MAPPING THE PAST TO GUIDE THE FUTURE: BIBLIOMETRIC INSIGHTS INTO LAST CHANCE TOURISM

Kartal Doğukan Çiki*, & Haluk Tanriverdi**

Abstract

The purpose of this study is to conduct a thorough bibliometric analysis of last chance tourism literature within the Web of Science (WoS) database, to identify research trends, key contributors, and significant publications to inform and guide future research efforts in this emerging field. Within this context, the research employed a bibliometric analysis approach and utilized bibliometric mapping techniques. The study established specific inclusion criteria to select articles aligned with the research objective. Subsequently, the scholars analyzed various parameters such as the most productive journals, popular keywords, annual publication trends, influential authors, highly cited studies, contributing organizations, and countries of significance. To fulfill the research objective, VOSviewer software was employed as a tool for analysis and visualization. The analysis yielded a total of 45 articles, starting from the first publication in WoS in 2010 and spanning until October 2022. It was seen that the three most cited articles were prepared by considering the polar region. It has been determined that the subject has gained momentum especially since 2019. Canada was at the top of the articles published on last chance tourism. Europe is the continent that contributes the most to last chance tourism with 18 different countries. Furthermore, the analysis revealed that the University of Ottawa stood out as the most productive institution, and the Journal of Sustainable Tourism emerged as the most prominent publishing venue.

Keywords: Last Chance Tourism; LCT Studies; Bibliometric Analysis; WoS Database; VOSviewer.

MAPEAR O PASSADO PARA ORIENTAR O FUTURO: UMA PERSPECTIVA BIBLIOMÉTRICA DO TURISMO DE ÚLTIMA OPORTUNIDADE

Resumo

O objetivo deste estudo é realizar uma análise bibliométrica exaustiva da literatura sobre turismo de última oportunidade na base de dados Web of Science (WoS), com o objetivo de identificar tendências de investigação, principais contribuintes e publicações significativas para informar e orientar futuros esforços de investigação neste domínio emergente. Neste contexto, a pesquisa empregou uma abordagem de análise bibliométrica e utilizou técnicas de mapeamento bibliométrico. O estudo estabeleceu critérios de inclusão específicos para selecionar artigos alinhados com o objetivo da pesquisa. Em seguida, os pesquisadores analisaram vários parâmetros, como os periódicos mais produtivos, palavras-chave populares, tendências de publicação anual, autores influentes, estudos altamente citados, organizações contribuintes e países importantes. Para cumprir o objetivo da investigação, foi utilizado o software VOSviewer como ferramenta de análise e visualização. A análise produziu um total de 45 artigos, começando com a primeira publicação no WoS em 2010 e estendendo-se até outubro de 2022. Verificou-se que os três artigos mais citados foram elaborados considerando a região polar. Foi determinado que o assunto ganhou impulso especialmente a partir de 2019. O Canadá ficou no topo dos artigos publicados sobre turismo de última oportunidade. A Europa é o continente que mais contribui para o turismo de última oportunidade, com 18 países diferentes. Além disso, a análise revelou que a Universidade de Ottawa se destacou como a instituição mais produtiva e o Journal of Sustainable Tourism emergiu como o local de publicação mais proeminente.

Palavras-chave: Last Chance Tourism; Estudos LCT; Análise Bibliométrica; Base de dados WoS; VOSviewer.

MAPEAR EL PASADO PARA ORIENTAR EL FUTURO: UNA VISIÓN BIBLIOMÉTRICA SOBRE EL TURISMO DE ÚLTIMA OPORTUNIDAD

Resumen

El objetivo de este estudio es llevar a cabo un análisis bibliométrico exhaustivo de la literatura sobre turismo de última oportunidad en la base de datos Web of Science (WoS), con el fin de identificar tendencias de investigación, colaboradores clave y publicaciones significativas para informar y orientar futuros esfuerzos de investigación en este campo emergente. En este contexto, la investigación empleó un enfoque de análisis bibliométrico y utilizó técnicas de mapeo bibliométrico. El estudio estableció criterios de inclusión específicos para seleccionar artículos alineados con el objetivo de la investigación. Posteriormente, se analizaron diversos parámetros, como las revistas más productivas, las palabras clave más populares, las tendencias anuales de publicación, los autores influyentes, los estudios más citados, las organizaciones contribuyentes y los países de importancia. Para cumplir el objetivo de la investigación, se empleó el software VOSviewer como herramienta de análisis y visualización. El análisis arrojó un total de 45 artículos, desde la primera publicación en WoS en 2010 hasta octubre de 2022. Se observó que los tres artículos más citados se elaboraron considerando la región polar. Se ha determinado que el tema ha cobrado impulso especialmente desde 2019. Canadá se situó a la cabeza de los artículos publicados sobre turismo de última oportunidad. Europa es el continente que más contribuye al turismo de última oportunidad con 18 países diferentes. Además, el análisis reveló que la Universidad de Ottawa destacaba como la institución más productiva, y el Journal of Sustainable Tourism emergía como el lugar de publicación más destacado.

Mots clés: Last Chance Tourism; LCT Studies; Bibliometric Analysis; WoS Database; VOSviewer.

_____

_____

* Full postal address: Istanbul Gelisim University, Faculty of Economics, Administrative and Social Sciences, Department of Tourism Guidance, Istanbul, Turkey. CV: Orcid ID: 0000-0002-8307-8561. [kdciki@gelisim.edu.tr]
** Full postal address: Istanbul University Faculty of Economics, Department of Tourism Management, 34126, Istanbul, Turkey. CV: Orcid ID: 0000-0002-2716-0405 [haluktanriverd@istanbul.edu.tr]

1 INTRODUCTION

The tourism industry, characterized by its labor-intensive nature, is susceptible to a myriad of global challenges that can significantly impact its stability and growth. Over the past few decades, numerous tourist attractions - encompassing natural wonders and cultural heritage sites - have faced the threat of extinction or have already disappeared due to various environmental and anthropogenic factors (Fonseca et al., 2022; Gössling & Peeters, 2015). This phenomenon has catalyzed the emergence of a new trend in tourism known as "last chance tourism" (LCT), where travelers are motivated by the desire to visit these vanishing destinations before they are irrevocably altered or lost (Schweinsberg et al., 2020).

Recognizing this trend, several tour operators and travel agencies have begun marketing these at-risk destinations, urging tourists to experience them while they still can (Miller et al., 2020). The theoretical foundation of last chance tourism is deeply rooted in the urgency and emotional appeal of witnessing threatened landscapes and species (Lemelin et al., 2010). This form of tourism is driven by a complex interplay of factors, including climate change, environmental degradation, and cultural changes (Amazonas et al., 2021; Kaján & Saarinen, 2013).

The intensity of the increasing interest in the studies is spread over various subjects, especially the protected areas and the North Pole (Cakar & Seyitoglu, 2021). There are interesting studies linking last chance tourism even to museums (Finastiian et al., 2018), but despite the growing interest, there is a critical need to further examine the impacts of this trend on both the environment and local communities.

However, the existing literature often fails to address how these motivations translate into practical conservation efforts or contribute to the degradation of these areas. Previous studies have predominantly focused on descriptive analyses, leaving a gap in understanding the broader socio-economic and environmental implications.

This study aims to fill this gap by employing a bibliometric analysis to systematically review and critically assess the existing body of work on last chance tourism. By systematically analyzing the existing body of research, we can identify trends, gaps, and opportunities for future studies, thereby contributing to the theoretical and practical development of this field.

In addition to examining the current state of last chance tourism research, this study also seeks to differentiate itself from previous bibliometric analyses by employing advanced bibliometric mapping techniques. Utilizing VOSviewer software, this research not only identifies key themes and influential works within the last chance tourism literature but also visualizes the relationships between different research topics and their evolution over time. This approach allows for a more comprehensive and dynamic understanding of last chance tourism, highlighting both the strengths and weaknesses of the existing literatüre (Ciascai, et al., 2022).

2 LITERATURE REVIEW

Last chance tourism, as defined by Smith (2012), refers to travel experiences driven by the desire to witness tourist attractions in their natural and original state, which face the threat of disappearance due to factors like climate change (Vila et al., 2016). Alternative terms used to describe this tourism market include "climate change tourism", "disappearing tourism", "vanishing tourism", "doom tourism", "dying tourism", "endangered tourism", or "see it before it's gone" tourism (Dawson, et al., 2011; Lemelin et al., 2010; Ruiz, 2008; Viken, 2006).

The concept of last chance tourism emerged in the 1990s, and its prominence has been reinforced by media and travel journals featuring content like "25 places you must visit before they disappear forever" (Bunakov et al., 2018). Consequently, tourists perceive a sense of urgency to visit these destinations (Hall et al., 2013).

The literature on last chance tourism reflects a growing interest in this field of study (Hoogendoorn, 2021). A notable focus within the studies on last chance tourism pertains to tourism movements directed toward the polar regions, as evidenced by works from Dawson et al. (2010, 2011), Eijgelaar et al. (2010), Groulx et al. (2016), Lemelin et al. (2010), Miller et al. (2020), Palma et al. (2019), and Stewart et al. (2012).

Piggott-McKellar and McNamara (2016) highlight that the polar regions are highly conducive for last chance tourism, justifying the significant attention devoted to this topic. The allure of witnessing polar bears emerges as a prominent motivation for travelers visiting the polar regions, as emphasized by Dawson et al. (2010) in the context of Arctic tourism.

It is possible to come across studies on themes such as cruise tourism skiing, wildlife watching, bird watching, nature parks and protected areas, emission measurements and reef visits as well as studies on the Arctic regions (Dawson et al., 2010; Eijgelaar et al., 2010; Lemieux et al., 2018; Newsome & Rodger, 2012; Piggott-McKellar & McNamara, 2016; Steiger, et al., 2012), regarding the concept of last chance tourism, which is based on the desire to experience a lost tourist attraction (disappearing land or sea landscapes, extinct species, etc.) one last time before it disappears (Finastiian et al., 2019; Wu et al., 2020).

With the increasing number of destinations facing the risk of disappearance, traveling to these places has gained popularity among tourists (Dawson et al., 2010). Similarly, researchers are also drawn to this phenomenon, leading to a gradual expansion in the scope of studies on last chance tourism. This research aims to assess the current state of the literature and sheds light on the multifaceted discussions surrounding last chance tourism, offering valuable insights for researchers to identify existing gaps.

There are still many gaps in the last chance tourism literature that need to be addressed. For instance, last chance tourism is not limited to polar regions and specific species. However, existing research is often descriptive and fails to address the broader socio-economic and environmental impacts of last chance tourism. More empirical research is needed in this area. Specifically, studies examining the long-term impacts of last chance tourism and how it can be balanced with sustainable tourism practices are required.

On the other hand, the attraction of tourists to endangered areas can provide economic benefits for their conservation, while at the same time accelerating

environmental destruction (Whitelaw et al., 2014). This paradox poses a major challenge for the sustainable management of tourism (Woosnam et al., 2021). Furthermore, the impacts of last chance tourism on local communities is also an important issue. While local communities may benefit economically from this type of tourism, they may also experience negative impacts on their cultural and social structures (D'Souza et al., 2021).

Therefore, managing last chance tourism in a sustainable and ethical manner is critical for both the protection of destinations and the economic benefit of local communities (Newsome & Rodger, 2012).

3 METHODOLOGY

In this research, the aim is to conduct a comprehensive bibliometric analysis of the existing literature on last chance tourism. Pritchard (1969, p. 349) defined bibliometric analysis as "the application of mathematics and statistical methods to books and other media of communication".

Bibliometric analysis is economical, non-invasive, clear and easy to implement, allowing researchers to see current studies and make quick comparisons of research (Abramo et al., 2009). Therefore, thanks to bibliometric analysis, both the current situation is revealed and it guides future studies (Yilmaz, 2019).

Table 1. Research Criteria.

| Databases	Web of Science
Keywords	Last chance tourism, last chance tourist
Search within	Topic (Title, Abstract and Keywords)
Document type	Article
Language	English
Research area	Tourism

Source: Compiled by authors.

The table describing how the articles included in the analysis of the research were selected is given above. (see table1). Research data were collected from the WOS database in October 2022 and the number of articles obtained in this collection was 82. The inclusion criterion considered at this stage was that the study type was article and keywords included in the title, abstract or keywords. Among the reasons why the WOS database is preferred is that it contains high-impact journals and that it is one of the databases that researchers are in demand.

In the second phase, the study focused on English-language articles, eliminating duplicate publications, which resulted in a final set of 54 studies. Subsequently, the remaining studies were assessed for their relevance to the research scope, resulting in a final selection of 45 articles. The collected data were then subjected to analysis using VOSviewer software. The bibliometric analysis employed two primary techniques, evaluation methods and relational methods, as described by Batista Sánchez et al. (2022).

To enhance the comprehension of bibliometric analyses and facilitate the generation of visual maps, researchers employ software tools like VOSviewer (Van Eck & Waltman, 2010). Such software finds application in various fields, including tourism (Ciki et al., 2023).

In this study, the researchers examined several aspects, including "the most productive journals," "the most popular keywords in papers," "the annual number of publications," "the most productive authors," "the most cited studies," "the most contributing organizations," and "the most contributing countries" (Ciki & Tanriverdi, 2023). Figure 1 illustrates the data collection process employed in the research.

Figure 1. Research Process.
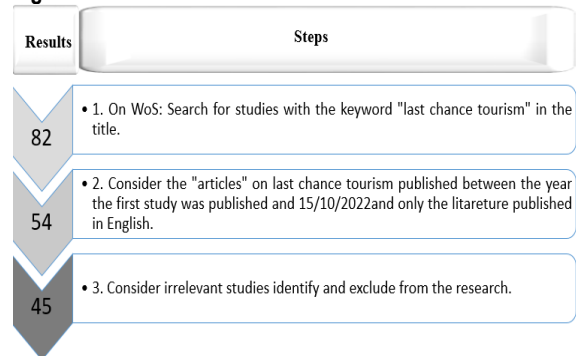
Source: Compiled by authors.

4 RESULTS ANALYSIS

4.1 Annual publication statistics

The distribution of studies on last chance tourism by years is depicted in Figure 2. The analysis revealed that the earliest publications on last chance tourism date back to 2010. Since then, the trend of these studies has shown fluctuations, but in the last four years, they have gained significant momentum. There were no publications in 2011 and 2015, while the highest number of publications was recorded in 2020 (WoS, 2022).

Figure 2. The Annual Number of Publications.
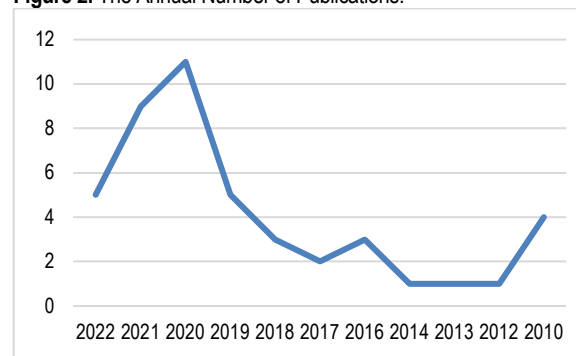
Source: Compiled by the authors using Vosviewer.

4.2 The Most Cited Publications in WoS

The studies on last chance tourism published in the WoS database are presented in Table 2, covering the period from 2010 to 2022. The table includes the top 10 most cited studies, starting from the highest citation count. Upon reviewing the articles related to last chance tourism, it was observed that the most cited study (cited 157 times) is titled "Antarctic cruise tourism: the paradoxes of ambassadorship, last chance tourism, and greenhouse gas emissions" (WoS, 2022).

Table 2. The Most Cited Publications.

Author(s)	Title	Journals / Books	Citation (WoS)	Method	Type
1- Eijgelaar, E., Thaper, C., and Peeters, P. (2010)	Antarctic cruise tourism: the paradoxes of ambassadorship, olast chance tourismo and greenhouse gas emissions.	Journal of Sustainable Tourism	157	Quantitative	Article
2-Lemelin, H., Dawson, J., Stewart, E J., Maher, P., and Lueck, M. (2016)	Last-chance tourism: the boom, doom, and gloom of visiting vanishing destinations.	Current Issues in Tourism	155	Both qualitative and quantitative	Article
3-Dawson, J., Stewart, E. J., Lemelin, H., Scott, D. (2010)	The carbon cost of polar bear viewing tourism in Churchill, Canada	Journal of Sustainable Tourism	119	Both qualitative and quantitative	Article
4-Piggott-McKellar, A.E., and McNamara, K. E. (2016)	Last chance tourism and the Great Barrier Reef	Journal of Sustainable Tourism	57	Quantitative	Article
5-Stewart, E., J, Wilson, J., Espiner, S., Purdie, H., Lemieux, C., and Dawson, J. (2016)	Implications of climate change for glacier tourism	Tourism Geographies	41	Both qualitative and quantitative	Article
6-Prideaux, B., and McNamara, K.E. (2012)	Turning a Global Crisis into a Tourism Opportunity: the Perspective from Tuvalu	International Journal of Tourism Research	38	*Qualitative*	Article
7- Groulx, M., Lemieux, C., Dawson, J., Stewart, E., & Yudina, O. (2016)	Motivations to engage in last chance tourism in the Churchill Wildlife Management Area and Wapusk National Park: the role of place identity and nature relatedness	Journal of Sustainable Tourism	32	Quantitative	Article
8-Palma, D., Varnajot, A., Dalen, K., Başaran, IK, Brunette, C., Bystrowska, M., … Ronge, TA (2019)	Cruising the marginal ice zone: climate change and Arctic tourism	Polar Geography	27	*Conceptual*	Article
9- Groulx, M, Boluk, K., Lemieux, CJ ve Dawson, J. (2019)	Place stewardship among last chance tourists	Annals Of Tourism Research	23	Quantitative	Article
10-Lemieux, CJ, Groulx, M., Halpenny, E., Stager, H., Dawson, J., Stewart, EJ ve Hvenegaard, GT (2018)	"The End of the Ice Age?": Disappearing World Heritage and the Climate Change Communication Imperative	Environmental Communication-A Journal Of Nature And Culture	23	Quantitative	Article

Source: Compiled by the authors using Vosviewer.

According to Eijgelaar et al. (2010), the allure of destinations facing the impacts of climate change continues to draw an increasing number of tourists who seek to experience these places before their disappearance, thus highlighting the consequential rise in greenhouse gas emissions. Eijgelaar et al. (2010) conducted a survey on the participants of the Arctic and Antarctic cruises in order to evaluate the awareness and attitudes of polar cruise tourists on climate change.

Findings from the study revealed that a significant portion, one out of every three respondents, selected the option "See Antarctica before you go" due to the perception of it being a last opportunity, highlighting its significance as a motivating factor to visit the destination. Moreover, the research findings do not suggest that these trips contribute to an enhanced sense of environmental awareness, attitude changes, or the promotion of more sustainable travel choices in the future.

The paper titled "Last-chance tourism: the boom, doom, and gloom of visiting vanishing destinations" by Lemelin et al. (155 citations) is the second most cited in the field. The objective of this study is to elucidate the promotion of last chance tourism through various tourism marketing strategies, with a particular focus on Arctic regions. In this regard, the study is supported by the analysis of three separate studies conducted in a destination known for polar bear tracking (Kruzhalin et al., 2022).

As part of the survey and polar bear observation, on-site interviews were conducted with 18 individuals engaged in polar bear watching. The research findings indicate that tourists are increasingly motivated to travel to Churchill in order to witness polar bears before their disappearance. Furthermore, a substantial portion of the participants hold the opinion, as revealed by the results, that human activities cause to climate change and polar bears will bear the consequences.

Ranked as the third most cited study, the research conducted by Dawson et al. (2010) titled 'The carbon cost of polar bear viewing tourism in Churchill, Canada' (119 citations) has investigated the carbon footprint of polar bear tourism and the perceptions of tourists towards climate change through surveys and in-depth interviews. The study aims to estimate the greenhouse gas emissions associated with polar bear tourism. The findings indicate that the majority of tourists acknowledge human contributions to climate change; however, the research also highlights a noticeable knowledge gap regarding the development and consequences of this process.

In their study, Piggott-McKellar and McNamara (2016) conducted research on the motivations of tourists to visit the Great Barrier Reef, which is the largest living coral reef, within the framework of last chance tourism. The research findings revealed that a significant majority, specifically 69.6% of the participants, displayed high levels of motivation to witness the Great Barrier Reef before potential irreversible changes occur.

Cakar and Seyitoglu (2021) conducted a parallel study focusing on Hasankeyf as a site for last chance tourism, aiming to explore the motivations and experiences of tourists visiting the area. The research findings indicated a positive correlation between the level of last chance motivation among tourists and the enhancement of their overall memorable tourism experiences.

The research conducted by Stewart et al. (2016) focused on investigating the perspectives of stakeholders and visitors regarding climate change and resource degradation in the Fox and Franz Josef Glaciers, located in Westland Tai Poutini National Park. The study findings suggest that visitors to the glacier region have the opportunity, to some extent, to witness the glaciers and these natural features before their complete disappearance, as revealed through the integration of social and physical components in this research.

4.3 The most productive authors

Figure 3 displays the researchers who have contributed the most to the field of last chance tourism based on their publication records in the WoS database. Dawson, J. and Stewart, E. J. emerge as the most prolific authors, each having published five articles. Following closely behind are Groulx, M., Salim, E., Ravanel, L., Lemieux, C., and Hehir, C., with four articles each (WoS, 2022).

Figure 3. The Most Prolific Researchers.
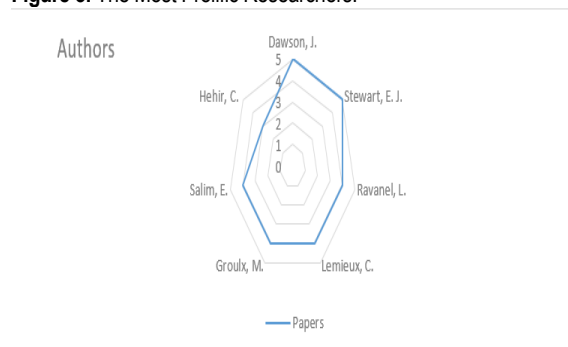
Source: Prepared by the authors.

According to the Web of Science (WoS) database, Dawson Jackie and Stewart Emma J. are recognized as the most prolific authors in the field of last chance tourism. Dawson, J. has an h-index of 19 and has published five articles on this topic, with publication years spanning 2010, 2018, 2019, and 2021. Dawson has 38 publications in WoS and his most cited work is "Last-chance tourism: the boom, doom, and gloom of visiting vanishing destinations", which ranks second in Table 2 with 155 citations. In addition, the total number of citations of 5 publications on last chance tourism is 327 (WoS, 2022).

Another researcher who has made significant contributions to the field of last chance tourism is Stewart, E. J. Stewart has published a total of five studies, with three published in 2017 and two in 2018. These studies have collectively received 87 citations, indicating their impact in the field. Among Stewart's 22 publications in the World of Science (WoS) database, her most cited paper focuses on the carbon cost of polar bear viewing tourism in Churchill, Canada. This particular study ranks as the third most cited article among all the publications on last chance tourism in WoS (WoS, 2022).

There are 4 authors each with four articles on last chance tourism in WoS: Ravanel Ludovic (h-index = 21), Lemieux Christopher (h-index = 21), Groulx Mark (h-index = 12), and Salim Emmanuel (h-index). -index = 4). One of these four authors, Ravanel, L.'s 4 publications on last chance tourism has a total of 101 citations. Ravanel has 77 articles published in journals scanned in WoS. The author's most cited paper is "Climate influence on rockfalls in high-Alpine steep rockwalls: The north side of the Aiguilles de Chamonix (Mont Blanc massif) since the end of the 'Little Ice Age'". The author's papers were published in 2020, 2021 and 2022 (2) (WoS, 2022).

Lemieux C.'s articles on last chance tourism were published in 2016 (2), 2018, 2019. The combined number of citations received by these four articles authored by the researcher amounts to 119. Among the 37 publications attributed to the author in the World of Science (WoS) database, the most cited article is titled "Weather and Climate Information for Tourism," which was published in 2010.

Another author, Groulx, M., who also has four articles to their credit, has garnered a total of 84 citations for their contributions. Additionally, this author has 22 articles listed in WoS, with the most cited article being "A Role for Nature-Based Citizen Science in Promoting Individual and Collective Climate Change Action? A Systematic Review of Learning Outcomes." The author's publications on last chance tourism span the years 2016, 2018, 2019, and 2021 (WoS, 2022).

Similarly to the other three authors, Salim, E. has contributed four studies on last chance tourism in the WoS database, and these studies collectively garnered 24 citations. Among the author's 12 studies listed in WoS, the most cited work is titled "Last chance to see the ice: visitor motivation at Montenvers-Mer-de-Glace, French Alps," which was published in 2020. Furthermore, Salim, E. has published articles on last chance tourism in the years 2020, 2021, and 2022 (twice) (WoS, 2022).

The total number of articles by Hehir, C. (h-index = 2) on last chance tourism is 3 and these studies have been cited 103 times in total. The author's most cited paper, published in 2020, is titled "Individuals' intentions to engage in last chance tourism: applying the value-belief-norm model." In addition to the aforementioned study, Hehir has published articles on last chance tourism in 2020 and 2022 (twice) among their five publications listed in the WoS database (WoS, 2022). Figure 4 showcases the interconnections among the most prolific authors, visualized using Vosviewer.

**Figure 4.** Link of most prolific authors (link of all authors).
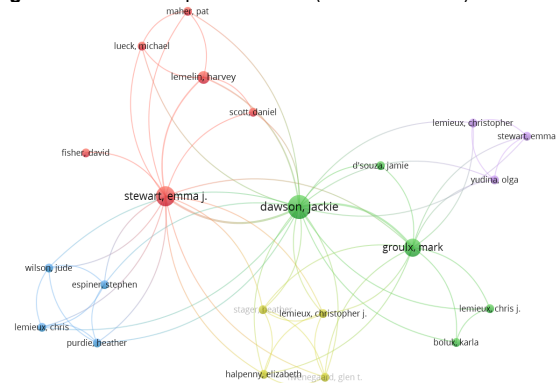
Source: Compiled by the authors using Vosviewer.

4.4 The Most Contributing Institutions

Figure 5 provides a visual representation of the distribution of last chance tourism articles published in the journals indexed in the WoS database, categorized by institutions. Notably, the University of Ottawa, located in Canada, emerges as the most productive university in this field. Ottawa University is associated with a total of six studies, with the earliest article dating back to 2010. The University of Ottawa has an extensive scholarly record, with a cumulative total of 103,474 publications in the WoS database from 2000 to October 2022.

It is worth noting that prior to 1999, the university's publication count stood at 26,813, signifying a significant increase in research output, particularly after 2000. In terms of productivity, the university reached its peak in 2021. Analyzing the university's publications between 2000 and 2021 based on WoS categories, it is observed that 837 publications fall under the domain of hospitality, leisure, and sport tourism, emphasizing the university's focus on tourism-related topics (WoS, 2022).

Figure 5. The Most Contributing Institutions.
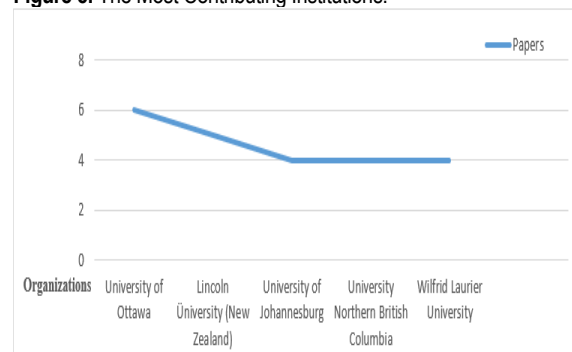
Source: Prepared by the authors.

Lincoln University stands out as a highly productive institution in the field of last-chance tourism, having made

significant contributions with five published articles since 2010. One of these studies, published in 2010, achieved a notable distinction by ranking third in terms of citation count (refer to Table 2). Prior to 1999, the university had already contributed to a total of 1,478 studies.

Over the period spanning from 2000 to October 2022, Lincoln University, based in New Zealand, has been involved in a remarkable 8,197 studies indexed in WoS. The year 2021 was particularly fruitful for the university, with 496 publications, while 176 of these studies (published between 2000 and October 2022) focused on hospitality, leisure, and sport tourism, reflecting the university's emphasis on tourism-related topics (WoS, 2022).

The University of Johannesburg has made notable contributions to the field of last chance tourism through the publication of five articles in WoS. All of these studies have been published within the recent three-year period, specifically between 2020 and 2022. Situated in Johannesburg, South Africa, the University of Johannesburg is a renowned public institution. Analysis of the university's WoS statistics between 2000 and October 2022 reveals a total of 27,958 publications.

Prior to 2000, the university made significant contributions to diverse fields with 2,064 publications in WoS. The lowest productivity in WoS was 2003 (with 132 studies). The most productive year is 2021 (with 3431 studies). Within the timeframe of 2000 to 2022, the University of Johannesburg has amassed a total of 798 publications in the field of hospitality, leisure, and sport tourism (WoS, 2022).

The University of Northern British Columbia has stood out as a highly productive institution in the field of last chance tourism, publishing a total of four papers. The first of these four studies was published in 2010, while the others were published in 2018, 2019, and 2021, respectively. Between 2000 and October 2022, the University of Northern British Columbia made significant contributions to various disciplines, with a total of 4,935 studies indexed in WoS.

Prior to 1999, the university had contributed 417 studies to the academic landscape. The year 2021 stands out as the University of Northern British Columbia's most productive year in terms of WoS publications, with a remarkable output of 350 studies. Within the period of 2000 to 2022, the University of Northern British Columbia published 31 studies in the field of hospitality, leisure, and sport tourism, addressing various tourism-related topics within this category (WoS, 2022).

Figure 6. Top Contributing Institutions Link.
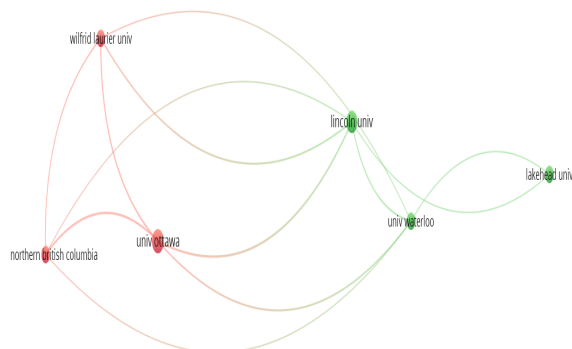
Source: Compiled by the authors using Vosviewer.

Wilfrid Laurier University, which continues its activities in Canada, contributes to the last chance tourism literature with 4 articles. These four studies were published in 2016 (2), 2018, and 2019, respectively. The institution contributes to various literatures with 10,956 studies on WoS in 2000 and later. The institution contributed to 2382 studies in 1999 and before. 2019 was the institution's most productive year (with 745 studies). Out of the 292 studies published under the category of 'hospitality, leisure, and sport tourism,' the majority (283 studies) were published from 2000 onwards until October 15, 2022, indicating the university's sustained focus in this area (WoS, 2022).

4.5 The most productive journals

Figure 7 provides an overview of the journals that have demonstrated high productivity in the field of last chance tourism between 2010 and 2022 (until October 15, 2022). Topping the list is the "Journal of Sustainable Tourism" with a remarkable publication count of 10 articles. Following is "Tourism Geographies," which ranks second among the most productive journals in the field of last chance tourism according to WoS data (WoS, 2022). Figure 7 illustrates that six other journals have contributed significantly to the literature on last chance tourism, each with two published articles.

Figure 7. The Most Contributing Journals.
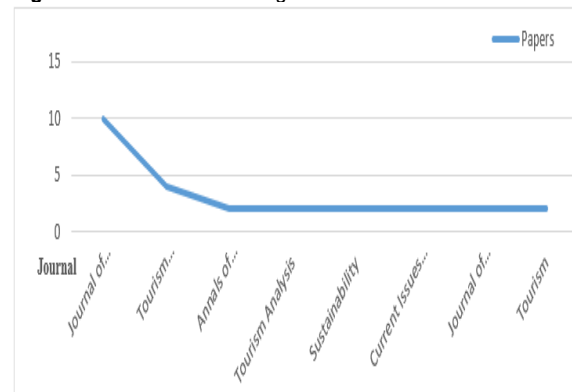
Source: Compiled by the authors using Vosviewer.

The Journal of Sustainable Tourism is a academic journal published on a monthly basis, focusing on the publication of theoretical, conceptual, and empirical research in the field of sustainable tourism. The primary objective of research published in this journal is to contribute to the advancement of knowledge and critical insights into the intricate relationship between tourism and sustainable development (TandOnline, 2022). The academic studies published in the Journal of Sustainable Tourism are categorized under "hospitality, leisure, and sport tourism" as well as "green sustainable science technology" in the WoS database.

From 2008 to October 2022, the Journal of Sustainable Tourism has published a total of 1511 scholarly articles. 2020 stands out as the most productive year for the journal, with a total of 239 published studies. The most frequently published document type of the journal is article (with 1321 studies). The period between 2017 and 2022 covered a significant share of the journal's publications, comprising over 57% of the total output (WoS, 2022).

Tourism Geographies is a renowned international research journal dedicated to the exploration and discourse of geographical perspectives within the realms of tourism, as well as recreation and leisure studies (Tourism Geographies, 2022). As the second most productive journal, Tourism Geographies has amassed a total of 857 publications within the WoS database. Slightly over half (52%) of these publications were disseminated between the years 2017 and 2022.

Among the years under analysis, the most productive year for the journal, focusing on studies in the field of "hospitality, leisure, and sport tourism," is 2019, with a noteworthy output of 121 studies. Articles comprise the most prevalent document type in the journal, accounting for 617 published studies. Book reviews rank as the second most frequent document type, encompassing 148 studies (WoS, 2022).

In the list of the most productive journals on last chance tourism, there are six journals with two articles each. These journals are Annals of Tourism Research, Tourism Analysis, Sustainability, Current Issues in Tourism, Journal of Outdoor Recreation and Tourism Research Planning and Management and Tourism (WoS, 2022). Figure 7 shows the link of the most productive journals on last-chance tourism (Vosviewer, 2022).

Figure 8. Link of Most Prolific Journals.
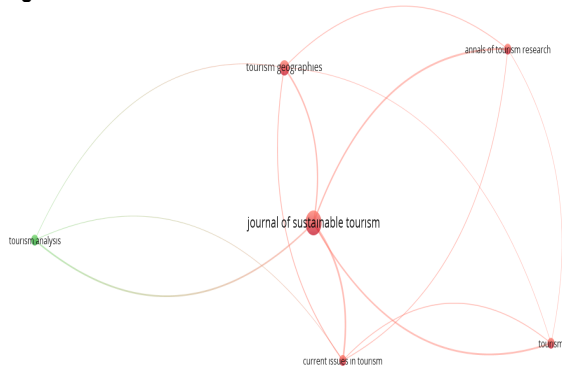
Source: Compiled by the authors using Vosviewer

4.6 The Most Popular Keywords in Papers

Within this phase of the paper, a science mapping analysis was undertaken using VOSviewer to identify the prevalent keywords in recent studies on chance tourism within the WoS database. Figure 8 visually presents the interconnections among all the keywords utilized in articles pertaining to last chance tourism. A total of 164 distinct keywords were employed in the studies published in the WoS database addressing the topic of last chance tourism.

Figure 8, generated using the VOSviewer software, was constructed without applying any threshold criteria. Notably, climate change (20), last chance tourism (20), and last-chance tourism (9) emerge as the most frequently utilized keywords in studies concerning last chance tourism. The keywords in Table 3 are some of the keywords in the entire network, as can be seen from Figure 8 (Vosviewer, 2022).

Table 3. The Most Frequently Used Keywords.

Rank	Keyword	Occurrences	Total Link Strength
1	Climate change	20	29
2	Last chance tourism	20	24
3	Last-chance tourism	9	10
4	Glacier tourism	5	12
5	Sustainable tourism	4	4
6	Tourism	4	3
7	Motivation	3	7
8	Churchill	3	6
9	Arctic	3	3
10	Landscape	2	8
11	Pro-environmental behaviour	2	6
12	Sustainability	2	5
13	Ambassadorship	2	5
14	Authenticity	2	5
15	Environmental awareness	2	5
16	Protected areas	2	5
17	Cuisine tourism	2	4
18	Hasankeyf	2	4
19	Parks and protected areas	2	4
20	Last chance tourism (lct)	2	1

Source: Compiled by authors.

The first cluster consists of keywords such as last chance tourism, glacier tourism, motivation. Keywords such as cruise tourism, sustainable tourism and authenticity come to the fore in the second cluster. The third set consists of keywords such as climate change, protected areas. There are two prominent words in cluster 4: ambassadorship and arctic. Parks and protected areas is the prominent word of the 5th cluster (WoS, 2022).

Figure 9. Link of Keywords Used in Last Chance Tourism Articles.
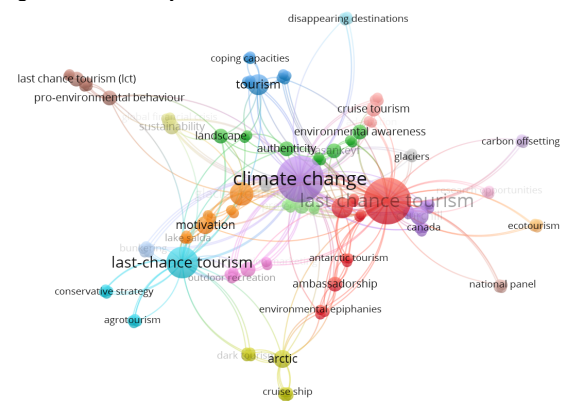
Source: Compiled by the authors using Vosviewer

Each keyword is represented by a node, and the size of the node indicates the extent of citation frequency, with larger nodes indicating higher citation rates (Ciki, 2022). To enhance the visual clarity of keyword interconnections, the VOSviewer software was employed once more, this time applying a determined threshold criterion. In this context, it has been accepted that the keywords with a minimum repeat number of 2 will meet the criterion. Although 164 keywords were used in articles on last chance tourism in WoS, only 20 keywords met the threshold and as a result, 5 clusters were obtained (Vosviewer, 2022).

4.7 The Most Productive Countries

The graphical representation in Figure 9 illustrates the countries that have made significant contributions to the field of last chance tourism in the WoS database. The continent that contributes the most to the last chance tourism literature is Europe, with 38 co-authored articles in total. The European

continent is followed by Oceania and North America with 12 co-authored articles. The African continent contributed to last chance tourism with 6 articles and the Asian continent with 4 articles (WoS, 2022). Figure 9 provides an overview of the countries that have made the most significant contributions to the field of last chance tourism.

**Figure 10.** Top 10 Contributing Countries.
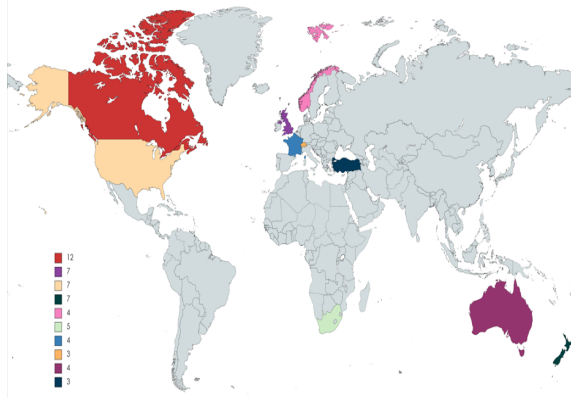
Source: Prepared by the authors.

The map in Figure 9 has been prepared by considering the countries that have contributed to last chance tourism with at least 3 studies. Canada leads the way in terms of the highest number of publications on last chance tourism in the WoS database, with a total of 12 studies. In terms of research productivity, Canada is closely followed by the UK, the USA, and New Zealand, all with 7 studies each. Other countries that have made notable contributions include South Africa with 5 studies, and Norway, France, Australia, Turkey, and Switzerland, each with 4 or 3 studies, respectively.

In addition, writers from 29 different countries contributed to the last chance tourism literature. The European continent, on the other hand, is the continent that contributes the most to last chance tourism with 18 different countries. 38 researchers from 18 different European countries contributed to last chance tourism.

In order to define the collaborative relationship of the articles in WoS from 2010 to mid-October 2022, a country-level co-authorship analysis was conducted and given in Figure 10. While mapping the international cooperation network in Figure 10, countries meeting at least 2 threshold criteria were included in the analysis and 4 clusters were obtained (Vosviewer, 2022).

Figure 11. Link of most Contributing Countries in Last Chance Tourism Articles.
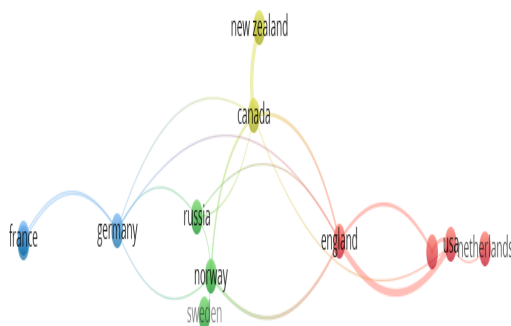
Source: Compiled by the authors using Vosviewer.

The countries in the blue cluster are France, Germany and Switzerland. Russia, Norway and Sweden are in the green cluster. Canada, which contributes the most to last chance tourism, is in the yellow cluster with New Zealand. England, Netherlands, USA and South Africa are in the red cluster (Vosviewer, 2022).

4.8. Evaluation of Results

This research in the field of last chance tourism has provided a better understanding of the theoretical foundations and practical implications of this tourism type. The results indicate that interest in last chance tourism has increased, especially since 2019. This rise parallels the growing awareness of global climate change and environmental degradation. However, the environmental impacts of this interest and its consequences for local communities must be carefully examined.

Studies on last chance tourism comprehensively address the environmental and socio-economic impacts of this type of tourism. For example, the work of Lemelin et al. (2010) shows how last chance tourism towards polar regions can lead to degradation in these fragile ecosystems. This situation reveals a complex relationship regarding last chance tourism's potential contribution to conservation efforts. Additionally, the studies by Dawson et al. (2011) emphasize the impacts of last chance tourism on tourist motivations and the inadequacy of these motivations in creating environmental awareness.

The sustainability and ethical dimensions of last chance tourism are also significant topics of discussion. The intense interest of tourists often accelerates environmental degradation, revealing the paradox of last chance tourism: tourist visits can lead to the faster disappearance of the very areas they aim to protect. In this context, the studies by Piggott-McKellar and McNamara (2016) examine the environmental impacts of last chance tourism on the Great Barrier Reef and question the sustainability of such tourism. Therefore, the impacts of last chance tourism practices on local communities require a balance between economic benefits and cultural degradation.

This study provides a comprehensive picture of the current state of last chance tourism literature through a bibliometric analysis. The analyses conducted using VOSviewer software reveal the main themes, influential studies, and research gaps in last chance tourism research. For example, the intensity of studies on polar regions highlights the ecological sensitivity of these areas. However, more research is needed on last chance tourism dynamics in other regions, such as tropical and subtropical areas.

5 FINAL CONSIDERATIONS

In this article, bibliometric analysis of last chance tourism themed articles published in journals scanned in the WoS database was made. The analysis conducted in this study encompassed articles published from the year of the first identified study until October 15, 2022, revealing that the earliest study available in the WoS database on last chance tourism was published in 2010.

The analysis indicated a noticeable surge in interest in the subject of last chance tourism from 2016 onwards. However, it is worth noting that no bibliometric study was identified that specifically examines the current state of the field of last chance tourism. Therefore, this article is important as it is the first study to address last chance tourism with bibliometric analysis.

Bibliometric studies provide clues for researchers to see the current status of the subject before moving on to any subject (Shang et al., 2015). In this study, VOSviewer program was used for bibliometric analysis. Along with the analysis of the parameters targeted in the research, visual analyzes were created through VOSviewer.

As a result of the bibliometric analysis, trends for the development of research on last chance tourism were determined. While the most articles on last chance tourism were published in 2020 (with 11 papers), the country that contributed the most was Canada with 12 articles. The continent that contributes the most to last chance tourism is Europe with 18 different countries.

While researchers from 29 different countries contribute to the last chance tourism literature, the most productive institution is the University of Ottawa (with 6 papers). The most productive journal is the "Journal of Sustainable Tourism" with 10 articles. The most cited paper is "Antarctic cruise tourism: the paradoxes of ambassadorship, last chance tourism and greenhouse gas emissions". The most prolific authors are Dawson, J. and Stewart, E. J. (with five articles each). The most preferred keywords are Climate change and last chance tourism (with 20 occurrences).

Researchers' interest in the themes of climate change and glacial regions draws attention, but despite the increasing number of studies, last chance tourism is not limited to these two themes. However, it is seen that the studies are generally directed towards destinations. All touristic values, which are in the process of extinction and are in demand as touristic attractions, can be examined within the scope of the research and contribute to the literature and the sector. In terms of last chance tourism, researches other than destinations and climate change can be carefully examined and deficiencies in the literature can be identified.

Future studies could focus on last chance tourism in regions beyond the polar regions, such as tropical and subtropical regions, to provide a more comprehensive understanding of global last chance tourism dynamics. Researchers could adopt interdisciplinary approaches that integrate insights from environmental science, sociology and economics to address the multifaceted nature of last chance tourism. However, longitudinal studies that track changes in tourist behaviour and destination conditions over time are needed to assess the long-term impacts of last chance tourism.

Future research could assess the effectiveness of policies and interventions designed to reduce the negative impacts of last chance tourism and promote sustainable tourism practices. The use of advanced technologies such as remote sensing and geographic information systems (GIS) in last chance tourism studies can increase the accuracy and depth of research findings by providing more precise data on environmental changes and tourist patterns. Future research

can build on the results of this study to identify and fill research gaps and contribute to the sustainable development of tourism and the protection of destinations at risk.

The limitations of this article are similar to those of previous bibliometric studies. The main limitation of the current article is that the data was collected only from the WoS database. In addition, the collected data includes only the articles. Although these inclusion criteria do not represent the entire field related to last chance tourism, it is recommended to perform analyzes by adding other types of studies (book chapter, paper, etc.) and other similar databases in order to make a more in-depth analysis or comparison. In addition, another limitation of the research is the use of VOSviewer software in the analysis of research data.

REFERENCES

Abramo, G., D'Angelo, C. A., & Caprasecca, A. (2009). Allocative Efficiency in Public Research Funding: Can Bibliometrics Help? *Research Policy*, 38(1), 206-215.

Amazonas, I., Meirelles de Oliveira, B., Belosevich Sosa, P., Cichoski, C., Turra, A., Kampel, M., Roberto Jacobi, P., & de Almeida Sinisgalli, P. (2021). Tourists' Perspectives of Marine Ecosystem Services as the First Stage of Participatory Modeling in the South Coast of Sao Paulo. *Anais Brasileiros de Estudos Turísticos,* 11. https://doi.org/10.5281/zenodo.5771012

Batista Sánchez, E., Deegan, J., & Pérez Ricardo, E. C. (2022). Influence of Internet on Tourism Consumer Behaviour: A Systematic Review. Advances in Hospitality and Tourism Research, 10(1), 130-156.

Bunakov, O. A., Zaitseva, N. A., Larinova, A. A., Zigern-Korn, N. V, Zhukova, M. A., Zhukov, V. A., & Chudnovskiy, A. D. (2018). Development Perspectives of "Last Chance Tourism" as One of the Directions of Ecological Tourism. Ekoloji, 27(106), 441–447.

Cakar, K., & Seyitoglu, F. (2021). Motivations and Experiences of Tourists Visiting Hasankeyf as A Last Chance Tourism Destination. Journal of Ecotourism, https://doi.org/10.1080/14724049.2021.1965151

Ciascai O.R., Dezsi S., Rus K.A., 2022, Cycling Tourism: A Literature Review to Assess Implications, Multiple Impacts, Vulnerabilities, and Future Perspectives, Sustainability, 14, 8983. https://doi.org/10.3390/su14158983

Ciki, K. D. (2022). Bibliometric Analysis of Diaspora Tourism Studies. The Central European Journal of Regional Development and Tourism, 14(2), 62-81. https://doi.org/10.32725/det.2022.014

Ciki, K. D., Inan, R., & Bulsu, C. (2023). Research Trends in Film Tourism: A Bibliometric Analysis Using the WOS Database. Prace i Studia Geograficzne, 68(1), 83-98. https://doi.org/10.48128/pisg/2023-68.1-05

Ciki, K. D., & Tanriverdi, H. (2023). Self-Determination Theory in the Field of Tourism: A Bibliometric Analysis. Tourism: An Interdisciplinary Journal, 71(4), 769-781. https://doi.org/10.37741/t.71.4.8

D'Souza, J., Dawson, J., & Groulx, M. (2021). Last chance tourism: a decade review of a case study on Churchill, Manitoba's polar bear viewing industry. Journal of Sustainable Tourism, 1–19. https://doi.org/10.1080/09669582.2021.1910828

Dawson, J., Stewart, E. J., Lemelin, H., & Scott, D. (2010). The Carbon Cost of Polar Bear Viewing Tourism in Churchill, Canada. Journal of Sustainable Tourism, 18(3), 319–336. https://doi.org/10.1080/09669580903215147

Denley, T. J., Woosnam, K. M., Ribeiro, M. A., Boley, B. B., Hehir, C., & Abrams, J. (2020). Individuals' intentions to engage in last

chance tourism: applying the value-belief-norm model. Journal of Sustainable Tourism, 1–22. https://doi.org/10.1080/09669582.2020.1762623

Eijgelaar, E., Thaper, C., & Peeters, P. (2010). Antarctic Cruise Tourism: The Paradoxes of Ambassadorship, "Last Chance Tourism" and Greenhouse Gas Emissions. Journal of Sustainable Tourism, 18(3), 337–354. https://doi.org/10.1080/09669581003653534

Finastiian, M., Torabi Farsani, N., & Mortazavi, M. (2019). Traditional Weaving House in Isfahan as A Museum for Promoting Last-Chance Tourism. Museum Management and Curatorship, 34(4), 448–461. https://doi.org/10.1080/09647775.2018.1562362

Fisher, D., & Stewart, E. J. (2017). Tourism, Time, and the Last Chance. Tourism Analysis, 22(4), 511–521. https://doi.org/10.3727/108354217X15023805452068

Fonseca, R. E., Filho, de Oliveira, M. A., Braga, S. S. & Pimentel, T. D. (2022). Beyond the Protected World Heritage in Brazil. Anais Brasileiros de Estudos Turísticos, 12. https://doi.org/10.5281/zenodo.7314413

Gössling, S., & Peeters, P. (2015). Assessing Tourism's Global Environmental Impact 1900–2050. Journal of Sustainable Tourism, 23(5), 639–659. https://doi.org/10.1080/09669582.2015.1008500

Groulx, M., Boluk, K., Lemieux, C. J., & Dawson, J. (2019). Place Stewardship among Last Chance Tourists. Annals of Tourism Research, 75, 202–212. https://doi.org/10.1016/j.annals.2019.01.008

Groulx, M., Brisbois, M. C., Lemieux, C. J., Winegardner, A., & Fishback, L. (2017). A Role for Nature-Based Citizen Science in Promoting Individual and Collective Climate Change Action? A Systematic Review of Learning Outcomes. Science Communication, 39(1), 45–76. https://doi.org/10.1177/1075547016688324

Groulx, M., Lemieux, C., Dawson, J., Stewart, E., & Yudina, O. (2016). Motivations to Engage in Last Chance Tourism in the Churchill Wildlife Management Area and Wapusk National Park: the Role of Place Identity and Nature Relatedness. Journal of Sustainable Tourism, 24(11), 1523–1540. https://doi.org/10.1080/09669582.2015.1134556

Hall, C. M., Scott, D., & Gössling, S. (2013). The Rrimacy of Climate Change for Sustainable International Tourism. Sustainable Development, 21(2), 112–121.

Hoogendoorn, G. (2021). Last Chance Tourism in South Africa: Future Research Potential? Tourism: An International Interdisciplinary Journal, 69(1), 73-82. https://doi.org/10.37741/t.69.1.6

Kaján, E., & Saarinen, J. (2013). Tourism, Climate Change and Adaptation: A Review. Current Issues in Tourism, 16(2), 167–195. https://doi.org/10.1080/13683500.2013.774323

Kruzhalin, V., Shabalina, N., Kashirina, E., & Nikanorova, A. (2022). Specific Issues of Arctic Cruise Development in the Russian Arctic: the Russian Arctic National Park Case Study. Anais Brasileiros de Estudos Turísticos, 12(Special Issue). https://doi.org/10.5281/zenodo.7151469

Lemelin, H., Dawson, J., Stewart, E. J., Maher, P., & Lueck, M. (2010). Last-Chance Tourism: the Boom, Doom, and Goom of Visiting Vanishing Destinations. Current Issues in Tourism, 13(5), 477–493. https://doi.org/10.1080/13683500903406367

Lemieux, C. J., Groulx, M., Halpenny, E., Stager, H., Dawson, J., Stewart, E. J., & Hvenegaard, G. T. (2018). "The End of the Ice Age?": Disappearing World Heritage and the Climate Change Communication Imperative. Environmental Communication, 12(5), 653–671. https://doi.org/10.1080/17524032.2017.1400454

Miller, L. B., Hallo, J. C., Dvorak, R. G., Fefer, J. P., Peterson, B. A., & Brownlee, M. T. J. (2020). On the Edge of the World: Examining Pro-Environmental Outcomes of Last Chance Tourism in Kaktovik. Alaska. Journal of Sustainable Tourism, 28(11), 1703–1722. https://doi.org/10.1080/09669582.2020.1720696

Newsome, D., & Rodger, K. (2012). Vanishing Fauna of Tourism Interest. In H. Lemelin, J. Dawson, & E.J. Stewart (Eds.), Last Chance Tourism: Adapting Tourism Opportunities in A Changing World (pp. 56-70). Routledge.

Palma, D., Varnajot, A., Dalen, K., Basaran, I. K., Brunette, C., Bystrowska, M., Korablina, A. D., Nowicki, R. C., & Ronge, T. A. (2019). Cruising the Marginal Ice Zone: Climate Change and Arctic Tourism. Polar Geography, 42(4), 215–235.

Piggott-McKellar, A. E., & McNamara, K. E. (2016). Last Chance Tourism and the Great Barrier Reef. Journal of Sustainable Tourism, 25(3), 397–415. https://doi.org/10.1080/09669582.2016.1213849

Prideaux, B., & McNamara, K. E. (2012). Turning A Global Crisis into A Tourism Opportunity: The Perspective from Tuvalu. International Journal of Tourism Research, 15(6), 583–594. https://doi.org/10.1002/jtr.1883

Pritchard, A. (1969). Statistical Bibliography or Bibliometrics? Journal of Documentation, 25(4), 348–349.

Ravanel, L., & Deline, P. (2010). Climate influence on rockfalls in high-Alpine steep rockwalls: The north side of the Aiguilles de Chamonix (Mont Blanc massif) since the end of the "Little Ice Age." The Holocene, 21(2), 357–365. https://doi.org/10.1177/0959683610374887

Ruiz, R. (2008). Endangered Natural Wonders Worth Seeing. Forbes.com, http://www.forbes.com/2008/0 (accessed November 21, 2022).

Salim, E., & Ravanel, L. (2020). Last Chance to See the Ice: Visitor Motivation at Montenvers-Mer-de-Glace, French Alps. Tourism Geographies, 1–23. https://doi.org/10.1080/14616688.2020.1833971

Schweinsberg, S., Wearing, S., & Lai, P.-H. (2020). Host Communities and Last Chance Tourism. Tourism Geographies, 1–18. https://doi.org/10.1080/14616688.2019.1708446

Scott, D., & Lemieux, C. (2010). Weather and Climate Information for Tourism. Procedia Environmental Sciences, 1, 146–183. https://doi.org/10.1016/j.proenv.2010.09.011

Smith, M. (2012). Apres moi le deluge: Ethics, Empire, and the Biopolitics of Last Chance Tourism. In R. H. Lemelin, J. Dawson, & E. J. Stewart (Eds.), Last Chance Tourism: Adapting Tourism Opportunities in A Changing World (pp. 153–167). Abingdon: Routledge.

Steiger, R., Dawson, J., & Stotter, J. (2012). Last chance tourism in alpine regions: Last chance to ski? In R. Lemelin, J. Dawson & E. Stewart (Eds.), Last chance tourism: Adapting tourism opportunities in A changing world (pp. 42–54). London: Routledge.

Stewart, E. J., Dawson, J., & Lemelin, R. H. (2012). The Transformation of Polar Bear Viewing in the Hudson Bayregion, Canada. In R. H. Lemelin, J. Dawson, & E. J. Stewart (Eds.), Last chance tourism. Adapting tourism opportunities in a changing world (pp. 89–102). Routledge.

Van Eck N.J., & Waltman L., 2010, Software Survey: VOSviewer, A Computer Program for Bibliometric Mapping, Scientometrics, 84(2), pp. 523–538. https://doi.org/10.1007/s11192-009-0146-3

Viken, A. (2006). Svalbard, Norway. In G. Baldacchino (Ed.), Extreme Tourism: Lessons from the World's Cold Water Islands (pp. 136–155). Amsterdam: Elsevier.

Vila, M., Costa, G., Angulo-Preckler, C., Sarda, R., & Avila, C. (2016). Contrasting Views on Antarctic Tourism: 'Last Chance Tourism' or 'Ambassadorship' in the Last of the Wild. Journal Cleaner Production, 111(B), 451-469.

Web of Science – WoS. (2022), Web of Science Basic Search, https://www.webofscience.com/wos/woscc/basicsearch, (access 10.10.2022).

Whitelaw, P. A., King, B. E. M., & Tolkach, D. (2014). Protected Areas, Conservation and Tourism – Financing the Sustainable Dream. *Journal of Sustainable Tourism*, 22(4), 584–603. https://doi.org/10.1080/09669582.2013.873445

Woosnam, K. M., Ribeiro, M. A., Denley, T. J., Hehir, C., & Boley, B. B. (2021). Psychological Antecedents of Intentions to Participate in Last Chance Tourism: Considering Complementary Theories. *Journal of Travel Research*, 004728752110250. https://doi.org/10.1177/00472875211025097

Wu, H. C., Cheng, C. C., Ai, C. H., & Wu, T. P. (2020). Fast-Disappearing Destinations: The Relationships among Experiential Authenticity, Last-Chance Attachment and Experiential Relationship Quality. *Journal of Sustainable Tourism*, 28(7), 956–977. https://doi.org/10.1080/09669582.2020.1713799

Yilmaz, I. (2019). Bibliometric Analysis of Bibliometric Studies on Tourism Published in Turkey. *Anais Brasileiros de Estudos Turísticos - ABET*, 9(1, 2 e 3). https://doi.org/10.34019/2238-2925.2019.v9.27111

CRediT author statement.

Term	Definition	1ʳˢᵗ Author	2ⁿᵈ A
Conceptualization	Ideas; formulation or evolution of overarching research goals and aims	x	
Methodology	Development or design of methodology; creation of models	x	
Software	Programming, software development; designing computer programs; implementation of the computer code and supporting algorithms; testing of existing code components	x	
Validation	Verification, whether as a part of the activity or separate, of the overall replication/ reproducibility of results/experiments and other research outputs	x	x
Formal analysis	Application of statistical, mathematical, computational, or other formal techniques to analyze or synthesize study data	x	
Investigation	Conducting a research and investigation process, specifically performing the experiments, or data/evidence collection	x	x
Resources	Provision of study materials, reagents, materials, patients, laboratory samples, animals, instrumentation, computing resources, or other analysis tools	x	x
Data Curation	Management activities to annotate (produce metadata), scrub data and maintain research data (including software code, where it is necessary for interpreting the data itself) for initial use and later reuse	x	x
Writing - Original Draft	Preparation, creation and/or presentation of the published work, specifically writing the initial draft (including substantive translation)	x	
Writing - Review & Editing	Preparation, creation and/or presentation of the published work by those from the original research group, specifically critical review, commentary or revision – including pre-or post-publication stages	x	
Visualization	Preparation, creation and/or presentation of the published work, specifically visualization/ data presentation	x	
Supervision	Oversight and leadership responsibility for the research activity planning and execution, including mentorship external to the core team	x	x
Project administration	Management and coordination responsibility for the research activity planning and execution	x	
Funding acquisition	Acquisition of the financial support for the project leading to this publication	x	x

Source: reproduced from Elsevier (2022, s/p), based upon Brand et al. (2015).