

EXTENDED ABSTRACT

CARRYING CAPACITY TOURISM AND LIMIT OF ACCEPTABLE EXCHANGE AS A BASE FOR THE SUSTAINABLE MANAGEMENT OF TOURISM ACTIVITIES IN THE COTACACHI CAYAPAS NATIONAL PARK - ECUADOR

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The Imbabura Geopark consists of several geosites of unparalleled natural and cultural wealth, a geopark that covers the entire province of Imbabura, being declared in 2018. The purpose of the Geopark is to promote education, tourism and sustainability in the region, and to promote its natural, cultural and heritage resources. In addition, it aims to encourage the participation and commitment of the local population in the protection and conservation of the area. The Imbabura Geopark contains the Cotacachi Cayapas National Park (PNCC), located on the regional limits between the coast and the highlands of the country, between the cantons of Eloy Alfaro and San Lorenzo in the coastal province of Esmeraldas, and between the cantons of Cotacachi and Urcuqui, in the Andean province of Imbabura. This territory is of great biological importance for the Republic of Ecuador. The foregoing makes it possible to point out that from the Sustainable Development Goals “SDGs” and specifically objective 12 on the global agenda, it is necessary to “Guarantee sustainable consumption and production patterns and promote jobs and local cultures and sustainable tourism that produces products. In addition to developing and applying tools to monitor the impact on the environment”.

The importance of this objective requires that States establish, as part of their public policy, mechanisms to reduce environmental damage and promote the integrity of ecosystems, based on the concept of sustainable tourism. The PNCC in 2019 received 211,628 visitors, with a daily average of 757 people in summer (July-September) and 532 in winter (October-June), figures that generate high congestion and saturation on its three main trails called: “Vehicular”, “Ruta Sagrada” and “Las Orquideas”. According to what was found in the investigation, two objectives were established: 1. Review the tourist carrying capacity

and 2. Determine efforts that focus on proposing a process to regulate entry and determine strategies for use and conservation. The methodological tools used were: The Carrying Capacity Tourist (CCT), carried out with a quantitative deductive approach, and the Limit Acceptable Change (LAC), executed as a qualitative descriptive model. This sought to answer the question: How to mitigate saturation and obtain financing from the PNCC?.

For this, international references from countries such as Chile and Costa Rica have been reviewed. The southern country has 105 protected areas spread over 41 national parks, 46 national reserves and 18 natural monuments. Nationals and 987,913 foreigners broke the record for total visitors. 3,523,447. The Central American country has protected 25% of its territory with protected parks and reserves to conserve biodiversity. Costa Rica has declared 30 national parks, 9 wildlife reserves, and has established 21 protected areas. In 2019, 996,430 nationals and 1,266,801 foreigners entered the country, with a total of 2,263,231 registered visitors. The figures presented show the priority of tourist activities since 55.97% of the income is from foreigners who carry out tourist activities.

The figures presented are desirable focused on the economic representativeness and potential growth of the country, but it is also true that tourism must be an integral part of the conservation strategy of each Protected Natural Area "ANP". However, it is the responsibility of each government and executive power to create legal instruments that support the conservation of these spaces, adapting as necessary to conventions, agreements and international organizations. For this, standards must be applied that promote adequate tourism management initiatives in order to reduce the gap between the current state of the place and the acceptable conditions allowed for the aforementioned factors. Thus, it is possible to determine a type of monitoring and evaluation to corroborate the efficiency of said government initiatives. For this research, four (4) visits were made during 2021 to measure anthropogenic impacts (interventions on flora, deforestation, measurement of decibels, pollution, among others), as well as interviews with administrators and park rangers in order to determine management. and administrative management capacity and, finally, apply 390 surveys to visitors to find out the profile, satisfaction and perception of tourism in the PNCC.

To determine the tourist saturation and therefore the overload, the annual income to the park between the years 2012 and 2021 was first analyzed. Determining an average annual income of 210,000 visitors, this is the basis for the analysis and determination if there is an overload, Therefore, the results of the CCT have determined a daily income of up to 304 visitors and not 677 people as currently registered. Therefore, this analysis establishes a condition of oversaturation, degradation, compaction, excessive visitation and loss of flora and fauna, on the trails where the tourist activity is carried out, therefore, there is noxious and irreversible damage to the ecological protection of the destination tourist.

In the investigation, a questionnaire was elaborated to carry out surveys towards 390 visitors, the objective was to obtain precise data on the level of visitor attention, quality, diversity, perception, satisfaction and standards related to the use, services and environmental protection of the tourist attraction. through the survey. The instrument was carried out virtually and in person. They were held on April 23 and 24, 2021 and October 30 and 31, 2021 at the entrance to the car park. As a result, the CCT showed a saturation of 197% in winter and 250% in summer, and LAC confirmed that the saturation of the y

trails exceeds the acceptable change limit. Therefore, to address the evidenced impacts, it is necessary to implement the CCT, which must allow the entry of up to 304 daily visitors and implement the LAC strategy on the regularization and restriction of activities for the conservation and sustainable development of the PNCC.

What was calculated in the CCT is ratified based on the evidence found in the LAC on the four categories, highlighting that more than 40 people a day circulate outside the established trail, the trails have a deterioration of around 35%, the amount of noise pollution exceeds the 60 decibels, the trails are compacted and eroded, the type of soil that is silty and the overload does not facilitate the recovery of the vegetation cover of the trails, 80% of the visitors perceive the sensation of saturation, 40% are dissatisfied. With the visit, what was identified in the territory is due to the fact that there are no regulations, restrictions, maintenance and temporary closures for the natural recovery of the ecosystems.

Within the determination of the CCT it is mandatory to analyze the Carrying Capacity Real CCR, for this calculation it is necessary to identify and calculate the Correction Factors "FC", both environmental, social and economic. In the first category, they were chosen because they are descriptors of the environment on the trails of the Lagoon and were measured based on bioclimatic factors. In the social category they were chosen for being a space open to the public and they were countered with the data from the survey carried out. And the last category, the economic one, was also measured from the already mentioned survey, determining that there is the will of the visitors to remunerate a payment for tourist entrance to the park.

Under the analysis of the CCT, it is evident that the maximum total limit of entry of daily visitors is 304 visitors. The "Vehicular" Trail can support up to 45 vehicles with a capacity of up to four (4) people each light vehicle, that is, a total of 180 people; the "Ruta Sagrada" trail has the capacity to receive up to 29 visitors and the Sendero de "Las Orquídeas" up to 94. So, in order to show if there is a tourist overload, the income data from 2018 and 2019 is taken into account and the analysis of daily income for this period, giving an average of 677 daily income.

Through the survey it was confirmed that 65% of tourists are satisfied with the offer and services of the place; 31.67% are satisfied with the visit, and 80% feel that the place is saturated, among other information. Another important fact obtained in the survey is that the elimination of free admission should be considered, since 91.03% of respondents agree that there is a fee between \$1.00 and \$5.00, while the 8.97% are willing to pay between \$6 to \$15 US dollars for management that if the free public policy is reformed, the possible economic income collected will serve to develop and consolidate the planning, administration and maintenance of the most visited tourist areas in both the PNCC as well as all the ANPs of continental Ecuador.

It should be noted that satisfaction evaluations are directly related to the acquisition, regulation and implementation of costs, services and equipment. In this sense, the general sustainability of the site, both economic, social and ecological, corresponds to the improvements made from the proposal of this research. To the extent that aspects or factors are considered, the actors related to heritage protection, tourism investment and

local development can be sufficiently integrated to facilitate a new management model on this ANP.

In this sense, it is valid to use the National Forestry Association of Chile (CONAF) as an international reference for the collection of income from ANPs where entry fees can be reserved and paid through digital platforms or in person; Therefore, all the economic income generated by this administrative unit is invested in tourism promotion, infrastructure development, maintenance, management and environmental education and in all its ANPs in the country, as an international benchmark, the actions that lead to carried out and propose a better management and promote a balanced development in the PNCC.

In terms of free and unlimited tourism, policies, guidelines, strategies and methods are needed to face and address the lack of planning and long-term vision to maintain and realize a sustainable tourism destination. Therefore, due to the fragility of the ecosystems, the overload of visits, the null capacity of economic income and the characteristics of the visitors, it is necessary to immediately limit the entry with CCT and gradually restore the recovery of the ecosystem, based on the LCA steps results obtained from the present study.

On the other hand, it is a priority and mandatory to carry out monitoring, an activity that allows measuring the progress achieved. It is worth mentioning that the CCT may be increased in percentage terms without implying a degradation of ecosystem resources, since this number is not static but can be dynamic to operationalize the management of a territory as long as there is already operationalization and implementation of the CCT and the LCA.