in the locality intervene should be analyzed. Because these aspects are not considered in the management of the protected area, nor in the construction of environmental policies, socio-environmental conflicts are created or stoked. What is at stake are the values culturally assigned to nature, and in any case the intrinsic economic or ecological values would not allow to reach agreements or functional solutions with the local community (Leff 2004, 43). For this reason, it is recommended that the concepts themselves and the ways of perceiving and relating to the community environment be taken into account for the management and use of the Limoncocha lagoon and its resources, as a central part of an area of multiterritoriality: indigenous collective territory and a protected area.

REFERENCES

- [1] Chapman, Margaret D. 2008. "La ecología política del agotamiento de recursos pesqueros en la Amazonía". En *El Manejo de las Pesquerías en Ríos Tropicales de Sudamérica*, editado por Danny Pinedo y Carlos Soria, 21-38. Bogotá: Instituto del Bien Común (Perú), Mayol Ediciones, IDRC.
- [2] Mestanza, C.; Saavedra, H.; Gaibor, I.; Zaquinaula, M.; Váscones, R.; Pacheco, O. Conflict and Impacts Generated by the Filming of Discovery Channel's Reality Series "Naked and Afraid" in the Amazon: A Special Case in the Cuyabeno Wildlife Reserve, Ecuador. *Sustainability* 2018, 11, 50.
- [3] Descola, Philippe. 2004. "Las cosmologías indígenas de la Amazonía". En *Tierra adentro. Territorio indígena y percepción del entorno*, editado por Alexandre Surrallés y Pedro García Hierro, 25-35. Perú: IWGIA.
- [4] Mestanza, Carlos, et al. "Beach litter in Ecuador and the Galapagos islands: A baseline to enhance environmental conservation and sustainable beach tourism." *Marine pollution bulletin* 140 (2019): 573-578.
- [5] Descola, Philippe y Gísli Pálsson. 2001. "Introducción". En *Naturaleza y sociedad. Perspectivas antropológicas*, coordinado por Philippe Descola y Gísli Pálsson, 11-33. México D.F.: Siglo Veintiuno Editores.
- [6] Echeverri, Juan Álvaro. 2004. "Territorio como cuerpo y territorio como naturaleza: ¿Diálogo intercultural?". En *Tierra adentro. Territorio indígena y percepción del entorno*, editado por Alexandre Surrallés y Pedro García Hierro, 259-275. Lima: IWGIA.
- [7] Mestanza, C.; Piccardi, M.; Pranzini, E. Coastal Erosion Management at Callao (Peru) in the 17Th and 18Th Centuries: The First Groin Field in South America? *Water* 2018, 10, 891.
- [8] Escobar, Arturo. 1999. *El final del salvaje. Naturaleza, cultura y política en la antropología contemporánea*. Bogotá: CEREC/ICAN.
- [9] Escobar, Arturo. 2010. *Territorios de diferencia: Lugar, movimientos, vida, redes*. Popayán: Enviñón Editores.
- [10] García Hierro, Pedro. 2004. "Territorios indígenas: tocando a las puertas del Derecho". En *Tierra adentro. Territorio indígena y percepción del entorno*, editado por Alexandre Surrallés y Pedro García Hierro, 277-306. Perú: IWGIA.



- [11] Mestanza, C., Llanos, D., & Herrera Jaramillo, R. V. (2019). Capacidad de carga turística para el desarrollo sostenible en senderos de uso público: un caso especial en la reserva de producción de fauna Cuyabeno, Ecuador. *Caribeña de Ciencias Sociales*, (marzo).
- [12] Gómez, Santiago. 2005. "Representación y economía ecológica de la cacería de fauna mayor y la pesca en la Reserva Biológica". Tesis de grado previa la obtención del título de Ingeniero Ambiental, Universidad Internacional SEK-Ecuador.
- [13] Mestanza-Ramon, Carlos, et al. "Disposición a pagar por el ingreso a zonas de uso público en el Parque Turístico "Nueva Loja", Sucumbíos-Ecuador." *Polo del Conocimiento* 4.2 (2019): 67-82.
- [14] Haesbaert, Rogério. 2013. "Del mito de la desterritorialización a la mutiterritorialidad". *Cultura y representaciones sociales* 8(15): 9-45. <http://www.culturays.org.mx/revista/num15/Haesbaert.pdf>
- [15] Hernández-Ávila, Leonardo. 2011. "Territorios, territorialidades y multiculturalismo" En *Cultura y Naturaleza. Aproximaciones a propósito del bicentenario de la independencia de Colombia*, editado por Leonardo Montenegro Martínez, 296-306. Bogotá: Jardín Botánico de Bogotá, José Celestino Mutis.
- [16] Leff, Enrique. 2004. *Racionalidad Ambiental. La reapropiación social de la naturaleza*. México D.F.: Siglo veintiuno editores.
- [17] Leff, Enrique. 2006. "La Ecología Política en América Latina: un campo en construcción". En *Los tormentos de la materia. Aportes para una Ecología Política Latinoamericana*, compilado por Héctor Alimonda, 21-40. Buenos Aires: CLACSO.
- [18] Mooser, A.; Anfuso, G.; Mestanza, C.; Williams, A. Management Implications for the Most Attractive Scenic Sites Along the Andalusia Coast (SW Spain). *Sustainability* 2018, 10, 1328.
- [19] Little, Paul. 2001. *Amazonia: Territorial struggles on perennial frontiers*. Baltimore: The John Hopkins University Press.
- [20] Montañez Gómez, Gustavo. 2001. "Introducción. Razón y pasión del espacio y el territorio". En *Espacio y territorios. Razón, pasión e imaginarios*, editado por Gustavo Montañez Gómez, Julio Carrizosa Umaña, Normando Suárez Fernández, Ovidio Delgado Mahecha y Julián Arturo Lucio, 15-32. Bogotá: Universidad Nacional de Colombia.
- [21] Roldán, Gabriel. 1992. *Fundamentos de Limnología Neotropical*. Medellín: Editorial Universidad de Antioquia.
- [22] Uzendoski, Michael. 2010. *Los naporuna de la amazonía ecuatoriana*. Quito: Ediciones Abya-Yala.
- [23] Walsh Environmental Scientists and Engineers Environmental Scientists and Engineers. 2003. "Línea Base para la Actualización del Plan de Manejo de la Reserva Biológica Limoncocha. Número de Proyecto: EC101-35". Informe no publicación, Autor.
- [24] Whitten, Norman E. 1976. *Sacha Runa: Ethnicity and Adaptation of Ecuadorian Jungle Quichua*. Urbana: University of Illinois Press.
- [25] Wildlife Conservation Society (WCS). 2007. "El tráfico de carne silvestre en el Parque Nacional Yasuní: Caracterización de un mercado creciente en la Amazonía norte del Ecuador". Acceso el 17 de abril de 2016. http://www.portalces.org/sites/default/files/ecu_pub_programaecuadorboletin2_2007.pdf
- [26] Ramón, Carlos Mestanza, and Alexis Mooser. "INTERNATIONAL JOURNAL OF ENGINEERING SCIENCES & RESEARCH TECHNOLOGY ENVIRONMENTAL IMPACTS OF TOURISM IN CUYABENO WILDLIFE RESERVE, ECUADOR."