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Articles

Socio-environmental dynamics and recreational- tourist potential of the Wetland La Segua (Ecuador): Attitudes and perceptions of local agents and visitors

Dinámicas socioambientales y potencialidades turístico-recreativas del humedal de La Segua (Ecuador): actitudes y percepciones de los agentes locales y visitantes

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Abstract

In this paper, a socio-environmental characterization of the Wetland La Segua in Ecuador is carried out in order to understand the meanings,

values, attitudes and motivations of the agents, local communities and visitors that intervene in this protected area declared a Ramsar Site, in relation to sustainability of its recreational-tourist management and the natural resources that support it. With this, it is sought to establish a series of future actions for the development and planning of the area in a compatible manner to promote the recovery of its ecosystem that is going through serious problems regarding to conservation and the management of its territorial resources, conflicts of land and water uses and crises of some traditional activities. The carried-out analysis implies a mixed quantitative and qualitative methodology, which includes an exploratory and documentary approach, using structured surveys and in-depth semi-structured and partially open personal interviews. Likewise, primary sources obtained from field work have been used, which has had the support of a GIS exploitation to georeferenced the changes in the land use experienced in the last two decades. Finally, various experimental-based indicators are identified for decision-making and implementation of preventive measures in terms of conservation and sustainable management of the wetland ecosystem, as well as to propose strategic guidelines for recreational-tourist management from community-based perspective, which together allow maintenance of socio-cultural and environmental relationships of a sustainable nature.

Keywords: Wetlands, tourism and recreation, socio-environmental characterization, sustainability, Wetland La Segua, Ecuador.

Resumen

En este trabajo se realiza una caracterización socioambiental del humedal de La Segua, Ecuador, como punto de partida para comprender los significados, valores, actitudes y motivaciones de los agentes, comunidades locales y visitantes que intervienen en este espacio protegido declarado Sitio Ramsar, en relación con la sostenibilidad de su gestión turístico-recreativa, y de los recursos naturales que le sirven de soporte. Con ello se busca establecer una serie de acciones futuras para su desarrollo y planificación de manera compatible con la recuperación de su ecosistema, actualmente con serios problemas de conservación y manejo de sus recursos territoriales; conflictos de usos del suelo y por el control del agua, y crisis de algunas de sus actividades tradicionales. El análisis realizado sigue una metodología mixta, cuantitativa y cualitativa, incluyendo un enfoque exploratorio y documental; se usaron encuestas estructuradas y entrevistas personales en profundidad semiestructuradas y parcialmente abiertas. Asimismo, se emplearon fuentes primarias obtenidas del trabajo de campo, que contó con el apoyo de una explotación SIG para georreferenciar los cambios de uso del suelo experimentados en las dos últimas décadas. Por último, se identifican diversos indicadores de base experimental para la toma de decisiones e implementación de medidas preventivas en materia de conservación y manejo sostenible del ecosistema del humedal, y para plantear lineamientos estratégicos de gestión turístico-recreativa de base comunitaria, que permitan, en su conjunto, el mantenimiento de relaciones socioculturales y ambientales de carácter sustentable.

Palabras clave: zonas húmedas, turismo y recreación, caracterización socioambiental, sostenibilidad, humedal de La Segua, Ecuador.

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Introduction

Socio-environmental characterization of protected spaces, perception, valuation of sustainability and the recreational-tourist potential of these territories by local agents and visitors, are two instruments that are certainly useful for obtaining direct information for the adoption of appropriate strategies of territorial planning and sustainable management of these protected areas. The socio-environmental diagnosis, the evaluation of the territorial resources and the potential of these spaces allows, first of all, to detect the deficiencies, weaknesses and limitations of nature tourism and ecotourism destinations with environmental fragility such as wetlands (Orgaz-Agüera, 2014; Sánchez-Carrillo, Álvarez-Cobelas, Cirujano, Carrasco-Redondo, & Díaz-Cambronero, 2015). But they also turn out to be fundamental to have a prospect of possible conflicts of interest between the agents, both external and internal, involved in these spaces, as well as the divergences between uses and land harnessing, thereby implementing the necessary actions of planning for its minimization and redirection (Jiménez & Castillo, 2014; Cardozo, Fernández, Soares, & Holm, 2016).

Numerous case studies (Chávez, 2007; Fernández, 2008; Fernández, Porter-Bolland, & Sureda, 2010; Marín-Muñiz, Hernández-Alarcón, Rivera, & Moreno-Casasola, 2016) have shown, in fact, that the perception of the environmental values of any territory varies depending on the use and benefits practiced and obtained, respectively, by local agents in the natural environment. In this context, being aware of this criterion is very necessary to identify alternatives for the improvement of the territorial resources use, both natural and sociocultural, in the influence area of these protected spaces in order to implement strategies that favor their conservation, enhancement and organization and planning based on public policies that take into account its heritage characteristics and its potential as an instrument of economic development and social wellness for local communities.

In rural and suburban areas, there are different perceptions of the natural environment, the landscape and the environment in general, based on their knowledge, customs and traditions that are difficult to understand for those who live in urban regions with patterns, rules and ways of life influenced by the western socioeconomic development model. Therefore, the search for sustainability alternatives for a good management of the territorial resources in these rural areas, requires a previous characterization of the ways of life of their populations and the problems they experience in their connections with the natural environment.

This type of diagnosis of a territorial nature should not be reduced, in any case, to the physical-environmental aspects and those related to the economic activities that support these protected areas such as tourism and recreation, but also, and precisely, it must include

socioenvironmental aspects, addressing the territorial reality from a systemic and comprehensive approach (Varisco, 2016). In addition, Konu and Kajala (2012) state that diagnoses and territorial valuations constitute the basis for developing a rigorous analysis of certain phenomena, offering elements, guidelines and criteria to assess the current and initial situation of any protected area, as well as to identify its trends and dynamics, and from there generate knowledge, good practices and learned lessons when proposing possible strategic conservation and management actions.

On the other hand, although tourism is relevant in terms of socioeconomic impacts, job creation and new productive activities, especially in poor and developing countries (Toselli & Mazza, 2014), it can also cause significant territorial impacts, particularly in areas of great environmental fragility such as wetlands, for this reason, it must be developed following sustainability criteria through comprehensive planning processes adjusted to this type of territory and the continuous evaluation of its results during the application of a governance strategy (Vera-Rebollo & Díez-Santo, 2016; Puhakka, Pitkänen, & Pirkko, 2016).

Well-understood sustainability, is nothing other than the capacity of socio-ecological systems (SES) to meet the needs of the current population and future generations while maintaining their socio-economic activities such as tourism over time, in a compatible manner with own resilience against negative impacts on ecosystems and natural and sociocultural landscapes (Martínez, Huber, Arredondo, Costero, & Peña, 2012). However, as many authors note (Martínez, 2013) sustainability still suffers from a widespread accepted conceptualization, as it turns out to be a somewhat imprecise, ethereal, deformable and adaptable term

according to interest, so that it has often ended up being trivialized or instrumentalized inadequately by interested theoretical and political speeches that have not even been translated into substantive actions that can really be described as sustainable. It can be even affirmed that there are as many proposals for defining and managing sustainability, as there are sustainable development projects, and these, in turn, often lack of planned tourism management, capable of overcoming the dichotomy "conservation *versus* development" and strengthening equity, effective social participation, comprehensive development based on respect for the general interests of local communities, diversification and economic multi-activity.

Furthermore, efficient and sustainable tourism planning in natural areas is only possible if all the actors involved are integrated, especially those who have to do with the management and establishment of policies oriented to strengthen the tourism sector in a compatible way with the preservation of the heritage values, both natural and sociocultural, of these spaces (Shone, Simmons, & Dalziel, 2016). It should be noted, however, that the existence of public policies that promote the development of tourism and recreational activities in nature turns out to be insufficient if they are not accompanied by well thought-out actions regarding proactive conservation and sustainability of the affected territory. In this respect, Malek and Powell (2017) state that ecotourism - as a form of tourism more typical of protected natural areas - if properly managed, must necessarily involve all community actors, and also to sensitize and train them to lead the management and conservation of the natural resources of these territories, which are, after all, the support and

qualification systems of the recreational-tourist attractions of the destination, representing a fundamental factor for the sustainability of it.

Among these natural resources that are also associated with practices and very characteristic sociocultural landscapes, it is important to highlight wetlands as unique ecosystems that share terrestrial and aquatic typologies and, therefore, with the presence of water, soils, vegetation, fauna, economic uses and anthropized landscapes. The value of these wetlands lies in their multiple ecological functions and the provision of ecosystem services of interest: areas of reproduction and fish rearing and diverse aquatic species, nesting and habitat of birdlife, their functioning as protection barriers against storms and hurricanes, its condition as a carbon capture system to mitigate global warming, provision of raw materials for construction and various agricultural activities, as well as places for the development of recreation products, environmental education and nature tourism, among others (Manson & Moreno-Casasola, 2007).

Over time, human beings have taken advantage of such environmental services to a greater or lesser degree, but the excessive use and changes in soil use of these ecosystems for various anthropogenic activities have had an impact on them provoking loss or deterioration, reduction of their biodiversity and negatives transformations in their environments, biophysical ecosystems and natural resources, such as the case of this study. Indeed, regarding to ecosystems generally subjected to a long historical process of anthropization, it can be understood that the success of the sustainable management plans of these territories, largely depends on the involvement and awareness of local communities in their areas of socioeconomic influence, and their level of commitment

to change some of their behaviors and attitudes that may be negative for the conservation and environmental sustainability of these spaces (Carmona-Díaz, Morales-Mávil, & Rodríguez-Luna, 2004; Moreno-Casasola *et al.*, 2006). For this reason, it is frequent that within social research applied to these territories, an essential step is to learn how individuals perceive their environment and interact with it, so from this point generate proposals to contribute to the environmental conservation and social and economic well-being of the affected local populations.

The aim of this study focuses, specifically, on this line of research, studying a specific case of local communities in the areas of San Antonio, La Segua, La Rea, La Sabana, in the province of Manabí (Ecuador), traditionally closely linked and influenced by the environment of the ecosystems wetland La Segua, where in addition to the fishing and agricultural activities with the longest historical trajectory, recreational-tourist activities have broken in recently, although still timidly.

As this wetland is an extremely fragile ecosystem from an environmental point of view and already altered since ancient times, the recent development of recreational-tourist activities in this space requires prior consideration of real and potential limitations for their sustainable implementation in the environment, as well as a reorientation is necessary, depending on the case, towards more rational practices that minimize their negative impacts and conflicts of use with other economic activities. For this, start points are the theses defended by authors such as Holladay and Powell (2013), who consider that the study of tourism in natural areas and its territorial implications should be carried out from a comprehensive and systemic approach that takes into account natural resources and landscapes, and also other heritage resources of an

anthropic nature, the sociocultural practices of local actors, the profile of recreational-tourist demand, the territorial governance system and its levels of coordination, in concordance with the public tourism management policies. Finally, it is taking into consideration the approaches of authors such as Scott, Cohen, Prayag and Moital (2014), who stress that these studies with an integrative and systemic approach must also take into account the perceptions, attitudes and motivations of tourists and visitors who travel to protected spaces, in order to articulate an offer that meets their needs, but at the same time sensitizes them even with respect and appreciation of the natural environment and their local communities, and facilitates the proper use and management of the natural ecosystem of wetlands.

The area under study

The object of this research is the wetland La Segua, located between the cantons Chone and Tosagua in the province of Manabí (Ecuador) (Figure 1), characterized as a wet area with an international category of Ramsar site since June 7, 2000 and most recently declared as a provincial protected area. The main territory of this space and the one with the highest level of accessibility and conservation belongs from the political-administrative point of view to the parish of San Antonio, with an

extension of 1 745 ha. It is a very seasonal sheet of water; therefore, the level comes down to about 525 ha in the dry season. It also has an average depth of 67 cm, and it is about 10-12 cm above sea level, its temperature ranges from 26 to 27 °C. The wetland La Segua is integrated into the Carrizal-Chone water corridor, in the central north region of the province of Manabí and a few kilometers from the mouth of the Chone River, in the bay of Caráquez

In the wetland La Segua, there are many natural and sociocultural resources of interest, but due to the inappropriate use of soil and water which has been taking place particularly in recent decades (shrimp farms, intensive agriculture, livestock, use of agrochemicals, introduction of exotic species, etc.), this area has experienced various territorial conditions that have led to the loss of biodiversity, the pollution of its water and a situation of crisis of the traditional agricultural activities which have derived in a major rural exodus.

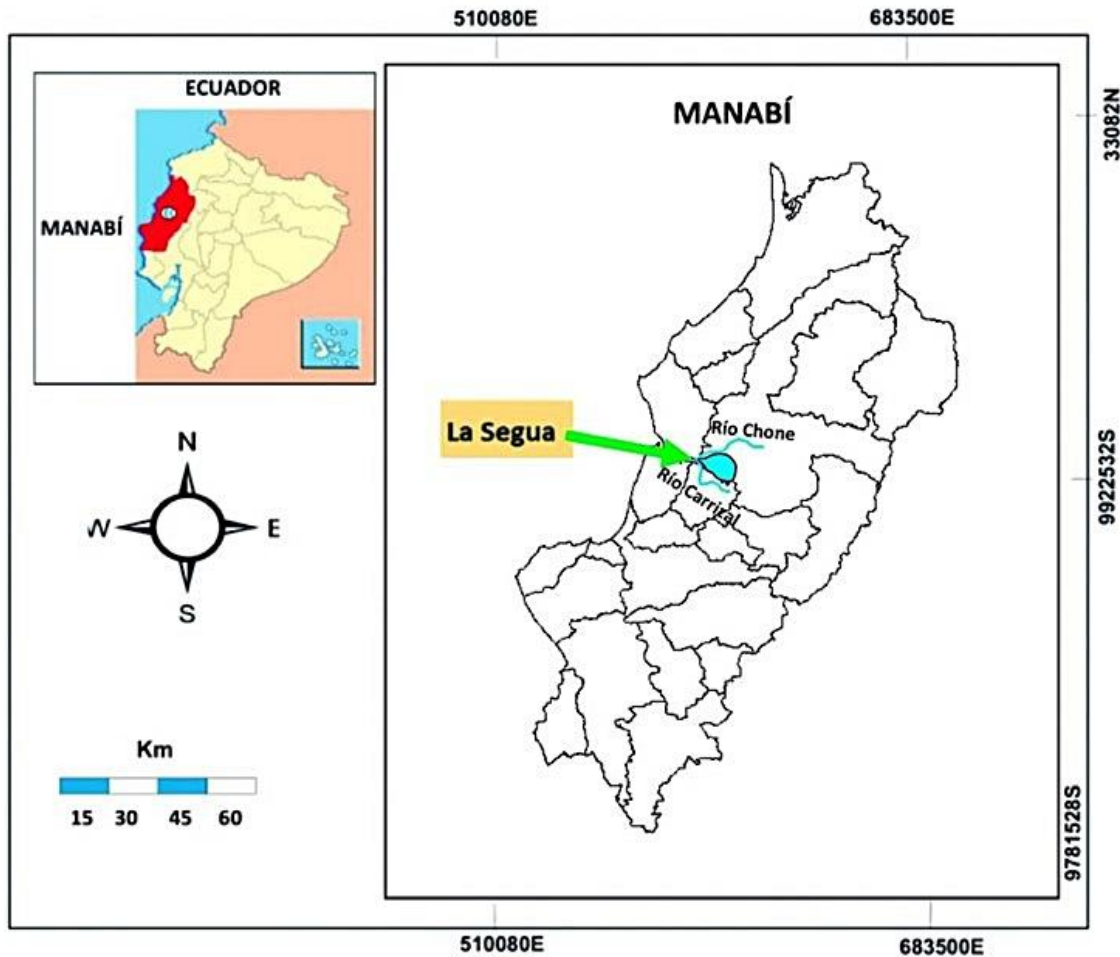


Figure 1. Geographical location map of the wetland La Segua.

Source: Cartographic base of the Environment Ministry of Ecuador (2014). Adapted by the author.

Methodology and working tools

A socio-environmental characterization of the wetland and its territorial environment is performed in this study, for this, an on-site field work was carried out to raise a series of socio-environmental diagnostic records of the main heritage resources. The analysis has been basically of an exploratory and documentary type and is based on both quantitative and qualitative methods and work tools. For the development of the research process, theoretical and methodological foundations were revised which have already been contrasted in various researches and case studies which were analyzed in the bibliographic review in relation with planning and management of wetlands (Nunes-da-Cunha, Fernández, & Junk, 2014; Ministerio del Ambiente de Ecuador, 2013; Ministerio del Ambiente de Ecuador, 2014; Secretaría de la Convención Ramsar, 2016).

After analyzing the research background and the methodologies applied in various case studies, a methodological procedure adapted to the reality of the area under study where three sequential phases were chosen:

1. An internal analysis of the wetland using both primary and secondary sources with the consultation of various data platforms and repositories of official documents, scientific journals and specialized techniques to support the research, prior classification, ordering and systematic analysis of the information obtained. The territorial characterization has taken into account the social, environmental, ecological and economic aspects, as well as the sociocultural and tourist ones. In addition to the visits made in the field work, surveys have been carried out by applying a total of 50 questionnaires to the population and

local actors of the four communities in the area of influence of the wetland (San Antonio, La Segua, Larrea, La Sabana). The 10 questions in the questionnaire were about the environmental and tourist situation perception of the wetland and the level of awareness of the ecosystem services provided.

For the analysis of the recreational-tourist and environmental management carried out in this wetland, a matrix with 17 sustainability indicators has been selected after applying direct and in-depth interviews to 10 managers, experts and local and regional stakeholders corresponding to different institutions involved or with direct or indirect competence in the public management of protected areas (Ministries of Environment and Tourism of Ecuador, Provincial DAG of Manabí, Decentralized Autonomous Governments of Chone and San Antonio parish, Ecotourism Association of Naturalist Guides of the Wetland La Segua ASOHUMEDAL, BirdLife Ecuador, Management Committee of the Fishermen of the wetland La Segua and Associates) Likewise, it has been adopted as a reference methodology for the work of the Environment Ministry of Ecuador: *Manual for the operational management of protected areas of Ecuador* (Ministerio del Ambiente de Ecuador, 2013) and *Evaluation of the effectiveness of natural resources heritage management* (Ministerio del Ambiente de Ecuador 2014). It should also be noted that some case studies have been considered where significant results have been obtained in the application of sustainable tourism indicators (OMT, 2018). Specifically, the evaluation of the situation of the study area has required a matrix of indicators that has classified these into four areas of analysis that are based on management programs already standardized in the country (general management of protected space, environmental

sustainability, sociocultural sustainability and economic sustainability), establishing a system of weighted indicators at three levels: high (H), medium (M) and low (L). The methodological proposal has finally considered six areas of management of this protected area, where matrix of the questionnaire is as well included (administration, control and surveillance, planning, community development and environmental education, tourism and public use, and conservation of biodiversity).

And finally, a georeferenced cartography of evolution of land uses was carried out using GIS, GPS instruments and the use of satellite images and for the period 1998-2018 (Figure 2), in order to identify trends and recent territorial dynamics of this space to carry out this multitemporal analysis, two Landsat 5 and 8 images with 30 m resolution were used, taken in August 1998 and September 2018, respectively, for each study area over a period of 20 years. These images were obtained from the USGS (United States Geological Center) server and were subjected to radiometric, geometric and topographic corrections.

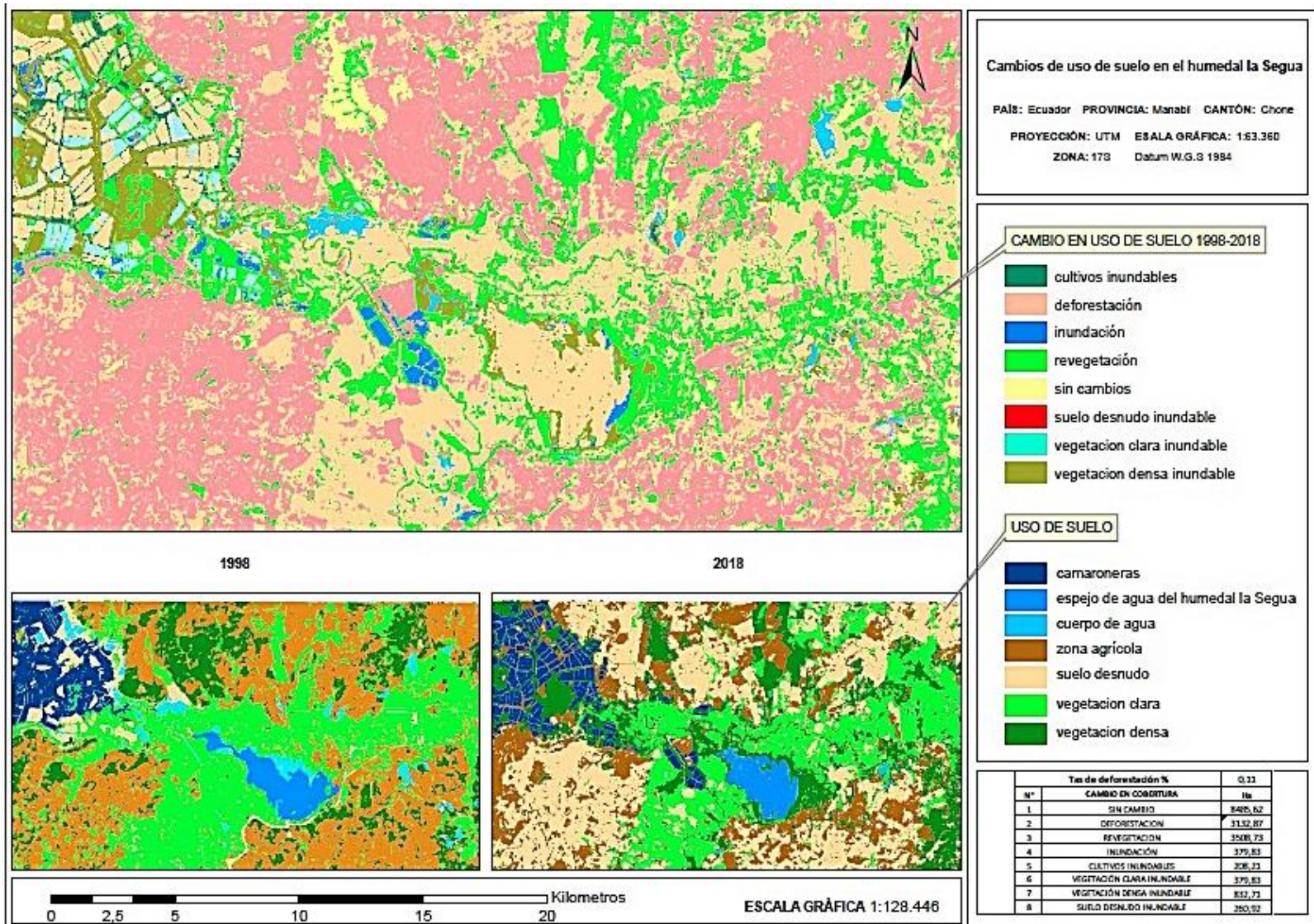


Figure 2. Map of land use changes in the wetland La Segua (1998-2018). Source: Self-reported information through GIS and satellite images.

2. In a second phase, an external analysis was carried out, focused on studying the profile and characteristics of the demand of visitors to the wetland, through applying surveys using a questionnaire that has included

some questions to determine its evaluation, attitudes, levels of satisfaction and motivations of the visit in relation to this protected space. This analysis is justified —according to other similar studies already contrasted (Scott *et al.*, 2014)— for the importance of obtaining first-hand information on the behavior, perceptions and trends of consumers who are attracted to these tourist destinations. Through this survey, we have also been able to detect the tourist resources most highly valued by these visitors and, in principle, with greater tourism potential, as well as the inadequacies of the territory in terms of equipment, infrastructure and support systems and support for the most demanded recreational-tourist activities.

To determine the sample size, the methodology proposed by Alatorre and Pérez (2011) has been used, based on the consideration of an infinite population, since the existing official statistics on the number of tourists and excursionist who visit the territory are practically non-existent, the visitor counts are, in turn, not very rigorous at the subregional and local levels and we do not have any previous scientific studies on the approximate volume of visitors. Finally, 196 questionnaires have been applied as the sample size, with a confidence level of 95 %, a margin of error of +/- 3.85 % and a variance of 50 %. The collected data was organized, tabulated and analyzed using the SPSS Version 21 program. For this survey, a questionnaire of 18 structured and mostly closed questions was used, which was distributed in different strategic points with the highest influx of visitors in the areas of Manta, Canoa and Portoviejo during the months of September and October 2018, based on the results of the previous field work carried out and the contacts with local agents to identify these points with the greatest number of visitors.

3. With the results obtained from the previous phases, some lessons have been learned to establish guidelines to guide the proper management of the wetland La Segua and its conservation, determining actions and projects that serve as tools for sustainability. Likewise, the OMT (2018) thesis has been taken into consideration, that in order to develop planning in sensitive areas, programs and projects that integrate management policies at the local, regional and national levels must be established, in addition to considering the local actors and entrepreneurs, as well as environmental, socio-cultural and economic factors in a comprehensive way. The information resulting from the actions proposed was finally synthesized in a matrix.

Results

The results of the study with a socio-environmental characterization of the wetland La Segua and its socioeconomic area of influence have been summarized in Table 1, which reflects the most notable aspects that we have extracted from the surveys applied to the local population and visitors, interviews with qualified agents, fieldwork and participant observation in the study area:

Table 1. Main socio-environmental aspects of La Segua. Source: Self-reported information through surveys, field work and GIS.

Territorial aspects	Characteristics
Socioeconomic	<p>47 % of the inhabitants of the wetland's area of influence are engaged in fishing using the trammel technique (net or bamboo fence). 17 % of the population performs agricultural work, the most important being those related to the cultivation of corn, plantain, tomatoes, cucumbers, broad beans, watermelons, peppers, beans, and melons, while 20 % carry out livestock activities and another 20 %, approximately, is dedicated to traditional shrimp aquaculture or the most recent commercial value of exotic tilapia species</p> <p>95 % of the inhabitants surveyed indicated that they had electricity service and 73 % stated that they did not directly use the water from the wetland in their daily activities, since the communities have a public service for the supply of drinking water, although at least the remaining 27 % used the water from the wetland to irrigate crops, care for livestock and shrimp farming</p> <p>On the other hand, the situation of the public sewage and wastewater evacuation service is very deficient, since only 3 % of households have this sewage service, with the majority of the population being themselves forced to construct cesspools and latrines with the consequent problems of aquifer contamination. 95 % electricity in all their communities. Finally, there is a health sub-centre located in the parish capital and three</p>

	<p>peasant social security dispensaries located in the local communities of Bravos Chicos, San Pablo and Barquero</p>
<p>Environmental and ecological</p>	<p>The wetland is freshwater and is made up of a central swamp that is almost always flooded and an extensive flood plain that is covered with water in the rainy season</p> <p>Its soil is sandy loam, silty and / or silty clayey, generally deep with narrow river deposits of recent sediments</p> <p>The water is of medium quality, with the presence of fecal coliforms and total suspended solids and a low percentage of dissolved oxygen</p> <p>Up to 12 species of fish, two species of river shrimp (<i>Machrobrachyum americanum</i> and <i>Macrobrachyun tenellum</i>), turtles of the Chelydra genus and 164 species of birds, 22 migratory species and 63 aquatic species have been identified in field work</p> <p>The flora is made up of 27 families and 39 species of wild vegetation and in the rainy season aquatic plants predominate, especially the common water hyacinth (<i>Eichornia crassipens</i>). In this season the swamp can have an average depth of up to 1.27 meters</p> <p>The environmental problems identified are related to the processes of degradation and accelerated loss of habitats due to anthropic pressures, the increasing desiccation, the reduction of water bodies, the inadequate use of surface water resources by expansion of agricultural crops, the construction of diverse infrastructures such as dams, the use of inadequate irrigation systems and the installation of ponds for aquaculture</p>

The socioenvironmental characterization study area comprised a total of 28 789 118 hectares, including both the wetland La Segua and its closest environmental surroundings. It has been able to determine with the GIS analysis and satellite images (Image 1) the most significant changes in land uses experienced in the last two decades and confirm the environmental impacts detected in the field work and reported in Table 1 above. Specifically, it has been possible to determine a loss of 35.9 % of the bodies of water, an important process of deforestation that has affected a total of 3 132.87 hectares of vegetation, which represents a higher percentage of loss of vegetation cover at national average deforestation rate estimated at 0.11 %. These deforestation data may seem contradictory with the results of the data obtained on revegetation of a total of 3 508.73 hectares, but this is explained in the verification of information carried out in situ, which has registered the replacement of the initial forest cover by Palm plantations initially interpreted as revegetation surfaces. The flood data obtained from 379.83 hectares represents the increase in areas for aquaculture use (shrimp farms) in areas adjacent to the wetland, while the clear and dense floodplain vegetation results from two environmental factors: the first, of natural origin, derived from the change of courses of bodies of water (rivers) or the emergence of new bodies of water (swamps) as a consequence of the rains, as can be seen particularly in the NE northeast of the study area; and the second, of an anthropic nature, as a result of cutting down forest cover to create artificial ponds for shrimp farms, particularly in the NW northwest area of the wetland.

With regard to the perception, attitudes and opinions of the population (inhabitants and local agents) about the environmental and tourist situation of La Segua wetland territory, 50 on-site surveys were applied, which, in the first place, yielded positive relative results regarding to the knowledge and level of environmental awareness about the environmental, economic and generation values of ecosystem services to the local community in this study area (69 % of those surveyed stated that they do know the values of the wetland, although 31% recognized not having knowledge about the activities carried out in the wetland environment and their impacts). In any case, it follows the need to promote communication processes to inform and sensitize the local population to a greater extent on the importance of this territorial resource, both ecologically and economically, and to train it in managing uses of the soil in a more sustainable way.

Respondents in general terms are aware of the most recent dynamics that have been causing significant changes in land use in the wetland environment, as well as its consequences: the appearance of shrimp farms, the introduction of exotic species such as tilapia (*Oreochromis niloticus*), which has caused severe damage to endemic species such as the chame (*Dormitator latifrons*), now almost extinct, the inadequate use of land and the intensification and bad practices of agricultural activities, which increasingly use agro-toxic products, and the expansion of ponds for fish farming.

Regarding to the perception of the local population about tourist activity and its potential in the area, 77 % of those interviewed recognize the importance of tourism for the diversification of the traditional wetland economy, while they express the need to facilitate initiatives promoting

tourism development, such as the accommodation area and complementary leisure and visitor services, both national and international. On the other hand, 23 % of the respondents thought that they did not know the meaning of the tourist activity and what it could represent for this area, assuming that the local population would need, before anything else, good prior training and education to really understand the possibilities of this activity for the socio-economic development of the wetland environment and as an opportunity as a new area for employment and entrepreneurship initiatives.

61.84 % of the people settled in the area of the wetland also agree with the promotion in the area of activities related to tourism, since they consider that this territory would gain visibility, notoriety, investment attraction and generation of income, part of which could revert to better conservation and management of natural wetland resources. On the other hand, 32.89 % disagree with the irruption of the tourist activity in the area, since they consider that the economic revenues are not redistributed equally among the local community, concentrating on very few economic agents or operators with generally foreign interests, while 5.26 % of respondents remain neutral since they consider that their economic income would not vary or depend in any case on tourist activity as such.

Once the socio-environmental diagnosis of La Segua wetland has been carried out, the results are presented regarding to the application of a matrix of sustainability indicators with respect to variables such as the conservation and environmental management of the protected area, its recreational-tourist management and its potentialities. These have been synthesized and classified in the following Table 2, Table 3, Table 4 and Table 5. The matrix has been classified, specifically, in four areas of

analysis (general management of the protected area, environmental sustainability, sociocultural sustainability and economic sustainability), establishing a system of weighted indicators at three levels: high (H), medium (M) and low (L).

Table 2. Sustainability indicators in terms of integral territorial management of the wetland and its environment (high, H; medium, M; low, L). Source: Self-reported information.

Indicators	H	M	L	Remarks
Existence of a wetland management plan with environmental and tourist planning objectives.			X	The management plan that exists is the one of Environment Ministry for the year 2015, but there are no substantive instruments for its development and application. The municipality of Chone carried out a study of the attractions of the wetland, but with hardly any guidance applied. In summary, the general planning foresights are not met.
Existence of some administrative department of tourist and environmental management in the area.		X		The protected area, according to the distribution of competences between Public Administrations of Ecuador, must be managed by the Decentralized Autonomous Government (DAG) of the parish Chone-DAG cantonal and the provincial DAG of Manabí
Budgets for the management of the protected area			X	There is no specially established budget for the management of the area, but only some investment resources in aspects of infrastructure and basic equipment of the

			population or some programs by the cantonal DAG and the provincial DAG.
To what extent are zoning limits and ordinances recognized and respected for the management and use of protected space		X	The limits are known by the community and local managers, and to a lesser degree its regulations of uses, but unfortunately they are not respected and numerous uncontrolled activities are carried out that threaten the conservation and environmental integrity of the space.
Existence of tourism promotion campaigns.		X	Actions are only carried out at the regional and local levels through printed advertising material and some promotional programs by the DAG Chone.
The area has facilities and equipment to satisfy and meet the recreational-tourist demand		X	Within the territory of the area there is an environmental information and interpretation center, a birdlife and landscape observation tower and a dock with canoes and life jackets. There are no quality services, actually, in the surrounding areas.

Table 3. Sustainability indicators regarding to environmental management and public use (high, H; medium, M; low, L). Source: Self-reported information.

Indicators	H	M	L	Remarks
There are environmental control and surveillance operations.			X	The contamination of the wetland derived from the activities carried out by the landowners of this area is the main environmental problem, since they usually use polluting substances for the maintenance of their shrimp farms, with

			little control of the environmental inspection, practically non-existent.
Wetland water quality.		X	Through an investigation carried out by the environmental school of ESPAM it has been possible to determine a high percentage of pollution of its waters by fishing activity and another series of secondary factors.
At what level is the conservation of the destination landscape		X	The environment of the wetland La Segua is in a mid-level of its conservation, since in certain cases there is visual contamination due to the growth of shrimp farms and agriculture.
Existence of some program of permanent environmental education and information activities for local communities.		X	Environmental education and information actions are not permanent and are only organized in a very sporadic and punctual way, coinciding with some commemorative days (World Environment Day, World Wetlands Day).
The protected area has systematized information for the management of natural and cultural heritage		X	There is no systematized information system, but you can find some university research papers, a tourist information guide and the management plan for the area.

Table 4. Sociocultural sustainability indicators in the wetland's area of influence (high, H; medium, M; low, L). Authors' own elaboration.

Indicators	H	M	L	Remarks
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Level of acceptance and conformity of local actors with respect to the official declaration as a protected area of this zone.		X		The degree of knowledge about the importance of this protected area is medium, but there are many short-term economic interests that allow activities to be carried out that go against the conservation and environmental sustainability of the protected area.
Implementation of programs to improve the well-being of the local community			X	The public budget for the management of this area is limited and almost null, and the actions are limited to the organization of some environmental education activities in the surrounding schools.
Participation of local actors in decision-making in the management of the area.			X	Practically all of the wetland territory is included on privately owned land. Its owners carry out various economic activities, mainly fishing and agriculture, but participation and involvement in issues related to the management and environmental conservation of the wetland is minimal.
At what level the cultural manifestations of the community are preserved.		X		Cultural manifestations are especially preserved in gastronomic aspects (traditional chame dish) and artisanal fishing.

Table 5. Indicators of economic sustainability in the wetland's area of influence (high, H; medium, M; low, L). Self-reported information.

Indicators	H	M	L	Remarks
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<p>The natural resources of the territory generate direct economic benefits (income, jobs, tourism) to the local communities.</p>			<p>X Income from activities such as tourism, recreation, research or environmental education are very limited and of little scope, while agriculture, livestock farming and aquaculture do have a significant socio-economic impact, although their short-term productivity perspective disregards the necessary environmental sustainability.</p>
<p>To what degree do local actors benefit from tourism and recreational activities in the area?</p>			<p>X An important part of the local population seems to perceive the recreational-tourist potential of the wetland environment, but the truth is that this activity still has a minimal participation and contribution in local economies and, therefore, the population does not receive a really significant income generation from tourism but very low.</p>

The external analysis of the wetland territory has been based on the application of surveys to determine the perception and profile of the visitor, in addition to knowing what the needs and expectations that the visitor intends to satisfy in relation to the territorial and recreational-tourist resources of the wetland. As a synthesis of the results of the demand study, we can highlight the following:

1. More than 50 % of the visitors are over 35 years of age, many of them researchers, foreigners, ecologists and ornithologists who visit the place for reasons of studies and research, followed by another 20 % corresponding to students from schools, colleges and universities in the area (environmental education visits). Most are foreigners and come from Europe (40 %), in second place from the United States (40 %) and a low

percentage are of national origin (20 %), which shows the little interest of local and national visitors in these protected spaces and the scarce tourist promotion to capture this demand by the competent Administrations.

2. 46 % of visitors have university training, stable employment and would be willing to pay \$ 86 / day for recreational-tourist products and services that can be planned in the area.

3. Most travel with family and friends (44 %), this being a positive factor due to their higher level of final spending.

4. 60 % of those surveyed know or have heard of the wetland, but they acknowledge that there is a deficient promotion that does not allow its naturalistic, scenic and recreational-tourist values to be properly disseminated. Most of the respondents stated that they accessed information about the wetland through social networks, specialized web pages and comments from friends and acquaintances, but not through tourism promotion channels.

5. The main motivation for the visit is to get to know and enjoy the biodiversity and natural resources, and despite the fact that there is no proper offer of visitor care service, they state that they have a good perception of the protected area.

6. Finally, among the deficiencies found in the wetland, they particularly point out the practical absence of specialized tourism products for ecotourism, ornithological tourism or environmental education, as well as bilingual guides, as well as the lack of equipment and infrastructure for public use and the lack of tourist services in the area of influence of the protected area.

Based on the results of the socio-environmental diagnosis and the opinions and suggestions of the local agents surveyed and those made to visitors, we have finalized a series of proposals for actions and planning strategies that address the problems detected in the natural space both from the environmental point of view, as well as recreation-tourism and sustainable development. These proposals have been reflected in the matrix of Table 6 and we understand that they should be articulated within the framework of a more comprehensive Action Plan with broader perspectives than the current Wetland Management Plan, which is even developed through substantive actions.

Table 6. Matrix of actions and strategies proposed at the tourist-recreational level for the wetland La Segua. Self-reported information.

Problems	General Objectives	Projects	Strategies
Lack of qualified personnel in tourist management and public use. Deficiencies in public environmental and tourist management	Promotion of recreational-tourist activity under sustainability criteria, promoting economic diversity and community-based sustainable development to improve the	Tools and workshops for the involvement of main actors and qualified local managers to compensate for a shortage of technical personnel. Obtaining income from the entrance of visitors should	Inter-administrative coordination between environmental and tourism preservation areas and creation of a consultative body to promote social participation in the public management of the space
			Identify innovative projects of both nature (conservation + development) that focus

	quality of life of the surrounding population.	return to improve the logistics of environmental and recreational-tourist management of the wetland	in a sustainable way in the investment in territorial resources with the greatest potential. Update of the 2015 Management Plan and comparison with other areas of the National System of State Protected Areas, with a self-sufficient financing system for the comprehensive management of the wetland. Improvement of the public services for the evacuation and purification of wastewater.
Lack of control in land expansions for shrimp farms and agricultural practices that are unsustainable and incompatible with the preservation of the natural space	Promote sustainable strategies that support the conservation and rational use of the natural resources of the wetland and its surroundings	Environmental education	<p>Training of the local population in sustainable farming and fishing practices and alternative organic production projects. Workshops on sustainable exploitation of water resources and ordinances for the regulation of water consumption.</p> <p>Carry out environmental awareness campaigns with the population, productive</p>

			agents and students at all educational levels in the region
		Natural resource management and planning	Management and control of polluting waste and residues in the wetland. Implementation of park ranger service and environmental inspection and control system.
			Integration of the specific, environmental and tourist policies of the natural space in the local and regional territorial and urban planning
			Delimitation of recreational-tourist load capacity and visitor registration with a view to strengthening wetland planning (development of a Management Plan with a Natural Resources Management Plan, a Master Plan for Use and Management with substantive decision-making bodies and a Plan for Sustainable development.

<p>Insufficient or deficient tourist infrastructure and equipment. Loss of tourists due to a lack of tourist facilities and services. International tourism only linked to scientific and educational tourism. National tourism and scarce proximity. Little generation of income from tourism, barely received by the local population</p>	<p>Boost the economy of the communities settled around the wetlands through the development and dissemination of recreational-tourist products that allow the optimal use of resources</p>	<p>Promotion of community tourism projects from public-private initiatives with the active participation of local agents. Strengthening of demand segments for ecotourism, ornithological tourism, environmental-educational tourism, and agritourism, through benchmarking techniques and possible transfers of good practices from other similar protected areas</p>	<p>Training and education plans for human resources in tourism management. Promotion lines for the creation of demonstrative and innovative tourist products</p>
			<p>Tourism promotion campaigns, especially in digital marketing, to attract national and proximity tourism and conventional international nature tourism. Ornithological tourism plan.</p>
			<p>Networking of the business and entrepreneurial nets through public-private tourism clusters</p>

Discussion

For the management of recreational-tourist flows in protected areas, their environmental planning and the promotion of local development, the socio-environmental characterization of the territory and visitors is revealed as a basic necessity, and when it do not fulfil this, as is the case of the wetland La Segua studied here, tourism and environmental planning have notable deficiencies and the heritage resources and equipment for public use are insufficient, inadequate or are often underused and with problems of functionality and sustainability and also to not meeting the expectations of visitor demand. Nature tourism can become a fundamental tool for the socioeconomic development of the populations located in the area of influence of the wetlands and alleviate the conditions of poverty that their rural populations usually undergo, but this requires adequate planning and public management from an environmental and tourist point of view (Fisher, Maginnis, Jackson, Barrow, & Jeanrenaud, 2005; Van-der-Duim & Henkens, 2007; Mulero & Rivera, 2018), which is certainly not easy to apply, particularly in territories such as the one we are studying here, where we lack studies and previous evaluations of recreational-tourist demand and attendance, behavior of visitor flows, foreseeable environmental, socio-economic and cultural impacts and levels of adaptation and functionality of public use equipment. Case studies such as the one we undertake here are, in this sense, very necessary, taking into account the heterogeneity of situations and particularity that can be found in the wetlands of Ecuador (Secretaría de la Convención Ramsar, 2012; Molina, 2012).

Despite the inclusion of the wetland La Segua in the National System of Protected Areas of State and having approved a management plan for 2015 as a provincial protected area, the truth is that to this date there have been few effective and substantive advances in the area of conservation and environmental and territorial management of this territory, and even when it should be noted that it is part of the country's natural heritage and holds the international title of Ramsar wetland, numbered 5 on the national list of Ecuador (Molina, 2012) . The results obtained from the surveys, fieldwork and direct observation that we have analyzed in the previous section, confirm the strong deficit in terms of environmental and governance management and much more from the point of view of recreation-tourism and public use.

It must be considered, in this sense, that the environmental administration and management of this space falls under the competence of both the Provincial Government of Manabí and the municipality of the canton Chone, despite the fact that there is no specialized administrative unit for the administration and management of the wetland and the inter-administrative coordination between both administrative organisms and in between of them, the Environment Ministry is very poor and unstructured. The 2015 Management Plan only addresses a very general management of the natural resources of the wetland and its surroundings, but it does not have a regulatory development to specify governing actions, public use and soil management, as well as operational zoning. And it is precisely soil management that focuses the current problem of the territory, since practically the entire area is privately owned and suffers a relatively important level of increasing intensification of primary productive activities (agriculture and fish farming), not existing at least

zones of protection to lessen impacts in the area of influence of the wetland, the same way, in practice, of a declaration with sufficient legal entailment as a state-protected area that could reinforce the conditions of protection and environmental sustainability of this space.

The wetland La Segua, like other Ramsar places with similar characteristics, is a geographical area with great potential for biological diversity, ideal for conducting environmental education and ecotourism research and activities, especially in the field of bird watching or ornithological tourism. However, the public management of this protected area is basically focused on the environmental and nature conservation aspects and, in addition, as it is not recognized within the State Natural Areas Heritage Subsystem, this wetland receives fewer resources than others Ramsar places in the country and cannot benefit from some coordinated projects of environmental conservation and sustainable tourism between the Environment Ministries and Tourism (Torres, 2012; Molina, 2012).

Here we found, therefore, a protected space that is barely used from the recreational-tourist point of view, despite the fact that the “Well-living” Plan of the Government of Ecuador (República del Ecuador, 2017) considers ecotourism as a strategic subsector of economic activity for the generation of employment and wealth in a sustainable way and compatible with the conservation of nature. In reality, despite the recreational-tourist potential that we have been able to identify in the wetland and its geographical environment, its declaration as a protected area has not been for the express purpose of stimulating sustainable development strategies, including recreational-tourist activity, but that it has responded exclusively to its ecological and landscape preservation as

shown in the 2015 Management Plan and, as has happened in other wetlands in Ecuador and even in more than a few countries with more advanced instruments of land use planning and economic development (Papayannis, 2002; Arias-García & Gómez-Zotano, 2015), has made it difficult to determine its true conception as an instrument of ecodevelopment and socioeconomic for depressed areas in its environment.

There is no doubt that the management level orientation of this space goes in a somewhat opposite direction to the determinations and recommendations of the Ramsar Convention itself, which has been an important starting point for the numerous instruments, plans and strategies that in recent years have tried to guarantee the conservation and revaluation of wetlands (Iza, 2004; Serrano, 2012). Therefore, in addition to identifying, systematizing and analyzing the different measures implemented to this date in the wetland, we have obtained from field work and contacts with local agents, visitors and experts a series of proposals that can improve the management of this once we have verified that the actions derived from environmental planning are insufficient and make the comprehensive management of this ecosystem difficult, which would have to connect and reconcile environmental orientation with recreation-tourism and sustainable development.

Despite the great importance of this Ramsar site for the country's natural heritage, it is evident that the local population, socioeconomic agents and even the public and private institutions involved, are not sufficiently aware of the importance of this place as a service provider ecosystems of value, including recreational-tourist ones, that can generate new development opportunities complementary to traditional

primary activities. Therefore, the recreational-tourist potential of the wetland can only be developed through a process of prior awareness, information and training of these local agents, as well as with the implementation of a Planning and Management Plan that goes beyond the exclusively environmental aspect of the current Management Plan of 2015 and contain determinations for the management of tourist land resources and their recreational-tourist holding capacity, taking into account the environmental fragility of the wetland and the future influx of visitors who can reach this destination as soon as equipment is put into value and sufficient and adequate reception infrastructures and promotion and commercialization actions, now practically non-existent.

In recent years, it is true that some public-use recreational-tourist and environmental education facilities have been enabled, highlighting the presence of a wetland visitor center, which is home to the Ecotourism Association of Wetland Naturalist Guides. La Segua (Asohumedal), with a history of more than a decade operating in the area together with the Association of Artisanal Fisheries Production La Segua (Asoprosegua). Both have received some support from the Provincial Government of Manabí and have the specific collaboration of the Mayor of Chone. But the truth is that the still embryonic offer of recreational-tourist activities in the area have hardly any connection and favorable synergies with the competent environmental administrations and their general strategies of action and it does not also have a support system at the promotional and commercialization of the Ecuadorian Ministry of Tourism suitable for this type of protected spaces.

This Ministry and other national and international entities and NGOs have implemented some public use equipment in the wetland

environment, but without involvement and inter-administrative collaboration of the Environment Ministry of Ecuador and without any effective and structured support for promotion and marketing, for what the initiatives have always been somewhat stagnant, punctual and uncoordinated, without even prior evaluation of impacts. In the aquatic landscape of the wetland, only since 2010 have some innovative initiatives been launched at the equipment level, but they have turned out to be insufficient to secure this protected area as the main nature destination of Manabí, despite its real potential to be. We refer, in this sense, to Los Caimanes trail, which includes a wooden dock over the waters and a tower that works as a viewpoint to enjoy one of the great attractions of the place: ornithology and birdlife (Figure 3). These works were financed by the United States Agency for International Development (USAID), in collaboration with the municipality of Chone, which provided machinery to fill the trail, and the Ministry of Tourism, which built the currently existing viewpoint. There is also a dock with canoes and life jackets, from where some activities are organized, but the offer of services in the surrounding areas is very limited, with small restaurants and food houses, but without any lodging establishment.



Figure 3. Wetland La Segua. Source: Self-reported information.

The natural resources of the wetland environment, its rich biodiversity and the unique values of the landscape, as well as the attractiveness of the observation of permanent and migratory birds, constitute an important base for the development of recreational-tourist activities, as well as socio-cultural resources such as traditional gastronomy, which has chame, tilapia and shrimp here as its main components. However, the absence of creative strategies at the level of product design, promotion and commercialization and creation of complementary tourist facilities and services is causing that the tourist activity hardly generates income and notable visitor flows in the area and

that the local population itself does not perceive, at least in the short term, this activity as a real instrument of socioeconomic development, unlike other activities such as agriculture, livestock and aquaculture, despite the greater environmental impacts that these generate in the territory and their traditional practices with low levels of sustainability (Mulero & Rivera, 2018).

Recreational-Tourism and sustainable development initiatives in natural spaces such as this one, as advised by various international organizations and NGOs experienced in case studies (Font, Cochrane, & Tapper, 2004; OMT, 2004; Van-der-Duim & Henkens, 2007), they must employ public-private participation techniques and planning tools - now non-existent in wetland management - that deal with possible conflicts of interest between private owners and other agents of economic activities and involve them in the development of sustainable and community tourism projects. The analysis of these techniques and tools is beyond the scope of this publication, as can be understood, but we can affirm that the key to planning, correctly and effectively, sustainable tourism development in wetlands is integrating technical aspects in the planning process (for example, resource and visitor management, natural resource management, and product development and marketing) with public participation by all interested groups.

Consequently, if the processes that have multiple actors and interest groups such as those we have observed in La Segua, seek to be balanced, legitimate and open, they must satisfy at least some of the following criteria (Steck, 1999; SNV, 2001):

1. The different actors must be involved from the beginning, must accept the process and its purpose and “must appropriate” the process of sustainable tourism development.

2. All the interested groups must be represented and the active participation of the representatives of each organization or group should be required (we have proposed a Board or Governing Council of the protected area at the consultative level of the managing administrations.

3. All stakeholders and groups should have equal access to information, resources and experience.

4. The way in which decisions are made and the degree of influence that the participants will have must be clear and transparent.

Conclusions

The socio-environmental characterization of the environment of the wetland La Segua has allowed us to identify various environmental problems such as the degradation and accelerated loss of habitats due to anthropogenic pressures, the tendency to desiccation and reduction of water bodies, the inappropriate use of surface water resources by expansion of the agricultural frontier, the construction of infrastructures lacking in all cases of prior environmental impact assessment, as well as

the introduction of exotic species with the consequent damage generated in endemic species, among other issues.

The overpopulation of aquaculture ponds for shrimp farming and large areas for livestock and various agricultural monocultures are obvious, without the local, provincial or state authorities proposing territorial planning strategies for proper comprehensive management of this environmental fragility space, to which is added the relative disinterest of local actors for their implementation insofar as they can limit or condition their traditional economic use, in addition to their minimal participation that is allowed in the actions developed by public administrations .

On the other hand, with this socio-environmental characterization and the profile of visitors analyzed, we can understand the complex relationship between the environmental management of the wetland, the reduction of poverty in the rural environment and the development of the potential of the area for sustainable tourism. It is evident that the opportunities to develop tourism should be viewed with caution, but it has considerable possibilities if the organizations and authorities involved in the wetland are capable of implementing and reaching consensus with the local population on realistic management plans that recognize this potential, although without overestimating its socio-economic benefits and underestimating its environmental and socio-cultural costs.

The approach that is made in this research work of the characterization of this protected natural space tries to guide its territorial and sectoral policies with an impact on nature tourism and its necessary compatibility with the conservation of the natural heritage that serves as

support and qualification. This is especially important in a protected area where the main motivation of the visitors is related to the enjoyment of the biodiversity, the landscape and the natural resources of the area. The perception of these visitors about the values and attractions of the wetland is generally positive, but it is not sufficiently compensated to achieve significant levels of satisfaction and an average stay of more than one day, since there is no offer of tourist services and of sufficient and minimally structured leisure. In fact, among the needs expressed by visitors, the existence of specialized tourist products, bilingual guides, and substantial improvements in the supporting infrastructure and tourist accommodation and catering services of a certain quality are highlighted. The predominance of proximity visitors and excursionists in the area and the low presence of generic international tourism, tells for itself of a very embryonic and deficient recreational-tourist development, with little socio-economic impact on the surrounding local communities; Hence, an important part of the local population does not perceive tourist activity as an engine of significant development, at least in the short and medium term.

This study has attempted to obtain some lessons learned that serve as orientation for the implementation of future ecotourism projects in the area and some other recreational-tourist activities that allow obtaining complementary income better than of traditional agricultural and fishing activities, assuming that this type of soft activities in nature related to tourism can be compatible with the conservation and environmental protection of the wetland and the biodiversity of its surroundings, as well as with the sustainability of the region and its local communities (scientific tourism, environmental education, research, entrepreneurship

ecotourism and community tourism). But for this there must be a well-defined tourism strategy in this protected area that must start from the training and professional training of local agents in the design, creation, promotion and marketing of recreational-tourism products that, in turn, follow environmental sustainability criteria in accordance with the guidelines of the 2015 Wetland Management Plan, which, in any case, should be developed and specified in more substantive regulatory and zoned ordinances and in a Master Plan for the Use and Integral Management of this area protected.

In short, we understand that it is necessary to review the role to be played by the competent Administrations in these protected areas, but at the same time with important recreational-tourist potentials such as the wetland La Segua. We have seen how the deficiencies are still considerable in the articulation of management and planning initiatives, the lack of adequate criteria for the organization of land uses and exploitation and the necessary renovation, reconceptualization and adaptation of the national tourism cases strategy on tourism development to the specific cases of these wetlands. It should not be forgotten, in this sense, that tourism is a very transversal activity that, especially in this case study, must be carried out in a protected area of great environmental fragility, which requires effective coordination between the different Administrations involved, and between them and all the agents and the local population involved in tourism development (Mulero & Rivera, 2018).

In order to propose, finally, actions that support the tourist development of La Segua, the results and lessons learned from other cases where some good practices have been applied where the establishment of community tourism projects within the framework of

sustainable and integral management is compatible to this space must be considered, looking for some solutions for the main needs of the population, with the provision of quality services for visitors and the rational and organized use of the natural and cultural resources of the territory (Idelhadj, Rivera-Mateos, & Rodríguez-García, 2012). The final proposal expressed in this research work has finally been structured into 4 projects and 11 strategies that seek an integral territorial organization of this protected area, its launch as a destination for community nature tourism and the strengthening of environmental and tourist public management, creating mechanisms for entailment and participation with local actors.

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