Research Article

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Ecotourism in Times of Covid-19: A Systematic Review from the Five Continents on How This Activity is Being Carried Out and What Proposals They Have for the Near Future

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Abstract

The emergence of the covid-19 virus has prompted governments in several countries to close their international borders, close transportation routes and decree quarantines as a public health measure to prevent the spread of the virus among the population. Globally, essential businesses have continued to operate, while others such as tourism must wait. Ecotourism is a sustainable activity that attracts tourists concerned about the environment and local culture, which generates income for the locals. In order to have a broader picture of how the ecotourism sector is dealing with covid-19, a systematic review was conducted to identify Scopus records detailing such evidence disclosed from 2020 to the first quarter of 2021. As results, records were identified in the five continents, which agree that the pandemic has negatively affected the income of local people, who have been forced to close their businesses and even perform illegal acts; however, there are also encouraging proposals of economic reactivation plans presented by villagers, who expect the opening of this activity to operate keeping all the health safety measures decreed by their governments.

Keywords: Ecotourism, covid-19; systematic review; economic revitalization; sustainable communities; public health

1. Introduction

Tourism, regardless of its typology, is recognized as one of the economic activities that has the greatest impact on the income and quality of life of the local population (Brida, Matesanz Gómez, & Segarra, 2020; Steiger & Scott, 2020; Su, 2020; Tu & Zhang, 2020). Tourism activity has undergone significant and complex changes, it went from mass tourism to alternative tourism, in which respect for the environment is privileged while providing the tourist with new experiences full of contact with nature and the culture of the local population of the tourist destination (Ghoddousi, Pintassilgo, Mendes, Ghoddousi, & Sequeira, 2018; McCabe & Qiao, 2020).

In recent years, ecotourism has been appearing as a new form of much more sustainable tourism, in which elements related to rest, enjoyment and protection of nature and knowledge of the

culture, are generators of new sustainable models of local development, thus attracting tourists who are interested in caring for the environment and respect for the local population and thus having an impact on improving the quality of life and reducing poverty rates of the local population (Ashok, Tewari, Behera, & Majumdar, 2017; Bluwstein, 2017; Walter, Regmi, & Khanal, 2018).

As of February 2020, the declaration of pandemic originating from the covid-19 virus motivated rulers of almost every country in the world to close their borders, decreeing policies of social immobilization and the stagnation of non-essential activities, including tourism (Alrashed, Min-Allah, Saxena, Ali, & Mehmood, 2020; Uğur & Akbıyık, 2020). Tourism has been recognized as the most affected sector because of the covid-19 pandemic, being even predicted to be one of the last to resume its usual activities (Collins-Kreiner & Ram, 2020; Sigala, 2020).

In order to get a broader picture of how the ecotourism sector is dealing with covid-19, the authors posed the following question: What is the evidence for ecotourism in times of covid-19 reported in the Scopus database between 2020 and the first quarter of 2021? Specifically, the following questions were posed: In which geographic areas has evidence of ecotourism in covid-19 times been collected? Will there be concordance in the experiences collected in each of the five continents?

In order to answer these questions, a systematic review was considered relevant (Kitchenham, 2004).

2. Materials and Methods

In order to arrive at a concrete and exhaustive understanding of evidence and scientific disclosure related to ecotourism in the context of covid-19, we have seen fit to conduct a systematic review that allows us to identify, select and accumulate all relevant research material directly that allows us to provide solutions to the proposed research questions (Kitchenham et al., 2010).

We follow the methodology presented in the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) model detailed by (Liberati et al., 2009; Moher, Liberati, Tetzlaff, Altman, & PRISMA Group, 2009), which consists of seven steps (Kitchenham, 2004):

1. Specification of research questions.
2. Database search.
3. Inclusion/exclusion criteria.
4. Selection of studies.
5. Data analysis and extraction.
6. Summary and interpretation of results.
7. Review report presentation.

3. Database search

The systematic review sought to provide a solution to the research questions posed through the search of the study variables in databases, in order to obtain data with high credibility and integrity, it was deemed convenient to select only peer-reviewed scientific articles.

The database used for this systematic review was Scopus, since it is the database with the highest quality data as well as being the most popular (Chadegani et al., 2013).

Following the suggestions of (Petticrew & Roberts, 2006), it is convenient in systematic reviews to make use of terms equivalent to the variable or subject of study, which is why multiple coded searches were performed on the same study variables. Table 1 details the coding and content of the searches.

Table 1: Searches

Code	Search	Results
AC	"Ecotourism" and "covid"	26
AD	"Ecotourism" and "coronavirus"	10
AE	"Ecotourism" and "Sars-Cov-2"	1
BA	"Sustainable tourism" and "covid"	42
BC	"Sustainable tourism" and "coronavirus"	13
BD	"Sustainable tourism" and "Sars-Cov-2"	2

4. Inclusion/Exclusion Criteria

Specific criteria were made for the selection of the literature to be studied.

4.1 Inclusion criteria:

- The study should show cases of ecotourism application in covid-19 or post-covid-19 times, in fully identified locations.
- The study should be empirical (quantitative, qualitative or mixed).
- The study must be approached from a purely tourism perspective.
- The study must have been published in a peer-reviewed scientific article.
- The study must have been published as of the date on which a state of emergency was declared in the country of study.

4.2 Exclusion criteria:

- The study is not in English.
  - The study offers only the opinions of the authors.
  - The study is only available as an abstract.
  - The study cannot be downloaded from the Scopus web page.
- Finally, if duplicate results were obtained, only the first observation was analysed.

5. Database search

The results of the initial search yielded 94, with 74 scientific articles being accessible.

Applying filters in accordance with the inclusion and exclusion criteria, 30 publications were withdrawn, leaving only 44 articles. A more meticulous review regarding the fulfilment of the research objectives allowed the final selection of 13 articles. This process is detailed in Table 2 and shown graphically in Figure 1.

Table 2: Sources of data and stages of systematic review.

1 st phase: identification	2 nd phase: screening	3 rd phase: eligibility	4 th phase: included
94	74	44	13

Figure 1: PRISMA flow chart.

6. Results and discussion

Below are the results of the thorough systematic review carried out, providing a solution to the research problems formulated.

7. Selected Studies

The records included in this study number thirteen, which were the result of the process of applying the discriminant filters detailed in the exclusion criteria and the careful review of the remaining records in order to identify those that meet the research objectives, as detailed in Table 3.

Table 3: Records identified.

Number	Author	Title	Journal
1	(Zukhri & Rosalina, 2020)	Acceleration model for tourism industry recovery based on environment post	IOP Conference Series: Earth and Environmental Science
2	(Cooper & Alderman, 2020)	Cancelling March Madness exposes opportunities for a more sustainable sports tourism economy	Tourism Geographies
3	(Cherkaoui, Boukherouk, Lakhal, Aghzar, & El Youssfi, 2020)	Conservation Amid COVID-19 Pandemic: Ecotourism Collapse Threatens Communities and Wildlife in Morocco	E3S Web of Conferences
4	(Chen, Cheng, Edwards, & Xu, 2020)	COVID-19 pandemic exposes the vulnerability of the sharing economy: a novel accounting framework.	Journal of Sustainable Tourism
5	(Duxbury, Bakas, de Castro, & Silva, 2021)	Creative tourism development models towards sustainable and regenerative tourism	Sustainability
6	(Notohamijoyo, Abdul Hakim, Billah, & Setya Wiyata, 2020)	Integration of ecolabelling and ecotourism schemes: Case study of forest honey in Indonesia	E3S Web of Conferences
7	(Sheller, 2020)	Reconstructing tourism in the Caribbean: connecting pandemic recovery, climate resilience and sustainable tourism through mobility justice	Journal of Sustainable Tourism
8	(King, Iba, & Clifton, 2021)	Reimagining resilience: COVID-19 and marine tourism in Indonesia	Current Issues in Tourism
9	(Karagiannis & Metaxas, 2020)	Sustainable wine tourism development: Case studies from the Greek Region of Peloponnese	Sustainability
10	(Harsono, 2020)	The impact of Covid-19 on marine ecotourism in Tegal City	E3S Web of Conferences

Number	Author	Title	Journal
11	(Castanho et al., 2020)	The impact of SARS-CoV-2 outbreak on the accommodation selection of Azorean tourists. A study based on the assessment of the Azores population's attitudes	Sustainability
12	(Couto et al., 2020)	The impacts of COVID-19 crisis over the tourism expectations of the Azores Archipelago residents	Sustainability
13	(Van et al., 2020)	The role of human-machine interactive devices for post-Covid-19 innovative sustainable tourism in Ho Chi Minh City, Vietnam	Sustainability

8. Geographical Areas where Studies were Conducted

Evidence of ecotourism application in Covid-19 times was found in all five continents. The vast majority of cases identified came from Asia (five records) and Europe (four records), followed by the Americas (two records) and Africa and Oceania with one record each. The distribution of cases by country can be seen in Figure 2.

Figure 2: Fernández-Bedoya PRISMA flow chart.

A more in-depth analysis made it possible to determine the geographic area where ecotourism experiences in covid-19 or post covid-19 times were evidenced for each of the records identified, along with the country and continent (see Table 3).

Table 4: Searches.

Number	Continent	Country	Geographical Area
1	Asia	Indonesia	Bangka Belitung Islands
2	America	United States of Americas	Several locations
3	Africa	Morocco	Atlantic Moroccan Sahara to the Atlas Mountains
4	Oceania	Australia	Greater Sydney
5	Europe	Portugal	Several locations
6	Asia	Indonesia	Eastern Sumbawa
7	America	Countries around the Caribbean Island	Several locations
8	Asia	Indonesia	Wakatobi National Park
9	Europe	Greece	Peloponnese
10	Asia	Indonesia	Tegal City
11	Europe	Portugal	The Azores Archipelago
12	Europe	Portugal	The Azores Archipelago
13	Asia	Vietnam	Ho Chi Minh City

9. Reported Results from Asia

Four records were identified from Indonesia (Harsono, 2020; King et al., 2021; Notohamijoyo et al., 2020; Zuhri & Rosalina, 2020) and one from Vietnam (Van et al., 2020).

In Bangka Belitung Islands (Indonesia), the work of (Zuhri & Rosalina, 2020) was developed. Through exploratory level qualitative research, information was collected on how covid-19 has affected the environment-based tourism industry, concluding that the tourism industry must open up as soon as possible to give a major boost to the community's economy and resume regional economic growth. On the sanitary aspect, the results of interviews showed that the tourism providers recognize that the sanitary protocol must be taken into account in the new normality, to which they will comply with the provisions of the government in order not to spread contagions during their activity. Finally, the authors emphasize that the reactivation of ecotourism should be carried out through a strategy that takes into consideration public health and the economy of the community in equal weighting, in this way the economy will emerge, giving work to people working in travel agencies, tour guide agencies, hotels, transportation agencies, restaurants, artisans and other citizens in general.

(Notohamijoyo et al., 2020) in Eastern Sumbawa, the case of communities near forests where honey is collected for commercial purposes (gastronomic ecotourism) was identified, which in addition to problems such as illegal logging, expansion of non-native plantations and others, there is also a drop in the number of buyers of forest honey due to the social immobilization decreed by the government. The authors proposed the need to create a comprehensive plan that involves the state and local communities. Through the granting of ecolabels, these forests will be protected by the state, in addition to being included in maps and fairs alluding to ecotourism, boosting the economy of the area; on the other hand, the state could contribute to the attractiveness of the community by installing attractions such as parks, lodging centres, promotional booths and licensing many ecotourism-related businesses for their development focusing on visits to the forest and consumption of local honey. These actions can be taken, according to the authors, at the end of the pandemic, to protect individuals in the communities from the disease.

The article presented by (King et al., 2021) deals with recreational ecotourism. The authors conducted interviews with the population of Wakatobi National Park, a place where large revenues are obtained through ecotourism. Through a qualitative and exploratory research approach, they obtained data from local leaders, fishermen, national park officials, tour operators and other stakeholders dedicated to tourism in this geographic area. The results show that in the post-covid-19 scenario, alternative tourism policies will be required from the local inhabitants, which are sometimes contrary to the current ones (perceived by locals as neoliberal models imposed by foreign operators and government elites). The WTCC initiative was proposed in Wakatobi, which advocates a more community-based tourism managed by and for local communities.

(Harsono, 2020) conducted a study in the city of Tegal (Indonesia), where marine and coastal ecotourism is predominant. The researchers conducted an exploratory qualitative research approach, which through online interviews collected local people's opinions on how they have been affected by the government-imposed quarantine. Traders, tour guides, fishermen, restaurant and hotel owners have closed their businesses temporarily, and some even plan not to reopen as they anticipate that tourism in the region will not return to what it was with the implementation of sanitary measures to protect health. Although Tegal city was the only region with zero cases of covid-19 infection at the time of data collection, local citizens believe that since their main activity is related to ecotourism, they are affected economically by not receiving tourists, and sanitarily by having contact with foreign tourists.

Finally, in Ho Chi Minh City (Vietnam), researchers (Van et al., 2020) presented a research with quantitative approach and descriptive level, through the interpretation of data collected through questionnaires, it was concluded that there is acceptance by tourists for interaction with Human-Machine Interactive Devices in the tourism sector in a post-pandemic scenario. This is thanks to the

current familiarity Vietnamese citizens have with new technologies, so interacting with robots and artificial intelligence presents cultural gaps for most tourists, being a positive feature for the sustainability of tourism and the protection of people in the pandemic period.

10. Results Reported from Europe

In Portugal, the issue of creative tourism and its affectation by covid-19 was explored (Duxbury et al., 2021). The authors identified the scarce development of theories alluding to creative tourism and even more so in metropolitan cities, which led to few proposals to boost this economic activity during and after the quarantine decreed by the pandemic. After analysing the local proposals, it was identified that the most beneficial would be the proposal called CREATOUR, which includes local offers, networks of creative activities and other initiatives under a common theme, localized networks of creative tourism, small-scale festivals that include creative tourism activities and creative accommodations.

Also in Portugal, specifically in the Azores archipelago, scientific evidence of recreational ecotourism was identified and presented (Castanho et al., 2020). Both studies used questionnaires to measure the sentiment of the local population, concluding that consumption has decreased due to quarantines, which has reduced the income of most of the population. Production of local products has also been reduced because workers have been unable to travel to their workplaces due to road closures. As for tourists, 74% of them have been forced to postpone their tourism plans in 2020 due to the pandemic, so they are considering visiting the Azores archipelago once basic safety and public health conditions are restored.

Finally, a case of gastronomic ecotourism was identified in the Peloponnese, Greece (Karagiannis & Metaxas, 2020). The authors conducted a study with a mixed approach, where they documented that thanks to wine tourism routes, wineries have been able to subsist in the pandemic, however they have been reoriented to seek to improve their quality before mass production, due to the lower number of visitors they receive. It is important to note that Greece is a country that depends heavily on tourism (30% of the national GDP), so government policies such as compulsory social immobilization and border closures have strongly reduced the number of visitors received.

11. Results Reported from America

In the United States of America, the topic of sports tourism was explored with the research conducted by (Cooper & Alderman, 2020). Through a qualitative approach and exploratory level study, the authors reviewed literature associated with March Madness, which is a sporting event held in the month of March throughout the United States of America. The results conclude that despite the economic loss related to the cancellation of sporting events such as March Madness, the desire for tourism will not disappear, and local citizens should develop other ways to captivate domestic tourists, while respecting the security measures in place.

In the Caribbean Islands, research was conducted on recreational ecotourism (Sheller, 2020). The study consisted of a literature review and its interpretation in the current reality, being disclosed in a qualitative approach research format. The author concluded that mobility justice theory needs to be reconsidered and applied in the Caribbean Islands, as it could generate connections between transportation infrastructure, tourism practices, boundary processes and sustainability issues and regenerative economies that cut across regions and scales of governance.

12. Results Reported from Africa

In the Atlantic Moroccan Sahara to the Atlas Mountains (Morocco) a research concerning wildlife tourism was conducted by (Cherkaoui et al., 2020). The research explores a sensitive issue related to the lack of security by the government towards wildlife areas that should be protected. The

quarantine decreed by the government has led to a ban on tourism, which has had a strong impact on the income of local people, who, lacking the resources to survive, have been forced to engage in illegal activities such as poaching, illegal fishing and deforestation. The authors do not intend to justify these actions, but they recognize that the economic chain has been broken by the quarantine, and a solution is needed as soon as possible.

13. Results Reported from Oceania

In Australia, researchers (Chen et al., 2020) evidenced the vulnerability of the collaborative economy in Great Sydney. Through a desk review of income results, it was identified that the closure of borders and roads, in addition to the enclosure policies enacted to counteract covid-19 brought dire effects on the local economy, especially those who receive income from the collaborative economy. It was identified that comparing August 2020 with January 2020, citizens dedicated to renting spaces through the Airbnb application received about 90% less income, resulting in \$14 million less income for the community.

14. Conclusions

It was necessary to conduct a systematic review of the available literature between 2020 and the first quarter of 2021 related to how the ecotourism sector is dealing with covid-19, taking into consideration that this activity is considered as non-essential in the vast majority of countries.

The results of the search identified 13 records that responded to the questions posed by the authors, which were systematized and summarized for their knowledge and study.

It is concluded that the main negative effect of the closure of borders and access routes had a negative impact on the economy of those villages that receive large incomes from ecotourism.

In Indonesia, villagers require more support from the government and a policy of investment in the locality along with promotional campaigns that will allow them to achieve the long-awaited economic revival. In Vietnam, tourists arriving in Ho Chi Minh City have the proximity to technology as their main quality, so although it is true that they have postponed their travel plans, they agree to return to this city for ecotourism once this activity resumes, using robots as far as possible to avoid contact with other people.

In Portugal, a strong blow to the local economy was identified in 2020, however the locals have organized themselves and have presented proposals to improve their economic situation as soon as the conditions to attend tourists are in place. In Greece, the wineries included in the gastronomic ecotourism routes have seen the number of tourists reduced, so they have decided to improve the quality of their products (and thus the price) in order to increase their income per visitor.

In the United States of America, a sporting event used to be held in March that mobilized large numbers of tourists. Due to the immobility policies, this event has reduced its grandeur, gathering only a few local tourists. A similar situation occurred in the Caribbean Islands, where border closure policies and transport bans have disconnected many local providers of ecotourism experiences.

In Morocco, the pandemic has motivated local people to engage in illegal activities that threaten the environment; while in Australia, tourist room and apartment lodgers have seen their income reduced by 90%.

There is no doubt that ecotourism has been hard hit by the pandemic, a correct implementation of public policies where promotion and investment by the state is evidenced will be key to lift this economic sector and thus improve the income and quality of life of the population dedicated to this activity. On the other hand, it is important to emphasize that in the new normality, policies such as social distancing, the use of masks, the application of alcohol and others should be implemented in the regular protocols of attention to tourists, in order to protect them and the local population. Examples of the use of robots and artificial intelligence can be implemented in localities that have people trained in their use, and that usually receive tourists who are familiar with new technologies.

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