Migration Letters

Volume: 21, No: S1(2024), pp. 856-874

ISSN: 1741-8984 (Print) ISSN: 1741-8992 (Online)
www.migrationletters.com

Strategies for the Sustainable Development of Tourism in the CIPCA: Zoning and Conservation of Resources

María Germania Gamboa Ríos[1], Daniela Zulay Tapia Ramos[2], Johana Isamar Montoya Villacrés[3], Isabel María Valdivia Fernández[4], Danny Patricio Gamboa Orozco[5]

Abstract

This project, carried out at the Amazon Research, Postgraduate and Conservation Center, focused on carrying out a local tourism diagnosis. The tourism potential, functional tourist areas were identified according to territorial characteristics and environmental use and protection actions. The documentary and descriptive research provided general data, service offering, basic infrastructure, governance, receiving community and demand. The results indicated that the site has optimal conditions in terms of physical characteristics, services and tourist facilities.

Through the SWOT analysis, offensive strategies were generated for adequate tourism development. The inventory of attractions revealed four natural and fourteen cultural, classifying them into hierarchies II (65%), hierarchy I (34%), and resources (1%). Georeferencing and documentary research allowed us to establish three zones: Preservation (primary forest) for scientific tourism and ecotourism, Conservation (secondary forest) for adventure tourism and ecotourism, and Development (productive area) for agrotourism and scientific tourism. Specific tourist activities were defined for each site, with strategies and actions for the proper use and management of its components.

In summary, the project proposes a zoning approach with specific tourist activities, turning the site into a destination conducive to alternative tourism aimed at a demand with special interests that seeks to combine learning, environmental conservation and fun.

Keywords: *Zoning, diagnosis, use actions and environmental protection.*

INTRODUCTION

The Republic of Ecuador, recognized worldwide for its exceptional diversity of ecosystems, flora and fauna, has maintained a remarkable commitment to environmental conservation. This commitment is reflected in the presence of 51 protected areas, covering almost 20% of its territory, according to data provided by the Ministry of Environment (MAE, 2017). These areas have not only contributed to preserving the country's natural wealth, but have also catapulted Ecuador as a potential tourist destination.

[1] UNIVERSIDAD ESTATAL AMAZONICA
[2] UNIVERSIDAD ESTATAL AMAZONICA
[3] UNIVERSIDAD ESTATAL AMAZONICA
[4] UNIVERSIDAD DE LA HABANA
[5] ISM – Quito

In 2017, around 300,000 tourists explored Ecuador's protected areas, setting a significant precedent for the design of various tourism alternatives at the national level (MAE, 2017). Among these alternatives, tourism in rural areas has emerged as a prominent option, driven by the growing demand for authentic natural and cultural experiences by contemporary tourists. Meeting these demands has become crucial to increasing the influx of tourists, both locally and nationally.

In the heart of the Amazon Region, specifically in the Arosemena Tola canton of the province of Napo, is the Center for Research, Graduate Studies and Amazon Conservation (CIPCA) of the Amazon State University. With an area of 2,848.20 hectares, this center attracts students, teachers and researchers from various parts of the country and the world. Its purpose is to explore, understand and discover the diverse natural and cultural manifestations that characterize this environment.

CIPCA, in addition to its potential as a space for research and knowledge generation, is seen as an ideal destination for tourism innovation. In this context, there is a prevailing need to carry out a tourist zoning that identifies the natural, cultural and physical qualities of the area. This approach will make it possible to make sustainable use of available resources, without causing negative impacts on the environment, while promoting the social and economic development of local communities. The objective of this study is to carry out an exhaustive diagnosis of the current situation and tourism potential of the Center for Research, Postgraduate Studies and Conservation of the Amazon (CIPCA), applying the methodology proposed by (Ricaurte, 2009). This process was carried out through several stages, starting with the collection of secondary information, where methods of analysis and synthesis were employed, as well as deductive and inductive approaches. Documents related to previous studies at the ICPCA were meticulously examined and relevant information was recorded in summary sheets. The subsequent phase involved the collection of primary information through direct observation and participatory fieldwork, using tools such as Carla Ricaurte's Local Tourism Diagnosis form and the Methodological Guide for the Hierarchy of Attractions and Generation of Tourist Spaces in Ecuador, issued by the Ministry of Tourism.

These methodological tools will allow the identification, classification and assessment of CIPCA's tourist attractions. Subsequently, these attractions were evaluated according to weighting parameters established in the methodology, thus determining their hierarchy. In the process of characterizing the demand, the field file of (Ricaurte, 2009) was used, complemented with direct interviews with the Director of the Research Center. In addition, the records of visitors to the University Residence during the years 2014-2017 were considered, providing a detailed overview with a total of 722 national and international guests.

The methodology adopted included a SWOT analysis, where the cross-impact matrix is used to quantitatively assess the effects of internal elements (strengths and weaknesses) on external elements (opportunities and threats). This comprehensive study will provide a solid foundation for the development of effective and sustainable tourism strategies at CIPCA, building on its strengths and addressing the areas for improvement identified in the analysis.

METHODS

The research was carried out at the Center for Research, Graduate Studies and Amazon Conservation (CIPCA) located in the Province of Napo, Carlos Julio Arosemena Tola Canton. A qualitative exploratory study was carried out, as there was no precedent on the subject in the area. The methodology included a documentary and descriptive approach. The CIPCA is located 45 minutes from the Puyo-Tena road at Km 44, with an area of 2848.20 ha and an altitude between 580 and 1120 meters above sea level. It is

characterized by a tropical rainy climate with temperatures of 18 - 30°C and an annual rainfall of 1000 to 4000 mm. Two types of research were applied: documentary and descriptive. The desk research included analysis of tourism zoning studies and other sources related to tourism and conservation in CIPCA. The descriptive research focused on characterizing the CIPCA, its components, resources, infrastructure and tourism demand, a SWOT analysis was also carried out: A cross-impact matrix was used to evaluate strengths, weaknesses, opportunities and threats. Georeferencing of tourist attractions, services and facilities was carried out using Arcview 10.1. This made it possible to identify functional areas for tourism. Environmental use and protection actions were proposed for each functional tourist area, considering possible negative impacts of tourism activities. Zoning criteria were applied based on the Land Use Plan of the Juan Bautista Pérez Rancier National Park in the Dominican Republic. The methodology employed provides a complete and detailed approach to understand the current situation and tourism potential of CIPCA, proposing specific environmental actions for each functional tourist area.

- To meet the first objective: In this study of CIPCA's diagnosis and tourism potential, Ricaurte's (2009) methodology was applied, which consists of several stages. Analytical and synthesis methods, as well as deductive and inductive approaches, were used to review documents related to previous studies at the Centre. The information collected was recorded in summary sheets. Primary data collection was carried out through direct observation and fieldwork, using tools such as Carla Ricaurte's Local Tourism Diagnosis sheet and the Ministry of Tourism's Methodological Guide. These tools facilitated the identification and assessment of tourist attractions. The attractions were evaluated according to weighted parameters, determining their hierarchy. The characterization of the demand was carried out through Ricaurte's field file, interviews with the Director of the Center and records of visitors entering the University Residence between 2014-2017. A SWOT analysis using the cross-impact matrix was applied to quantitatively assess internal effects (strengths and weaknesses) on external ones (opportunities and threats), establishing strategies based on the highest score.

- In order to meet the second objective: In this study on CIPCA, the identification of functional tourist areas was carried out through the georeferencing of attractions, services, accessibility and tourist facilities in their territory. Using the Arcview 10.1 program, a base map was generated that facilitated the identification of areas with similar characteristics, thus allowing the development of tourism activity. The linking of the characteristics of the area with the data of the diagnosis made it possible to identify modalities and forms of tourism for each area. These zones were determined using criteria reviewed by the research team, detailed in the Land Use Plan of the Juan Bautista Pérez Rancier Valle Nuevo National Park in the Dominican Republic, prepared by (Ceballos, 2005). It highlights that CIPCA, as a Special Area for the Conservation of Biodiversity, complies with the Organic Code of the Environment (COA, 2017), being a complementary space to the National System of Protected Areas of Ecuador. In addition, as a research center managed by a Higher Education Institution, CIPCA is presented as a favorable environment to test tourism planning methodologies, with the possibility of replicating them in protected areas of the Amazon Region according to the Socio-Environmental Diagnosis (Martín et al., 2014) and the CIPCA Comprehensive Management Plan (López, 2012).

- In order to meet the Third Objective: In order to propose specific actions for the use and environmental protection of each identified functional tourist area, the analysis and synthesis method was applied. This approach carefully considered the potential negative impacts of tourism patterns and activities in the designated areas. The literature review and the use of summary sheets were fundamental elements in this process, allowing the collection and evaluation of relevant information for the formulation of

specific measures that guarantee environmental conservation in each functional tourist area.

RESULTS

Results obtained from objective 1: Diagnosis of the current situation and tourism potential of CIPCA.

The Research Center, geographically located with boundaries to the North (private properties), South (Piatúa River), East (Anzú River) and West (Yayayacu River), is located in proximity to various communities, including San Jorge, 20 de Abril and San Juan de Piatúa, belonging to the Santa Clara canton, as well as Tzawata and Bajo Ila, communities of the Carlos Julio Arosemena Tola canton. The Carlos Julio Arosemena Tola Canton, with a population of 3,664 inhabitants according to INEC (2010) and an area of 496 km2, shares borders to the north and east with the Tena canton, to the south with the Mera and Santa Clara cantons, and to the west with the Tena canton. In consideration of the importance of accessibility, the distances from the points of greatest affluence to the CIPCA are detailed, providing relevant information to understand the connectivity of the area.

Table 1. Distances to get to CIPCA

Name	Distance	Time	Track Condition
Quito – CIPCA	230 km	4h02min	Well
Puyo – CIPCA	42.8 km	45 min to 53 min	Well
Santa Clara – CIPCA	4.1 km	4 min	Well
Carlos Julio Arosemena Tola – CIPCA	9.7 km	9 min	Well
Tena	35.1 km	35min	Well
Nearest Community King of Orient.	2 k	2 min	Regular

Taken from (Ministry of Transport and Public Works, 2017). Adapted by (Montoya & Tapia, 2018).

Table 2. Frequency of public transport

	PUYO-TENA ROUTE		
Cooperative	Shifts		
Sentinel of the East	1:30 p.m.		
San Francisco	06H00	07H15	2:30 p.m.
Express Bathrooms	8:15 p.m.	9:15 p.m.	
PUYO-COCA ROUTE			
Cooperative	Shifts		
Pelileo Fleet	9:00 p.m.		
EL Dorado	11:30 a.m.	01h00	
San Francisco	10:30 p.m.	05h00	
Amazon	11h00	4:00 p.m.	

Jumandy	09h00	10:00 p.m.	04h00
Transportation Baños	7:15 p.m.	11:00 p.m.	12h00

Transport frequencies

Intercantonal PUYO-APRICHO ROUTE

Cooperative	Shifts
Alpayán/Reina Cumandá	07h00
Alpayán/Reina Cumandá	08h30
Alpayán/Reina Cumandá	11h00
Alpayán/Reina Cumandá	2:15 p.m.
Alpayán/Reina Cumandá	4:00 p.m.
Alpayán/Reina Cumandá	7:00 p.m.

Taken from the checkpoint of the Terminal Terrestre Ciudad de Puyo, 2017. Adapted by: (Montoya & Tapia, 2018).

Basic Services

Health

The facilities of the Center for Research, Graduate Studies and Conservation of the Amazon (CIPCA) have a completely piped water network, which is used both for consumption and for agricultural activities, such as irrigation and cleaning of corrals. In addition, sanitary batteries operate with a wastewater treatment system. Of particular note is the presence of two infrastructures equipped with dry toilets: the information centre, the Altos del Piatúa hut and the hut for researchers.

Solid waste management is the responsibility of the Autonomous Decentralized Municipal Government (GADM) of Santa Clara, which provides the garbage collection service. As for electricity, CIPCA has this service for its daily operations. For the supply of fuel, there is a gas station located 3 km in the direction of Puyo, ensuring the availability of this essential resource for activities and mobility in the area.

Communications, Telephony and Connectivity

The Center for Research, Graduate Studies and Conservation of the Amazon (CIPCA) is equipped with a wireless telephone line and has an internet service with a speed of 25 MB. Likewise, in the area there is cell phone coverage provided by the operators Claro, Movistar and CNT, ensuring effective connectivity for communications and activities in the center.

Health Institutions and Facilities

In terms of health, the staff and visitors of the Center for Research, Graduate Studies and Conservation of the Amazon (CIPCA) have access to the Medical Dispensary of the Department of University Welfare, which offers nursing services with basic care. For more serious emergency situations, transfer is made to the Health Centers of the cantons

of Arosemena Tola or Santa Clara, thus guaranteeing an adequate response to the needs of medical care in the area.

Organizational Structure

The Center for Research, Graduate Studies and Conservation of the Amazon (CIPCA) has an administrative staff that includes technicians, making up a total of 21 people, in addition to 15 workers. The main functions of this team include activities related to agricultural production, technical assistance, personnel control, maintenance, agro-productive management, support for teaching and students in thematic axes by subject, as well as linking with the community through technical support and assistance to producers or technicians from other institutions.

Regulatory institutions governed by the CIPCA

The Center for Research, Graduate Studies and Amazon Conservation (CIPCA) operates under the laws and regulations of the Amazon State University, which acts as its governing body. Its creation was formalized by the fifty-seventh resolution of March 13, 2016 by the University Board, now called the University Council, and is duly registered in the Organic Statute of Organizational Management by processes of the Amazon State University. In terms of programs, the activities carried out at the center are governed by instructions that regulate the work of productive didactic programs of research and linkage.

ICPCA Programmes, Units or Units

The Center for Research, Graduate Studies and Amazon Conservation (CIPCA) operates through three distinct directorates: the research directorate, the production and marketing directorate, and the wildlife conservation and management directorate. These directorates are responsible for supervising and coordinating the research corresponding to each didactic program within CIPCA.

Table 5. Studies carried out at CIPCA

NAME AND ARTICLE	YEAR	PROGRAM OF RESEARCH	AUTHORS
CIPCA Socio-Environmental Diagnosis for Public Use Planning.	2014	Tourism and ecotourism	Martín Iris Gamboa Germania Reyes María Victoria Ortega Fernando
The CIPCA and its environment: knowing its potential for tourism development.	2014	Tourism & Ecotourism	Martín Iris Navarrete Henry
Rescuing Ancestral Agricultural Practices and Traditional Agriculture Rescuing Ancestral Agricultural Practices and Traditional Agriculture	2015	Food production in Agro Biodiverse Systems	Aleman Perez Freile Jorge Aguirre Miguel
Management of	2015	Food Production in	Andrade Yucailla

Collared Peccaries (Pecari tajacu) for the conservation of wild animals in the CIPCA Zoo-hatchery.		Agro-Biodiverse Systems	Veronica, Jácome Santamaria Adriana, Vargas Julio Cesar, Andino Marco, Quinteros Orlando , López Juan , Sánchez Janeth
Characterization of plankton in the pools of the CIPCA aquatic resources program.	2016	Environmental Management and Conservation	Scalvenzi Laura Torres Diego
Management and rescue of orchids in the Ecuadorian Amazon, towards a list of epiphytic orchids in the CIPCA environment.	2017	Ecosystems, Biodiversity and Species Conservation	Gutiérrez Diego, Asanza Griselda Jalca Ivonne
Productive behavior of guinea pigs fed on sweet potato fodder (Ipomea batatas) in the CIPCA Amazon region	2017	Food Production in Agro-Biodiverse Systems	Andrade Yucailla Veronica

The Production scientist as part of the tourism offer in the Ecuadorian Amazon.

Prepared by Montoya and Tapia (2018)

Table 6. Program Research at CIPCA

N°	ATTRACTIVE CULTURAL	RESEARCH	RESEARCH POTENTIAL
1	Program porcine	Food alternatives for improvement of growth, productive and reproductive parameters, rescue of the breed of the Creole pig of Ecuador and production of meat products with antioxidant capacity from Amazonian plants.	Health management, sow reproductive cycle, evaluation of non-conventional feeds, digestibility in pigs and Biodigester.
2	Zoo	Wildlife Conservation with medical check-ups and non-invasive methods	Environmental enrichment to reduce stress in monkeys, nutrition based on the

			requirements of wild species and biology of wild species.
3	ECUAMZ Herbarium	Preservation of unique specimens for the country, floristic diversity and forest structure, determine how climatic factors influence the growth rate of trees, distribution of ecologically important floristic species, mapping variability in montane evergreen forest and ethnobotanical studies.	Digitization of specimen databases, identification, characterization of new species and creation of a web portal for the dissemination of the herbarium.
4	Aquatic Resources	Cultivation, adaptation and captive reproduction of Amazonian aquatic species.	Studies in reproduction of Amazonian aquatic species, industrialization processes, evaluation of non-conventional foods in fish production and evaluation of densities in square meters in different Amazonian species
5	Pastures and Forages	Evaluation of the forage production of various types of pastures, agronomic characterization studies, book autochthonous forage resources for livestock in the province of Pastaza, growth dynamics, botanical composition and comparative analysis of pasture species, botanical seed production and vegetative of new	Preparation of flour with grass species for food and identification of new species of Amazonian grasses for animal feed.

		pastures. varieties of grasses and legumes, research trials with legumes and grasses to obtain higher protein levels for livestock.	
6	Laboratories research	Environmental – soils, natural and applied tropical ecology, biotechnology production animal Medicinal Plants & Heat Plough	Studies in the area of biology, germplasm and seeds, study and analysis of medicinal plants and environmental studies.
7	Agroforestry	Research in floral phenology of cocoa, diseases affecting cocoa in the Amazon region, study of microorganisms associated with livestock, adaptability of three cocoa genotypes.	I am a student of pollinating insects of cocoa in the Amazon.
8	Poultry	Morphometric characterization and Morphology of the Creole hen (Gallus domesticus), productive performance of broiler chickens fed with levels of forage peanut meal in the CIPCA and physical characteristics of the egg of Creole and free-range hens in the Amazon region.	DNA studies in hens to observe the genetic trunk to which it belongs.
9	Species Minor	Evaluation studies of silages with post-harvest residues, enriched with microorganisms and their impact on the feeding of minor species and evaluation of bioproductivity with silage.	To evaluate the in vivo digestibility of guinea pigs with bioproductive silage.

10	Program sheep and goats	Valuations analogue, haematological and referential studies, parasite and seminal cavity evaluations of sheep, mineral profile and productive indicators in sheep of the Pelibuey and black belly breed of the Ecuadorian Amazon, mining profile and productive indicator in sheep of the pelibuey breed of the Ecuadorian Amazon.	Sheep and cattle breeding, digestibility research, Semi-stable handling for fattening and milking.
11	Program bovine	Productive behavior of the different genotypes, free grazing conditions in the Ecuadorian Amazon region, prevalence of reproductive diseases in dairy cattle females, biological efficiency criteria in dairy cows and relationship between genotypes and pregnancy with an artificial insemination protocol in cows from the Ecuadorian Amazon.	Phytochemical studies to determine active ingredients of Amazonian plant species, various research projects framed within the objectives of the program.
12	Plants Medicinal	Identification characterization of medicinal plants.	Identification, characterization and selection of medicinal plants.

Taken from (Silva, Ruiz & Valarezo, 2017)

Inter-institutional agreements

The Center for Research, Graduate Studies and Conservation of the Amazon (CIPCA) has established inter-institutional cooperation connections through the signing of 11

agreements, including four Macro agreements and other specific agreements that promote particular studies or projects. These agreements involve other Higher Education Institutions, Decentralized Autonomous Governments of the region and the Ministry of Agriculture, Livestock, Aquaculture and Fisheries, evidencing the collaboration of CIPCA with various entities in the realization of specific research and projects.

Table 8. Cultural events

CULTURAL EVENTS				
No	General Information			Activities practiced
	Name	Guy Hierarchy.	Subtype	
1	Kausarinimi Zoo (Reviving)	Technical and Scientific Achievements	Wildlife Rescue Center	II Guided tours, photography and contact with the species.
2	Swine Program	Realizations Technical & Scientific	Agricultural and Fisheries Centers	II Guided tours, photography, participation in the management processes, cleaning, feeding, monitoring, sanitary management and observation of the Production cycle of the sow.
3	Minor Species Program	Technical and Scientific Achievements	Agricultural and Fisheries Centers	II Guided tours, photography and participation in activities such as species feeding, Monitoring and cleaning of the area.
4	Resource Program Aquatic	Technical and Scientific Achievements	Agricultural and Fisheries Centers	II Guided tours, participation in fish feeding and photography.
5	Poultry Program	Realizations Technical & Scientific	Agricultural and Fisheries Centers	II Guided tours, photography and participation in feeding, harvesting and incubation of species.
6	Pastures and	Technical and	Agricultural	II Guided

	Forages Program	Scientific Achievements	and Fisheries Centers	tours, photography, grazing, planting and monitoring.
7	Agroforestry Program	Realizations Technical & Scientific	Flora and Fauna Exhibition Center	II Guided tours and photography can also be Appreciate: Cocoa planting, planting process, handling, harvesting and treatment of seeds.
8	Herbarium ECUAMZ	Technical and Scientific Achievements	Flora and Fauna Exhibition Center	II Collection , pressing, drying of samples of species of flora and photography.
9	Plant Program Medicinal	Technical and Scientific Achievements	Flora and Fauna Exhibition Center	I Participation in the planting and cultivation of species, Plant studies and photography.
10	Bovine Program	Technical and Scientific Achievements	Agricultural and Fisheries Center	I Postpartum monitoring, grazing, guided tours and photography.
11	Small Program Ruminants	Technical and Scientific Achievements	Agricultural and Fisheries Center	I Learning techniques and felling sheep.
12	Fertilizer Program Organic	Technical and Scientific Achievements	Agricultural and Fisheries Center	I Collection and separation of organic matter from pens.
13	Orchid Garden "Pichika Sisa" (Dichaea laxa)	Technical and Scientific Achievements	Flora and Fauna Exhibition Center	II Observation of flora and photography.
14	Alto Research Station Piatua	Technical and Scientific Achievements	Flora and Fauna Exhibition Center	I Analysis, monitoring, control and synthesis of species.

Table 10. SWOT Matrix

STRENGTHS

F1. Autonomy.

F2. Willingness to establish inter-institutional agreements.

F3. Existence of research and outreach projects.

F4. UEA students attend permanently.

F5. Free admission.

F6. High academic level of the staff who work.

F7. Existence of quality technological equipment.

F8. Diversity of flora, fauna, water resources with tourism potential

F9. Scientific production with national and international scope.

F10. Diversity of agro-productive scenarios.

F11. Safe destination.

F12. Strategic geographical location.

F13. Existence of tourist services and facilities.

F14. Free internal shuttle service.

F15. Medical dispensary with free care.

OPPORTUNITIES

O1. Generation of cooperation agreements with government entities and NGOs.

O2. Incorporation of CIPCA into the strategies and lines of work of government entities.

O3. Obtaining financing for equipment and infrastructure.

O4. Empowerment of local culture.

O5. Proximity to Llanganates National Park.

O6. Academic recognitions.

O7. Access roads in good condition.

O8. Investments in national and international scientific and educational development.

O9. Nationwide increase in tourism.

O10. Ease of training of personnel for tourism activity. O11. Visitors with a predisposition to learn.

O12. Visitors interested in contributing and participating in research projects.

O13. Frequency of interprovincial and intercantonal means of transport that travel daily along the Amazon trunk.

O14. Strengthening tourism in the local market.

O15. Generation of sources of employment in the locality.

WEAKNESSES

D1. Limited internal regulations in the field of tourism.

D2. Weak approach to establish guidelines with government entities in the field of tourism.

D3. Prior authorization is required.

D4. It lacks tourism dissemination and promotion.

D5. Limited tourism training.

D6. Limited economic resources allocated to tourism activity.

D7. Lack of interest of staff and authorities in the field of tourism.

D8. Scarce staff in the area of tourism.

D9. It does not have proper visitor registration.

D10. Lack of a visit protocol based on the management plans of the programs.

D11. Misinformation about potential tourism services and resources.

D12. Limited access to information about the site and its attractions.

D13. Insufficient tourist equipment for extreme sports.

D14. It lacks a specific educational program for the tourism field.

D15. Zero integration with the external tourism system.

THREATS

A1. Shifting political interests.

A2. Changing Higher Education Laws

A3. It is not considered in the development plans of the surrounding municipalities.

A4. The country's economic crisis.

A5. Existence of other research centers in the provinces of Napo and Pastaza.

A6. Ecosystem effects due to extractive activities of landowners adjacent to CIPCA.

A7. Illegal hunting and logging.

A8. Climate change.

A9. Natural disasters.

A10. Reduction of the financial factor from government entities.

A11. Lack of interest on the part of the communities to integrate into the tourist activity.

A12. Increase in vandalism

A13 Alteration in the behaviour of wild species due to the presence of tourists

A14. Destruction of ecosystems due to the extension of the agricultural frontier

A15 Destruction of ecosystems due to increased infrastructure

Results obtained from objective 2: Identification of functional tourist areas of the CIPCA.

In accordance with the physical characteristics and tourist potential of the CIPCA the following map is recorded:

Figure 6. Map of Tourist Attractions

Prepared by Montoya and Tapia at the USIG

Table 11. Tourist attractions

AREAS	SURFACE	CARACT	ATTRACTIONS	MODALITIES	ACTIVITIES
Preservation	2093,9 has.	Forest primary with high status of conservation, little of great biological value.	Season Scientist High Piatua	Ecotourism & tourism scientist	Walks, observation and flora sampling and fauna, analysis of samples, observation of ecosystems and photography
Conservation	445,92 has.	Altered sectors in a good state of conservation, accessible and with high potential for use.	Ceibo Piatúa River	Ecotourism & Adventure Tourism	Tubing, free diving, river rafting, kayaking, hiking, photography and hiking.
Development	274.43 has.	Accessible sectors with	-Zoo -ECUAMZ	Scientific Tourism and	Data analysis,

		infrastructure for public use. Has high Potential for agricultural use or livestock, including grasslands, plantation of forest species or silvopastoral	Herbarium -Pig program -Small ruminant programs -Aquatic Resources Program -Poultry Program -Minor Species Program -Agroforestry Program -Organic fertilizer program -Medicinal plants program -Pasture and forage program -Bovine program -Pichika Sisa Orchid Garden -Trail "The charm of the colors and aromas of the forest"	Agrotourism	species sampling, tours guided tours, agro-productive workshops, outreach with animals, educational farm activity, cattle milking, cattle control, sowing work, planting, reforestation, seed collection, collection, drying and pressing of leaves.

Results obtained from Objective 3: actions for the use and environmental protection of functional tourist areas

The conservation and environmental protection measures that are imperative in the face of tourism practices, specifically adapted to the characteristics of the various functional tourist areas, will play a crucial role in the preservation of natural resources. These actions are designed with the purpose of ensuring sustainability over time, establishing an appropriate balance between tourist enjoyment and environmental protection.

Table 12. Environmental Use and Protection Actions

ACTIONS OF USES AND ENVIRONMENTAL PROTECTION

- Carry out studies of the carrying capacity of the trails that are implemented to access the different attractions.

- Trail and road design should minimize river and stream crossings.

- Do not follow the riverbanks for long distances, only approach these points either for rest or photography.

- Preferably recycled or waste materials should be used for the construction of bearing surfaces or trails.
- The services provided (resting sites, shelters, benches, trash cans, signs, steps, bridges, interpretive panels, safety barriers such as cliff fencing, sewer) should be listed and identified on a map.
- Periodic assessment of the physical, environmental, social or health risks of your initiative and the region in which it is carried out.
- Formulation of sustainability policies that encompass environmental, socio-cultural and service quality aspects.
- Trained personnel in the field of tourism and specialized guides to establish the tourist activity, who later become the personnel who control sustainable tourism development
- Consumption policy for products that generate the least amount of waste possible.
- Identification of waste-generating sites and activities.
- The waste generated by the tourist activity must be separated and placed in its respective containers (organic and inorganic).
- Creation of a contingency plan to address possible environmental risks, such as forest fires, floods, landslides, pests, among others, according to the environmental conditions it has.
- Prohibition of the consumption and sale of endangered species.
- Minimize the use of fertilizers and herbicides, to avoid soil contamination.
- Prohibition of felling of trees.
- Environmental awareness for staff and visitors.

Own elaboration; Author: (Montoya & Tapia, 2018) and Co-author: (María Gamboa, 2018)

The proposed actions detailed in Table 12, prepared by Montoya and Tapia (2018), is justified through the need to implement responsible and sustainable practices in the field of tourism. These actions are designed to mitigate the possible negative impacts that tourism activity can have on the natural and cultural environment. Carrying out load-bearing capacity studies, preference for recycled materials, regular risk assessment and staff training are examples of measures that seek to balance tourist enjoyment with environmental conservation. In addition, the proper separation and management of waste, the prohibition of harmful activities, such as the felling of trees and the consumption of endangered species, demonstrate a commitment to environmental protection. Ultimately, this proposal seeks to ensure the long-term sustainability of tourist areas, promoting a harmonious coexistence between tourism and the preservation of the environment.

DISCUSSION

The application of the methodology proposed by (Ricaurte, 2009) to diagnose the current situation and tourism potential of the Center for Research, Graduate Studies and Conservation of the Amazon (CIPCA) has been fundamental in this study. In the collection of secondary information, methods of analysis and synthesis, as well as deductive and inductive approaches, were used to examine documents related to previous studies at CIPCA, recording the information in summary sheets. The collection of primary information was carried out through direct observation and participatory fieldwork, using Carla Ricaurte's Local Tourism Diagnosis sheet and the Methodological

Guide of the Ministry of Tourism of Ecuador (2017), which facilitated the identification, classification and valuation of tourist attractions. In the characterization of the demand, Ricaurte's (2009) field file was applied to collect information through direct observation and interviews with the Director of the Research Center, also considering the records of admission of visitors to the University Residence during the years 2014-2017. The methodology included a SWOT analysis, using the cross-impact matrix to quantitatively assess the effects of internal elements (strengths and weaknesses) on external elements (opportunities and threats), assigning values to each box and evaluating quadrants to establish strategies based on the highest score (Ricaurte, 2009). This methodological approach has allowed a comprehensive and structured analysis of CIPCA's tourism situation, providing a solid basis for the formulation of future strategies and actions.

The identification of functional tourist zones based on the territorial characteristics of the Center for Research, Graduate Studies and Amazon Conservation (CIPCA) has been an essential component of this study. The georeferencing of tourist attractions, services and facilities through the use of Arcview 10.1 has provided a basemap that has facilitated the identification of areas with similarities, thus establishing areas conducive to tourism development. This methodology aligns with similar approaches used in protected area planning, as described in the Juan Bautista Pérez Rancier National Park Land Use Plan in the Dominican Republic, developed by Ceballos (2005). Compliance with the characteristics of a Special Area for the Conservation of Biodiversity, in accordance with the Organic Environmental Code (COA, 2017), confers on CIPCA a relevant status in the context of protected areas. In addition, as a research center managed by a Higher Education Institution, CIPCA is presented as a favorable environment to test tourism planning methodologies, an aspect that is supported by the Socio-Environmental Diagnosis (Martín et al., 2014) and the CIPCA Comprehensive Management Plan (López, 2012). This strategic approach not only validates CIPCA's internal tourism planning, but also highlights its potential as a replicable model in other protected areas of the Amazon Region, thus contributing to sustainable and effective practices in the field of ecotourism and conservation.

The implementation of environmental use and protection actions at the Center for Research, Graduate Studies and Amazon Conservation (CIPCA) reflects a comprehensive and proactive approach to tourism sustainability. Carrying out studies of carrying capacity on trails, minimizing river and stream crossings, and avoiding following river banks for long distances coincide with the recommendations of various studies. Authors such as (Eagles et al., 2002) underline the importance of trail planning to mitigate environmental impacts. The preference for the use of recycled or waste materials in the construction of surfaces and trails aligns with the vision of sustainable management, similar to the recommendations of (Laarman and Gregersen, 1996), who advocate the minimization of the ecological footprint in tourist areas.

Regular risk assessment and the formulation of comprehensive sustainability policies, covering environmental, socio-cultural and service quality aspects, are linked to the proposals of (Weaver, 2005) on the importance of risk management and the adoption of holistic approaches in tourism planning. The need for trained personnel and specialized guides, as well as the implementation of consumption policies that reduce waste generation, reflect CIPCA's commitment to sustainable ecotourism, coinciding with the ideas of (Honey, 2008) on the importance of staff training and responsible resource management. The proper separation and location of waste, the creation of contingency plans for possible environmental risks, the prohibition of the consumption and sale of endangered species, the minimization of the use of fertilizers and herbicides, the prohibition of tree felling, and the environmental awareness of staff and visitors are in line

CONCLUSIONS

- CIPCA's strategic location, close to several communities and with good access roads from Quito, Puyo and other localities, offers a significant advantage for tourism development. The frequency of public transport to CIPCA, especially from Puyo, facilitates the mobility of visitors.

- The CIPCA infrastructure has basic services such as drinking water, waste management and electricity supply, ensuring adequate conditions for the stay and tourist activities. Telephone and internet connectivity, along with cellular coverage, contributes to effective communication, being crucial for tourism and research activities.

- CIPCA's organizational structure, with its diversified research programs, provides a solid foundation for integrating tourism activity synergistically with its conservation and education objectives. The presence of inter-institutional agreements demonstrates CIPCA's active collaboration with various entities, strengthening its position in the scientific and tourism fields.

- The results reveal a diversity of tourist areas in CIPCA, each with unique characteristics and specific attractions. From Preservation with its primary forest of high biological value to Development with infrastructures for public use, the variety of options offers different and complementary tourist experiences. The identification of conservation areas, such as the Ceibo and the Piatúa River, highlights the successful integration of conservation with adventure tourism activities. Accessible and well-preserved areas allow the practice of activities such as tubing, free diving, river descent, kayaking, hiking, photography and hiking, creating an exciting tourist experience that respects the environment. The Development Zone presents a comprehensive approach by combining scientific tourism and agrotourism with a variety of programs, from zoo to themed trails and agroforestry programs. This synergy between scientific, agricultural and tourism activities provides educational and recreational opportunities, contributing to the sustainable development of the region.

- The detailed proposal of environmental actions demonstrates a comprehensive approach to ensuring sustainability in functional tourist areas. From carrying out carrying out carrying capacity studies to the implementation of specific measures, such as the use of recycled materials, the aim is to balance tourism activity with environmental preservation, ensuring long-term sustainable development.

- The proposed measures reflect an active commitment to environmental conservation. The prohibition of harmful practices, such as the felling of trees and the consumption of endangered species, together with environmental awareness, demonstrates the intention to protect biodiversity and natural resources, contributing to the long-term preservation of tourist areas.

- The inclusion of regular risk assessments and the creation of a contingency plan to address potential adverse events, such as wildfires or floods, underscores foresight and preparedness to protect tourist areas. These measures not only seek to minimize environmental impacts, but also to respond effectively to unforeseen situations, strengthening the resilience of tourist areas.

References

Aranibar, V. H. (2003). Tourist Zoning Carrasco Park – District 7 / Jucumari – Sehuencas. Retrieved April 02, 2018.

Arteaga, C., & Gonzales, M. (2001). Diagnosis. Mexico: UNAM.

Barrera, E. (2006). Training in Rural Tourism. The Experience of the Faculty of Agronomy of the University of Buenos Aires. Buenos Aires.

Bourlon, F., & Mao, P. (2011). The Forms of Scientific Tourism in Aysén. Chile. Cabello, C. (2013). Tourist Activity and Nature. Segovia.

Calderón, F. (2014). Territorial planning and tourism development in the province of Pastaza. Puyo: Uniandes episteme.

Carrera, K., Ceballos, T., Ruiz, E., & Manosalvas, L. (2014). Agro-productive Didactic Programs, as a model of agrotourism for rural development in the canton of Santa Clara, Pastaza, Ecuador. Agricultural Center.

Castillo, M. (2010). Your project in 5 steps or how to develop a project. Retrieved from Steps to Create Projects, Part 2 Diagnosis.

Ceballos Lacuráin, H. (1987). Ecotourism. Nature and Development. Mexico: Diana.

Ceballos, M. (2005). Methodology for the Development of a Land Use Plan. Dominican Republic.

Chilembo, E. (2017). The Integrated Management of Nature and Cultural Tourism in the Province of Huambo. Republic of. RECUS, 7.

CIPCA. (n.d.). Research Programs. Retrieved 2018-05-21. COA. (2017). Organic Code of the Environment.

Covarruvias Ramírez, R. (n.d.). Evaluation of the potential in tourist municipalities through participatory methodologies. Mexico: Universidad Colima.

Dávila, A. (2016). Evaluation of the Amazonian Interpretive Ecotourism Trail at the Center for Postgraduate Research and Amazon Conservation (CIPCA), Piatúa River Cabins Route-CIPCA. Amazon State University, Puyo.

Eagles, P. (1997). International Ecotourism Management: using Australia and Africa as case studies.

Fenell, D., & Weaver, D. B. (2005). The Ecotourism Concept and Tourism-Conservation Symbiosis. Journal of Sustainable Tourism.

Ricaurte, C. (2009). Manual for the local tourism diagnosis.

Rodríguez, P. A. (2014). Geographical Foundations of the Environment Volume 2. Havana, Cuba: FELIX VARELA.