

Analysis of the Tourist's Operations for the Observation of the Humpback Whales (*Megaptera novaeangliae*) in the Canton Puerto López, Manabí – Ecuador

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Abstract-The observation of humpback whales (Megaptera novaeangliae) began in the canton Puerto López - Manabí Ecuador at the beginning of the 90s, the tourist activity on this resource grew and became attractive for job opportunities, that's why in this research it was analysed the compliance of legal norms for the whale watching and tourist management. Twenty tour companies have about 22 boats, which attend 72544 domestic and foreign tourists. This data was registered only during the whale watching season from June to September 2014. It was corroborated that the boats approach to the whales from 10 to 40 m distance and every time they try to go closer. This fact can cause the migration of whales in other areas away from Puerto López in a short or long term or it can affect their reproduction.

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I. INTRODUCTION

The present research was carried out with the permission of the National Park of Machalilla (Fig. 1), administered by the Ministry of Environment of Ecuador [1], it was evaluated by tour operations [2] and developed the observation for companies which deal with humpback whale watching "*Megaptera novaeangliae*" migrating every year from July to September [3], from the south to the coast of Ecuador for reproductive purposes, because whales have their offspring in warmer waters like here in Ecuador [4], and Machalilla is called "The Galapagos of the Poor", it is located in Canton Puerto López, and has its name thanks to the pre-Columbian settlements of the central coast of Ecuador.

The Puerto López canton is part of the Machalilla National Park, it is in the south of Manabí province (Ecuador), and it is the second most visited natural tourists' area. The control over whaling tourism in Ecuador is the responsibility of the Ministry of the Environment and Tourism. Inconveniences that have tourists, fishermen and settlers are related to the accidents during the process of whale watching, that's why tour operations should be audited independently and their practices should be complied with the regulations of whale watching [5].

It was possible to identify impacts caused by the tour operators on biophysical system, the impact like diving and whale watching [1]. These impacts were measured based on the presence of garbage and signs of degradation in populations and natural areas. On the other hand, there is a notorious lack of norms for the aquatic activities of diving, snorkeling, fishing and recreational tours, thus it is difficult to monitor and implement rules of tourist's operation.

The whale watching service is provided by local tour operators on the beaches of Cantón Puerto López; the National Park of Machalilla (NPM) is one of the most organized regarding to the management of tour operators, because the tourist activity is highly developed inside the Park.

The Machalilla park grants operating patents to tour operators, it grants sighting quotas per day, it's an activity that substantially diversifies the economy of the Canton. The authorities of the Ministry of Environment and Tourism are constantly making control to enforce the conservation of coastal marine resources [6], and to ensure the safety of tourists who hire the whale watching service in the country in the canton Puerto López.

In the canton Puerto López concentrated a great amount of different tourist attractions, which has encouraged that during the last ten years it was observed a remarkable increase in the tourist activity [7]. In Puerto López the tour operators offer the following tourist activities: boat trips to the Isla de la Plata, whale watching, diving and sport fishing.

In 1999, it was only five operators. Currently there are 32 tourist companies which are certified to carry the three-hour tour to the coast of Puerto López and visit the Isla de La Plata, where there are blue-footed boobies, frigates and other birds for which this place is a place of reproduction [8].

Biologist Pedro Jiménez, the administrative director and the researcher of the foundation to study Marine Mammals, agrees that whale watching began in Ecuador "about 20 years ago thanks to the contributions that were generated for the research of these cetaceans and during the time the interest to this activity has been constantly increasing." Jiménez also

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explains that despite the time (almost two decades) the sighting of the species is done without official regulations, even though this activity is considered as the main source of ecotourism in the country [6].

The objectives of this research are:

- Conducting census of tourists visiting the National Park of Machalilla for whale watching.
- Qualifying the application of tourist management standards in the process of whale watching in the National Park of Machalilla through census sheets.
- Defining if the tour operators from the National Park of Machalilla are complying with the services they offer and the correct application of the regulations for whale watching.

The method that was used in this research is to determine the amount of people who visit National Park of Machala; according to the statistics in 2014 the park was attended by 72544 visitors, it was identified the companies, which were contracted to give the service of whales observation in the National Park of Machalilla, moreover it was asked questions such as “What is the reason for visit?”, “what equipment there is in the boat?”, “Operation”, “Fulfillment of regulations” and “whales behavior”.

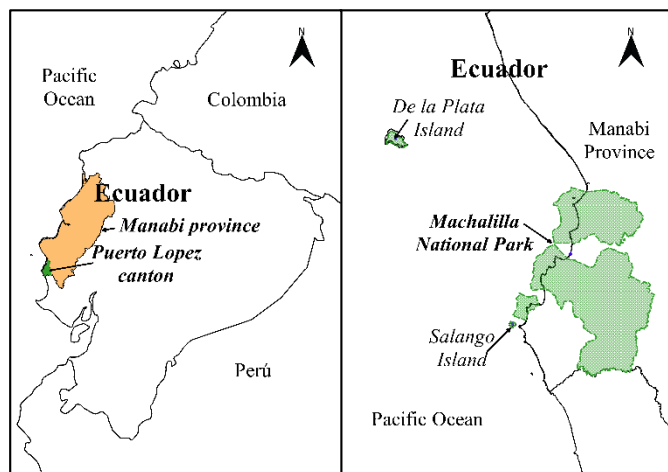


Fig. 1 Machalilla National Park located at Puerto Lopez canton of the Manabi province, Ecuador.

II. METHODOLOGY

This research tries to create a situational diagnosis that allows to have a clear idea of the existing opportunities (accommodation, places to have fun, etc.) for the tourism promotion, that in the future could be strengthened, as well as to visualize weaknesses that should be minimized, to increase tourism in the area [9].

In the National Park of Machalilla it was identified the natural attractions to prepare strategies for tourism promotion.

During the history canton Puerto López became one of the main tourist attractions in the country, it is a small fishing

village, but here whale watching has special characteristics, thanks to the participation of artisanal fishermen. For them it is an alternative job, nowadays it as a tourist attraction of national and international importance.

In this field, it was created the information survey about qualities of the infrastructure to promote sightseeing in the Canton Puerto López.

The purpose of the survey is to obtain some information about the reason of the visit; how to choose the tour company and the boat; what is the necessary boat equipment; how the service is organized; regulatory compliance and to know the details about whale’s behavior.

A. Statistics of the investigation

The information, presented below was collected by identifying 20 tour operators dedicated to whale watching and 22 vessels in the Puerto López Tourists’ Pier (Table I).

TABLE I
List of vessels conducting whale watching in canton Puerto López, National Park of Machalilla.

Boat name	Load capacity	Tourist agency	Legal representation
Cornelia	20	Adventuris	W. Muñoz
Nadumi	23	Arrecife Marino	D. Muñoz
Ballena de Plata	16	Ballenas De La Plata	S. Gonzalez
Cirialsur	22	Cirial Sur	G. Bedoya
Crismarino	21	Crismarino	N. Quijije
Joe Salango Tour	18	Joe Salango Tour	A. Muñoz
Adventure 1	25	La Plata Tour	J. Rivera
Isla Salango	17	Marea de la Plata	A. Medina
Isla Salango 1	23	Marea de la Plata	A. Medina
Mi Paco Y Yo	18	Mi Paco Y Yo	R. González
Millon Servi	21	Millon Servi	H. Vines
El Pirata	12	Operadora Jonafeli	E. Angulo
Orca Tour	21	Orca&Tours	W. Parrales
Lobo Marino	22	Orcados Aventuras	A. Pincay
Parcemar	18	Parcela Marina	S. Acuña
Polo Tour	22	Polo Tour	A. Parrales
Rosita	21	Rosita Tour	C. Parrales
Matarraya	25	Salango Tour	J. Pin
Pelicano 1	16	Salangome	R. Gutierrez
Salangome	16	Salangome	R. Gutierrez
Spondylus Tour	22	Spondylus Tour	J. Chilán
Wirey	18	Wirey CIA TLDA	M. Narvaez

B. Statistics of visits

In 2014 a total number of visitors was 72.544 (Table II), from them it was interviewed 245 people.

TABLE II
Tourists visited National Park of Machalilla in 2014.

Months	Nacional tourists	Foreign tourists
June	6.674	2.705
July	14.117	3.109
August	31.875	5.104
September	6.060	2.900
Sub total number of tourists	58.726	13.818
Total number of tourists	72.544	

Source: National Park of Machalilla.

The following data were used because it is the average of visitors whose objective is the observation of whales.

There are two schedules for sighting: in the morning from 10.00 a.m. to 01.00 p.m. and in the afternoon from 14.00 p.m. to 17.00 p.m., established by the National Park of Machalilla, the price is from 25 USD if you buy from the operator and from dealers on the street the price is 40 USD.

C. Sample size

The number of observations to include in the statistical sample were calculated as follow:

$$n = \frac{N \cdot Z_{\alpha}^2 \cdot p \cdot q}{e^2 \cdot (N-1) + Z_{\alpha}^2 \cdot p \cdot q}, \quad (1)$$

where

N = Total number of visitors is 72.544, the number of visitors for three months is 24.181.

Z_{α} = statistical confidence level of 95 %, it is 1.96

P = possibility of occurrence of an event.

$q = 1-p$; for the previously assigned p value, $q = 0.20$

e = error of estimation, usually it is 5 %, in this case $e = 0.05$

III. RESULTS

The 33 % of the tourists come to Puerto López to observe whales, 26 %- for other tourist's activities, and 18 % per vacation. 13 % of responders answered to know the place and 10 %- to go for a walk (Fig. 2 and 3) 29 % of the respondents answered that the selection of the tour operator was done on the street (sellers on the street), 22 % choose the tour in the office, and 19 % - in Internet.

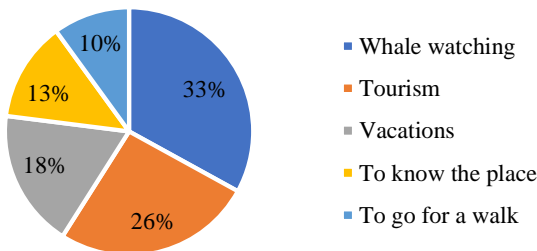


Fig. 2 Motivation to visit Puerto López.

Others bought the tour in the hotel where they stayed from 16 % to 14 % present bought it from some unknown operator.

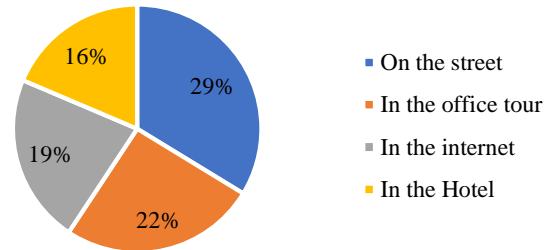


Fig. 3 Selection of the tour company.

As it is shown in Fig. 4 the percentage of the whale watching activity of tour operators in Puerto López is as following: Orcados 15 %; Adventures, 14 % Marea de la Plata, 12 % Ballenas de la Plata, 10 %, Wirey CIA LTDA y Orca & Tours, 9 % Spondylus Tour, Mi paco y yo 8 %. Less percentage have: La Plata Tour, 5 % Rosita Tour, Crismarino and Cirial Sur, 3 %.

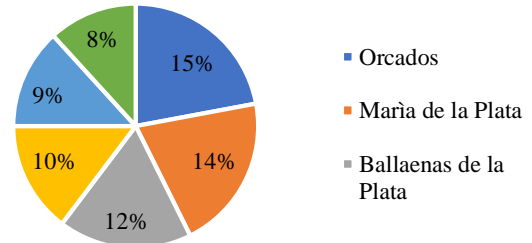


Fig. 4 The most requested tour companies in the Puerto López canton.

A. The equipment, contained on the boats and the procedures

The survey showed that all the boats have an orange flag, as well as the presence of first aid kit, also on each boat presents a guide in the uniform, with a captain and a sailor. Respondents answered that they were informed about the rules of whale watching, and they were satisfied with the snorkeling service.

Fig. 5 shows, that the number of passengers on a boat is varied depending upon its capacity, usually it's 25 people as a maximum and a 16 people as a minimum. 33 % of responders answered that on their boat there were 22 passengers, 20 % said that there were 18 passengers, 18 % answered that there were 20 passengers; 12 % - 16 passengers, 9 % - 21 passengers, and 8 % - 25 passengers.

The 89 % of the tourist answered that they did not know the rules for whale watching and 11 % answered that they knew them, Fig. 6.

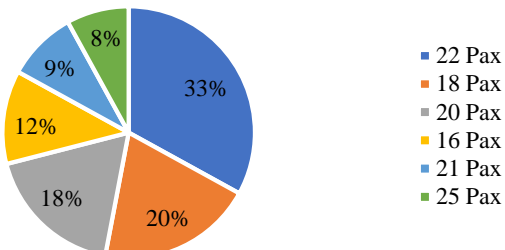
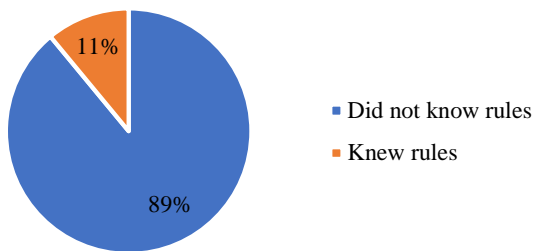


Fig. 5 Number of passengers on a boat.

Fig. 6 Knowledge of whale watching standards.

B. Implementations of norms and standards for whale watching

The tourists said that the boat sailing was simultaneous. 44 % of the respondents expressed that after 25 minutes of waiting they could observe a whale, 35 % of respondents answered that it happened after 20 minutes and 10 % - after 30 minutes Fig. 7.

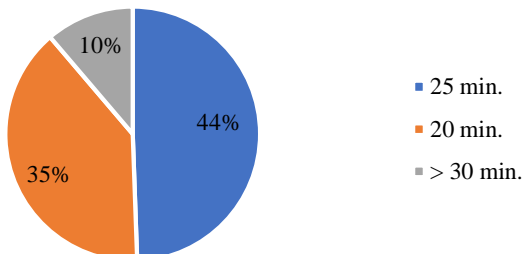


Fig. 7 Time observation to the first group of animals.

The respondents expressed that the approach to the whales was carried out laterally (67 %), behind (24 %) and very rarely in front (9 %) (Fig. 8).

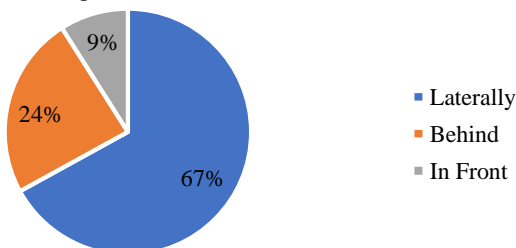


Fig. 8 Approach to the whales.

All the interviewees agreed that the boat slowed down when they saw whales, and that the distance between the whale

and the boat was 10 meters for 27 % of the interviewees, 23 % answered that the distance was 20 meters, 21 % answered that it was 15 meters, 18 % said, that the distance was 25 meters and 11 % responded 40 meters. (Fig. 9).

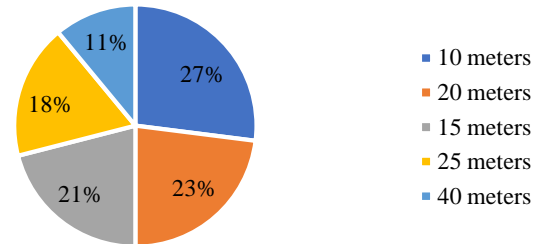


Fig. 9 Distance between the whale and the boat.

The number of vessels that observe whales at the same time varies from 4 to 6, (25 % and 36 % respectively) Fig. 10.

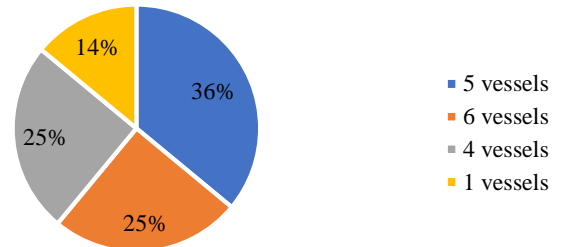


Fig. 10 Number of vessels near the group

From the observations made by the tourists it was found out that it is necessary to create groups of rescuers for those whales that are entangled in nets, at least during the high season; in Puerto López, tourists also said, that they didn't see any accidents between whales and fishing nets during the trip. In addition, they confirmed, that the operator, which offered them the service, respects the animal welfare, during the observation.

IV. CONCLUSIONS

In Ecuador, the National Park of Machalilla is the second place after Galapagos archipelago, where there are a lot of varieties for tourists, only in 2014 it was registered 72.544 national and foreign visitors, whose goal was whale watching

The vessels do not respect what is established in the regulations for whale watching, where set up, that the observation maneuvers must be minimum 400 m. away from a group of whales.

The employees of the National Park of Machalilla have a control over boats that depart from Puerto Lopez and according to their observations in the park there are more boats that originally sailed from Puerto López.

At the time of this interview tourists could not identify the origin of the boats, but 61 % of tourists responded, that usually there were from 5 to 6 boats at the same time.

Whale watching is regulated by the Ministry of the Environment together with the Ministry of Tourism and the Port Captancy which control it, they also have control over the requirements of the vessels and their crew.

The whale watching activity is also done informally outside the National Park in unsafety boats, for example, in towns of Machalilla and Salango.

V. RECOMMENDATIONS

Determine the increase of tourists in the canton Puerto López, since creation of this tourist alternative.

Presentation of a mandatory action plan, which shows the improvement of the service for tourists and greater care for nature. This plan deals with trainings for everybody working in tourist agencies, for crew, guides and office staff.

Continue to monitor the docks and reduce the congestion of boats at the time of whale watching.

Identify the availability of tourists, who arrive to Puerto López, to pay for whale watching.

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