



# Tourism as a Cultural Ecosystem Service in Protected Areas: A Review of Emerging Issues

## Abstract

**Catherine KIFWORO**   
Department of Tourism and Integrated  
Communication, Vaal University of  
Technology, Email, [ckifworo@gmail.com](mailto:ckifworo@gmail.com)  
**Corresponding author**

**Kaitano DUBE**   
Department of Tourism and Integrated  
Communication, Vaal University of  
Technology, Email, [kaitanod@vut.ac.za](mailto:kaitanod@vut.ac.za)

Tourism as a cultural ecosystem service within protected areas remains an under-researched domain despite its pivotal role in supporting conservation and host communities around these entities. This study used a bibliometric approach to review 116 articles from the Scopus database related to tourism and cultural ecosystem services in protected areas. Citation, bibliographic coupling, co-authorship, and co-occurrence analyses were conducted using VOS Viewer. The findings showed few studies from the Global South, particularly in African countries. The extant studies leaned towards ecology rather than tourism perspectives. The dominant themes were assessments, mapping, supply and demand, land use planning, conservation, use of social media research, human-nature interactions, climate change impacts and sustainable development. The evident gaps for further studies in tourism were niche tourism products, climate change adaptability and mitigation, impacts of tourism, stakeholder engagement and management, payment for ecosystem services, using social indicators for assessments and efficacy of using social media for tourism research. Empirical studies would be particularly key in providing primary data to inform policy and practice. The study points out knowledge gaps and sets the agenda for future studies.

**Keywords:** Cultural ecosystem services, host community, protected areas, tourism

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## Introduction

Tourism in protected areas serves as a mechanism to demonstrate the interplay between the natural environment and human society (Pueyo-Ros, 2018). The relationship is a complex phenomenon resulting in positive and negative impacts (Stone & Nyaupane, 2018). On the positive side, millions of tourists visit protected areas yearly, generating income supporting local economies, creating employment opportunities, and contributing to conservation and the well-being of neighbouring populations (Bushell & Bricker, 2017; Chiwawa & Wissink, 2023). However, tourism also generates negative impacts, such as offroad driving (Belsoy et al., 2012; Van Berkel et al., 2018), damage to ecosystems (Taff et al., 2019) and reduced access, especially for poor communities, to ecosystem services in protected areas (Dłużewska et al., 2022; Outeiro et al., 2019). The International Union for Conservation of Nature (IUCN) classifies protected areas into strict nature reserves, wilderness areas, national parks, natural monuments, habitat/species management areas, protected landscapes/seascapes, and protected areas with sustainable use of natural resources (Day et al., 2019). While the core function of these protected areas is biodiversity conservation (Cummin & Allen, 2017), they also act as hubs for cultural ecosystem services that benefit humans and sustain livelihoods (Ament et al., 2017). Consequently, managing tourism as a cultural ecosystem service within protected areas comes with many challenges, including balancing the needs of various stakeholders such as tourists, local communities, tourism entrepreneurs and park management (Melledu et al., 2023; Rice et al., 2020). Cultural Ecosystem Services constitute a component of ecosystem services, with provisioning, regulating, and supporting ecosystem services (Bouwma et al., 2018; Millenium Ecosystem Assessment, 2005). Provisioning services include food, water and timber. Regulating services include climate and diseases while supporting services include soil production, biodiversity conservation, and nutrient cycling. Of the four services, cultural ecosystem services remain the most under-researched (Hirons et al., 2016; Palomo, 2017; Taff et al., 2019). Cultural ecosystem services (CES) are defined as man's intangible benefits from ecosystems, such as spiritual, artistic, educational, aesthetic, tourism, and recreational experiences (Millenium Ecosystem Assessment, 2005; Vlami et al., 2020). Fish et al. (2016) further defined cultural ecosystem services as the interaction between environmental spaces and the cultural or recreational activities that take place within these spaces. These services are created through interactions between humans and ecosystems rather than as priority products of nature that people utilise to enhance their well-being (Fish et al., 2016). Based on the definitions above, it is apparent that cultural ecosystem services play a fundamental role in developing tourist attractions in protected areas. According to Monz et al. (2021), there is a scarcity of studies focusing on tourism as a cultural ecosystem service in protected areas. This paper, therefore, reviews existing studies in tourism as a cultural ecosystem service in protected areas to pinpoint gaps in knowledge and set the agenda for future studies. Specifically, the study aims to answer the following research questions. What is the intellectual structure of research on tourism as a cultural ecosystem service in protected areas? What are the emerging concepts and themes from studies on tourism as a cultural ecosystem service in protected areas? The paper is organised into five sections. The first section is the introduction, followed by the methodology in section two. The study findings are presented in section three, while the discussions around them appear in section four. The fifth section provides the conclusion and recommendations for further studies based on the findings.

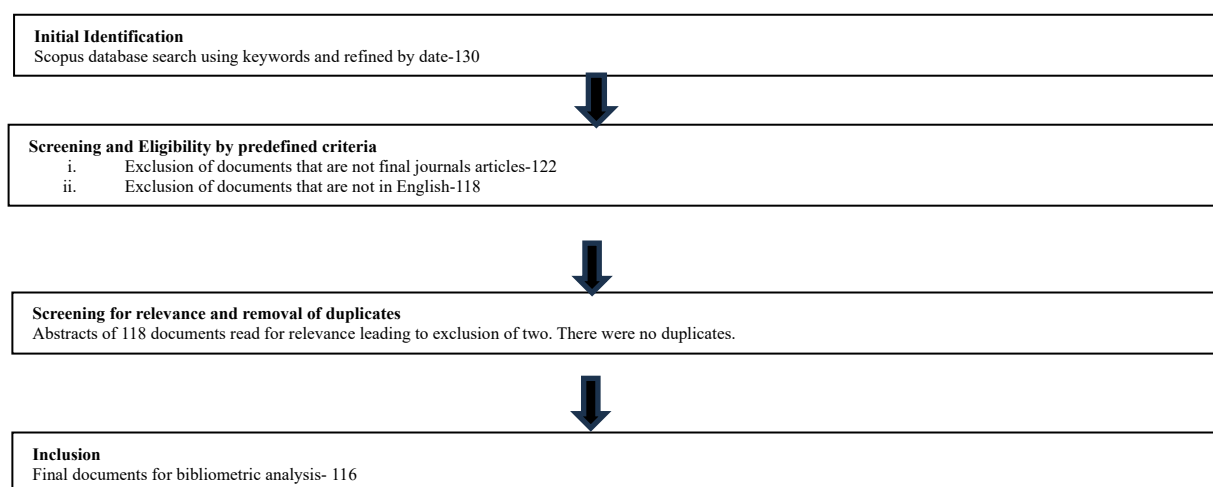
## Methodology

The study used a bibliometric analysis approach to review studies conducted on tourism as cultural ecosystem services in protected areas. Bibliometric analysis is a novel methodology that has been used in various disciplines, including tourism, as exemplified by studies such as (Gaonkar & Sukthankar, 2024; Pardosi et al., 2024; Garrigos-Simon et al., 2018; Hasan et al.,

2022; Shin et al., 2023). Scopus database was used to retrieve data for the study. Scopus was preferred because it covers a broader journal range and contains many tourism publications (Huang et al., 2020; Visser et al., 2021). The search string “cultural ecosystem services,” “protected areas,” and “touris\*” was used to guide the search within the title, abstract and keywords of documents on Scopus. To locate current research, the search was further limited to studies from 1st January 2013 to 31st December 2023. This was to ensure the analysis of contemporary issues in the discipline. This initial search resulted in 130 documents. The search was, after that, restricted to journal articles exclusively written in English and at the final publishing stage. This measure was taken to ensure the inclusion of only complete and peer-reviewed publications written in English. This step resulted in the retention of 118 documents. Further screening was conducted by exporting the 118 documents with their titles, abstracts and keywords to Microsoft Excel, where the documents were checked for relevancy and duplication. This resulted in the exclusion of two documents. The remaining 116 documents were then considered for the study. The last search for the study was run on the 4th of January 2024. The Boolean search query used for the study was:

(TITLE-ABS-KEY ("cultural ecosystem services" AND "protected areas")) AND (touris\*) AND (LIMIT-TO (PUBSTAGE, "final")) AND (LIMIT-TO (DOCTYPE, "ar")) AND (EXCLUDE (PUBYEAR, 2012) OR EXCLUDE (PUBYEAR, 2024)) AND (LIMIT-TO (LANGUAGE, "English"))

The flowchart in Figure 1 represents this study's document search and screening process.

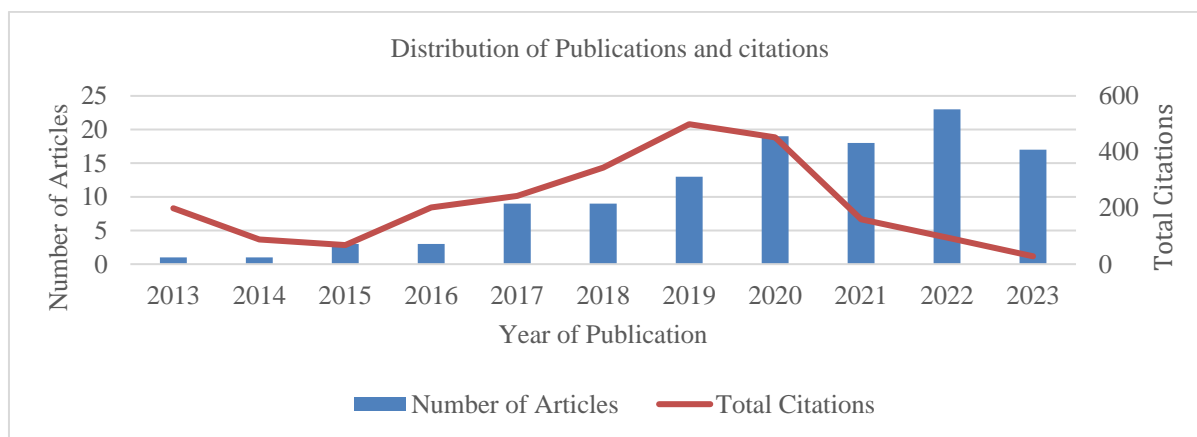


**Figure 1: Identification, screening and eligibility criteria flowchart**

The bibliometric analysis of the remaining 116 documents was conducted using the visualisation of similarity (VOSviewer) software. VOSviewer is software used to create, visualise, explore and analyse maps based on network data (Van Eck & Waltman, 2014). Specifically, citation, co-authorship, and co-occurrence analyses were carried out. Citation analysis helps determine the impact of a study by identifying the most cited author or journal (Durieux & Gevenois, 2010). Co-authorship analysis identifies the nature of collaborations on the topic of interest. Co-occurrence analysis helps identify a discipline's topical trends, themes and emerging issues (Garrigos-Simon et al., 2018). Descriptive analysis of background information, such as the number of publications and citations from Scopus and Vosviewer Output was also done using Microsoft Excel. The output was presented as tables, figures and network maps. The network maps are made of circles linked by lines. The item under analysis is presented as circles. The larger the circles, the higher the frequency of occurrence of the item under analysis. The thicker the line between two circles, the stronger the connection between the items (Van Eck & Waltman, 2014).

## Findings of the study

### *Distribution of the volume and citation of publications by year from 2013 to 2023*

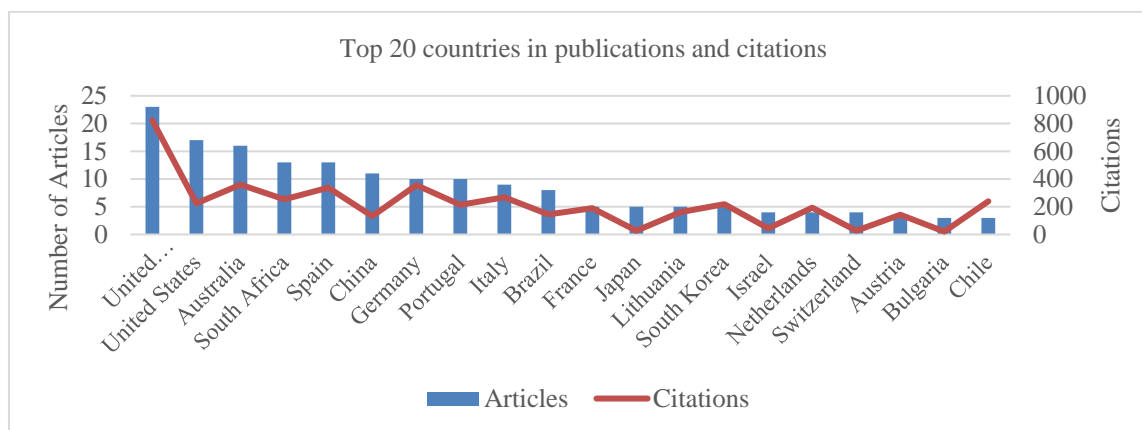


**Figure 2: Publication volume and citation trends from 2013 to 2023**

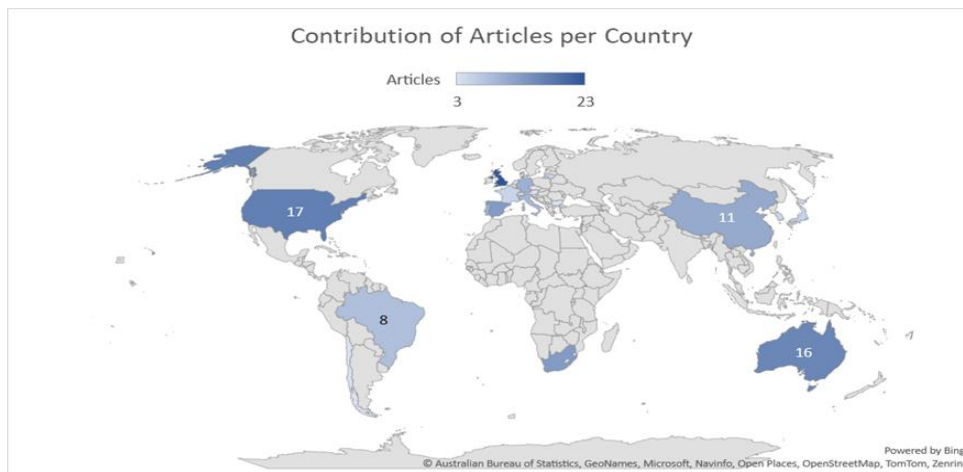
Descriptive analysis of output from Scopus revealed that there was a fluctuating trend in volume and citations of publications on the tourism and cultural ecosystem services (CES) in protected areas over the years, with a slight dip in 2021, a significant increase in 2022 and another decrease in 2023 (Figure 2). The highest number of publications was witnessed in 2022, while the highest number of citations was in 2019. The results imply an overall decrease in the volume of articles and citations, indicating the need for more research in the subject area.

***The contribution by countries to the knowledge base of tourism as a cultural ecosystem service in protected areas***

Citation analysis was used to determine the impact of publications on tourism as a CES in protected areas based on countries. The findings revealed that a total of 43 countries contributed to this study. The United Kingdom emerged as the lead contributor in volume and citations among these, hence the most influential. The United States, Australia, South Africa, Spain, China, Germany, Portugal, Italy, and Brazil were also among the top ten contributors in terms of publication volume, listed in descending order. In descending order, Australia, Germany, Spain, Italy, South Africa, Chile, the United States, South Korea, and Portugal were among the top ten most cited contributors. Therefore, while some countries like the United Kingdom maintained their top position in volume and citation of publications, others like Chile, South Korea, and Germany had relatively higher citations than countries with more publications. Generally, countries from the global North took the lead, while the global South trailed behind.



**Figure 3: Publications and citations by country for top 20 countries**



**Figure 4: Geographical distribution of publications by country**

**The top 10 journals with the most cited articles**

Citation analysis based on journals is shown in Table 1.

**Table 1: Top 10 journals and their characteristics**

Journal Name	TP	TC	CPP	Cite Score <sup>a</sup>	SNIP <sup>a</sup>	SJR <sup>b</sup>
Ecosystem Services	21	525	25	12.5	1.82	1.956Q1
Ecological Indicators	8	225	28	10.3	1.665	1.396Q1
Applied Geography	1	193	193	8.1	1.462	1.138Q1
Journal of Environmental Management	7	191	27	13.4	1.849	1.678Q1
Science of the Total Environment	6	189	31	16.8	2.026	1.946Q1
Landscape Ecology	5	162	32	8.2	1.46	1.471Q1
Journal of Outdoor Recreation and Tourism	5	153	31	5.2	1.209	0.844Q2
Plos One	3	137	46	6	1.253	0.855Q1
Tourism Management	3	106	35	22.9	3.643	3.561Q1
Ocean and Coastal Management	3	91	30	7.7	1.314	1.126Q1

Notes: TP=Total Publication; TC=Total Citation; CPP= Citation per Publication; SNIP=Source Normalised Impact per Paper; SJR=Scimago Journal Ranking; Figures for 2022 provided by Scopus; Figures for 2022 provided by ScimagoJR

The findings indicate that the leading journal in terms of citations is Ecosystem Services, followed in descending order by Ecological Indicators, Applied Geography, Journal of Environmental Management, Science of the Total Environment, Landscape Ecology, Journal of Outdoor Recreation and Tourism, Plos One, Tourism Management, and Ocean and Coastal Management. In terms of the volume of publications, Ecosystem Services is still leading. The rest of the top ten journals in descending order are Ecological Indicators, Land, Journal of Environmental Management, Science of Total Environment, Ocean and Coastal Management, Sustainability (Switzerland), International Journal of Environmental Research and Public Health, Journal of the Bulgarian Geographical Society and Plos One. The results imply that the journal with the highest impact in terms of tourism as a CES in protected areas is Ecosystem Services. Notably, only two tourism-specific journals appear among the top ten highly cited journals, i.e., Journal of Outdoor Recreation and Tourism (3TP, 153TC) and Tourism Management (1TP,106TC). Furthermore, these two journals do not appear among the top ten journals with the highest number of publications, as indicated in Table 1. However, the Journal of Tourism Management has the highest Cite Score and SNIP values, indicating its strong influence on the discipline. The findings highlight the necessity for conducting additional rigorous research on the effects of tourism as a CES in protected areas.

**The top twenty most cited authors in studies on tourism and cultural ecosystem service in protected areas**

Results of citation analysis based on authors as the unit of analysis, as presented in Table 2, revealed that the most cited author was Nahuelhual et al. (2013). Their research focused on using GIS and participatory methods to map out recreation and ecotourism as CES. In second position was Martínez Pastur et al. (2016), who identified cultural ecosystem service hot spots and the factors that characterise them. They also defined the spatial associations between CES, using geo-tagged digital images that local people and visitors posted on the Panoramio web platform. The third most cited was da Mota & Pickering (2021), who used social media research by conducting multi-lingual sentiment analysis on tweets of stakeholders on their perception of park management. They also assessed the popularity of urban beaches using metadata from Flickr, a social media image and video hosting platform. It was evident that the most cited studies focused on assessing and mapping CES, with recent studies using social media data. In contrast, earlier studies used GIS as a mapping methodology.

**Table 2: Top 20 most cited authors**

	Author	Title	Citations	Journal Name
1	Nahuelhual et al., 2013	Mapping recreation and ecotourism as a cultural ecosystem service: An application at the local level in Southern Chile	193	Applied Geography
2	Martínez pastur et al., 2016	Spatial patterns of cultural ecosystem services provision in Southern Patagonia	162	Landscape Ecology
3	da mota & Pickering, 2021	Geography of discourse about a European natural park: Insights from a multilingual analysis of tweets.	117	Society & Natural Resources
	da mota & Pickering, 2021	Assessing the popularity of urban beaches using metadata from social media images as a rapid tool for coastal management		Ocean & Coastal Management
4	Kim et al., 2019	Quantifying nature-based tourism in protected areas in developing countries by using social big data	106	Tourism Management



5	Vigl et al., 2017	Mapping the ecosystem service delivery chain: Capacity, flow, and demand pertaining to aesthetic experiences in mountain landscapes.	94	Science of the Total Environment
6	Ridding et al., 2018	The importance of landscape characteristics for the delivery of cultural ecosystem services	91	Journal of Environmental Management
7	Jobstvogt et al., 2014	Looking below the surface: The cultural ecosystem service values of UK marine protected areas (MPAs).	89	Ecosystem Services
8	Willemien et al., 2015	Using social media to measure the contribution of red-list species to the nature-based tourism potential of African protected areas	86	Plos One
9	Gosal et al., 2019	Using social media, machine learning and natural language processing to map multiple recreational beneficiaries.	81	Ecosystem Services
10	Lee et al., 2019	Mapping cultural ecosystem services 2.0–Potential and shortcomings from unlabelled crowd-sourced images	75	Ecological Indicators
11	Mayer & Woltering, 2018	Assessing and valuing the recreational ecosystem services of Germany's national parks using travel cost models	75	Ecosystem services
12	Retka et al., 2019	Assessing cultural ecosystem services of a large marine protected area through social media photographs	63	Ocean & Coastal Management
13	Arbieu et al., 2018	Large mammal diversity matters for wildlife tourism in Southern African Protected Areas: Insights for management	58	Ecosystem Services,
	Arbieu et al., 2017	Mismatches between supply and demand in wildlife tourism: Insights for assessing cultural ecosystem services		Ecological Indicators,
14	Zhao et al., 2023	Assessing the supply and demand linkage of cultural ecosystem services in a typical county-level city with protected areas in China	55	Ecological Indicators
15	Schirpke et al., 2018	Recreational ecosystem services in protected areas: A survey of visitors to Natura 2000 sites in Italy	48	Journal of outdoor recreation and tourism
16	Gosal & Ziv, 2020	Landscape aesthetics: Spatial modelling and mapping using social media images and machine learning	43	Ecological Indicators
17	Chung et al., 2015	Assessment of coastal ecosystem services for conservation strategies in South Korea	36	Plos One
18	Martinez-harms et al., 2018	Inequality in access to cultural ecosystem services from protected areas in the Chilean biodiversity hotspot	35	Science of the total environment
19	Kalinauskas et al., 2021	Mapping and assessment of landscape aesthetic quality in Lithuania	34	Journal of Environmental Management
20	Maciejewski et al., 2015	Cross-scale feedbacks and scale mismatches as influences on cultural services and the resilience of protected areas	34	Ecological Applications

### Nature of collaboration in the publications on the topic of tourism as a cultural ecosystem service in protected areas

Co-authorship analysis was conducted to establish collaboration networks using countries as the unit of analysis. The total link strength (TLS) represents the strength of the collaboration between the countries. Figure 5 shows the analysis results of 43 countries, out of which 14 met the minimum threshold of 5 articles per country. These 14 formed four clusters. The red cluster was the largest, with five countries, including Spain (leading), China, Brazil, Lithuania and Portugal. The other three clusters had three countries each. The yellow cluster comprised the United Kingdom (leading), Japan, and South Korea. The green cluster comprised the United States (leading), South Africa and Australia. Germany led the blue cluster, which was also comprised of Italy and France. Overall, the United Kingdom led with a total link strength of 27. The other countries among the top five in descending order in terms of collaborations are Portugal (TLS of 19), Australia (TLS of 19), Spain (TLS of 19), and Germany (TLS of 19). Seven out of the 43 countries had not collaborated with any other country.

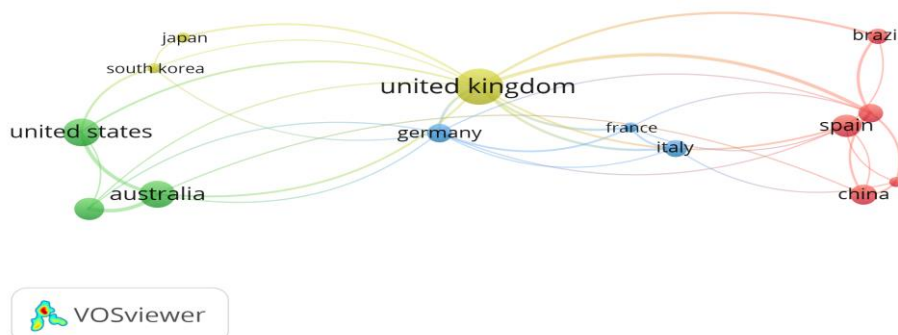
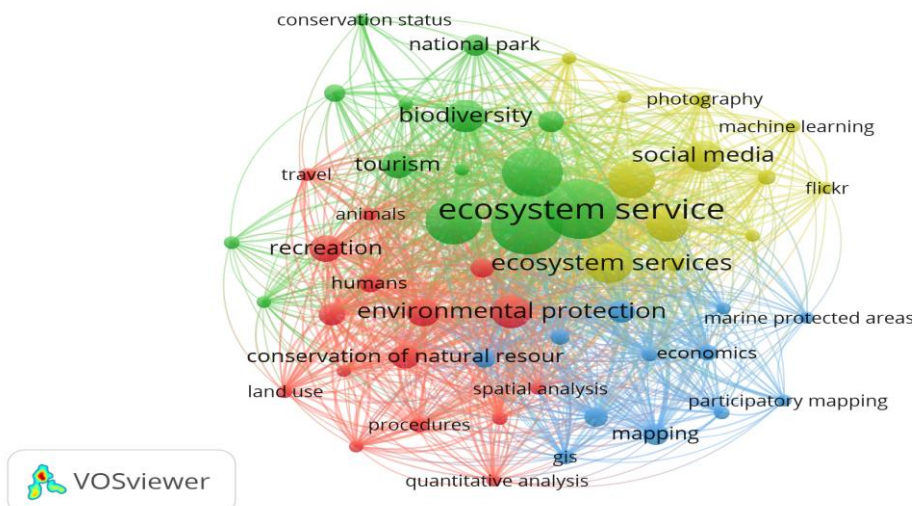


Figure 5: Co-authorship analysis of countries in tourism as an ecosystem service in protected areas

### Key research themes on tourism as a cultural ecosystem service in protected areas

A co-occurrence analysis was performed to examine the key emergent concepts of tourism as a CES in protected areas and how they are related. The unit of analysis was all keywords based on a minimum threshold of 5 occurrences per keyword. The analysis resulted in 53 keywords and 4 clusters presented as a network visualisation (Figure 7) and an overlay visualisation (Figure 8). Network visualisation was used to show emerging and current themes, while overlay visualisation showed trends over time. In terms of emerging and current themes, the most frequently occurring terms were cultural ecosystem services (54) and ecosystem service (53), followed by protected area (41), protected areas (38), and conservation (29). This indicates that the research focus on CES in protected areas is environmental conservation rather than tourism. This is further implied by the terms displaying the strongest link strengths. Ecosystem service displays the strongest (445), followed by protected area (327), environmental protection (290), conservation (287) and cultural ecosystem services (267). Tourism (145) and its variants, such as ecotourism (69) and travel (6), do not appear among the top 10, signifying a lower occurrence and less research. As stated earlier, the analysis resulted in four clusters of keywords, as shown in Figure 7. The largest cluster (red) contains fourteen keywords, namely environmental protection (24), ecosystem (17), recreation (16), conservation of natural resources (14), human (12), landscape (9), humans (9), procedures (7), land use (6), outdoor recreation (5), adult (5), ecosystem management (5), forest (5) and spatial analysis (5) in descending order of frequency. This cluster comprises articles whose main research themes are conservation, recreation, land use, and human aspects or interactions.

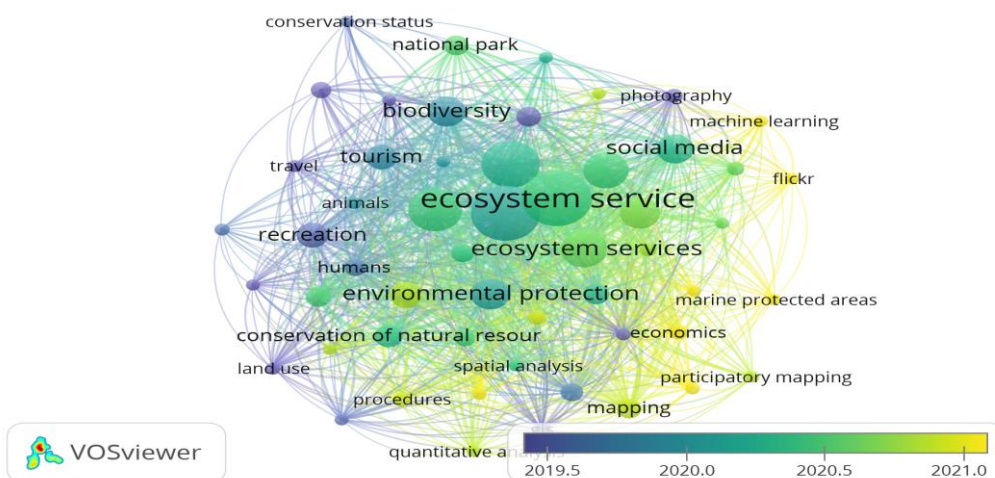




**Figure 7: Network visualisation of co-occurrence analysis of keywords in the articles on tourism as a cultural ecosystem service in protected areas**

The second largest cluster (green) has thirteen key terms, namely, social networking online (33), conservation (29), ecosystem services (29), social media (22), ecosystems (17), environmental management (10), photography (7), recreational activity (7), perception (5), nature-based recreation (5), coastal zone (5), Flickr (5), and marine protected areas (5). The articles in this cluster focused mainly on using social media to collate data on CES in the form of photographs posted by users from coastal and marine protected areas. The third (blue) and fourth (yellow) clusters have eleven keywords each. The blue cluster contains the terms cultural ecosystem service (12), assessment method (11), mapping (11), decision making (10), economics (8), sustainable development (8), GIS (7), aesthetics (6), mapping method (6), marine protected areas (5), and participatory mapping (5). The focus here is on assessing and mapping cultural ecosystem services using mixed methodologies, including participatory approaches for decision-making about sustainable development. The yellow cluster, on the other hand, comprises articles on tourism demand in protected areas and biodiversity in protected areas. It contains the following words: cultural ecosystem services (54), ecosystem service (53), protected area (41), protected areas (38), biodiversity (21), ecotourism (17), tourism (17), national park (11), nature-based tourism (9), animals (5) and travel (5).

Regarding changing research trends, the study employed overlay visualisation, which uses colour to show the evolution of study areas over time. The analysis yielded four clusters based on the average year in which the keywords appeared. Yellow clusters represent the most recent studies, while the purple ones represent the oldest. Therefore, from the analysis presented in Figure 8, the most recent studies focused on assessing and mapping cultural ecosystem services using participatory approaches and crowdsourced data from social platforms such as Flickr. This is as opposed to earlier studies that relied on onsite techniques and the use of GIS. Recent studies have also focused on coastal and marine protected areas in addition to the previous focus on terrestrial wildlife-protected areas. The analysis also reveals that earlier research was centred on conservation, nature-based tourism, and outdoor recreation. In contrast, more recent research incorporates other aspects of sustainable development by also considering economic and social perspectives.



**Figure 8: Overlay visualisation of co-occurrence analysis of keywords in the articles on tourism as a cultural ecosystem service in protected areas**



## Discussion of findings

Research on tourism as cultural ecosystem services (CES) seems nascent, with findings indicating a fluctuating trend in the past decade. The study further revealed that developed countries have a higher concentration of research output on tourism as a CES, with Europe being the most prominent. In contrast, less developed countries, including most African countries, have lower levels of research output in this area. This is in tandem with the findings of Hasana et al. (2022). The low research output from these countries is a concern since they host a high percentage of protected areas and depend on nature-based tourism (Mushawenhuka et al., 2022). It was also evident that the countries with the highest collaboration, such as European countries, also had high research output. The collaboration was both inter-country and intercontinental collaborations. On the contrary, those with the weakest collaborations, such as African countries, also had low research output. The study also revealed that the top journals in the study area were mainly from agricultural sciences, biological sciences and environment, with Ecosystem Services leading in publications and citations. This explains the strong bias that most studies had towards other ecosystem components, with CES and tourism being mentioned in passing. This supports the sentiments of Palomo (2017) and Hirons et al. (2016), who posited that CES was less researched than other ecosystem services. This has implications for the direction and scope of discussions. As demonstrated in this study, the main research themes were conservation, land use and recreation rather than tourism. Though *Tourism Management Journal* was the most influential tourism-specific journal, it had few publications, indicating the need for more studies. The knowledge base of tourism as a CES in protected areas seems to be structured around assessments, mapping, supply and demand, land use planning, conservation, social media research, human-nature interactions, climate change and sustainable development. This is illustrated by the top three most cited authors who focused on assessing and mapping CES hotspots, with tourism assuming a secondary position (da Mota & Pickering, 2021; Martínez Pastur et al., 2016; Nahuelhual et al., 2013). Since assessment and mapping are critical in generating data on tourist hot spots, tourist profiles, preferences and experiences, which inform tourism product development (Jamgade & Mondal, 2023), it is important to have studies that examine these but from a tourism perspective.

CES accommodates both mass and niche tourism. However, protected areas provide distinct prospects for special interest activities that can be converted into niche tourism, such as mental and well-being benefits (Buckley et al., 2023; Chan, 2017), fishing (Chen, 2020), birdwatching (Santos et al., 2019), wine tourism (Winkler et al., 2016), mangrove tourism (Spalding & Parrett, 2019; Tanner et al., 2019) and spiritual tourism (Chaudhary et al., 2019). This type of tourism allows a select group of elitist high-end tourists to engage in tourism activities while paying a premium for ecosystem services, hence supporting conservation and other needs such as carbon offset projects. There is, therefore, a need for more studies on niche tourism product development and its contribution to sustainable tourism initiatives in protected areas. Studies have been conducted on the effect of tourism on CES with differing outcomes. Taff et al. (2019) opined that tourism reduces the ability of CES to provide health, spiritual value and well-being. Other negative impacts include the destruction of biodiversity and reduced access by locals to CES (Chakraborty et al., 2020; Chung et al., 2018; Havas et al., 2016). Other studies, however, pointed out positive impacts where tourism contributed to increased carbon storage (Li et al., 2023), enhanced CES (Chen, 2020), and payment for ecosystem services programs (Tanner et al., 2019). The willingness of tourism to pay both for tourism and conservation is key in sustaining the supply of cultural ecosystem services in protected areas (Jamean & Abas, 2023). This willingness varies according to the resource and perceived benefits (Jianhong Xiao et al., 2021). More research on the impacts of tourism on CES in protected areas is needed to contribute to this discourse. Sustainable tourism management in protected areas often calls for trade-offs in balancing economic, social and environmental perspectives. While most studies assess CES from an economic and environmental point of view (Soe Zin et al., 2019; Saha & Mukul, 2022), there is a need to incorporate the social perspective to have a holistic assessment of sustainable development. A few studies have followed a combined approach that evaluated the CES from economic, social and environmental perspectives (Hou et al., 2022). However, there is generally a lack of assessment studies based on the social angle, hence the need for more tourism studies that address this.

The human-nature nexus within and without the protected areas was also eminent in the studies. Fish et al. (2016) argued that tourism arises from human interaction with nature. The various stakeholders, including tourists, host communities and management of the protected areas represent the human aspect. Some studies focused on the views of both tourists and host communities (Buckley et al., 2023; Chen, 2020; Pinto et al., 2021). Muhati et al. (2018) examined the views of the host communities where tourism was not perceived to be significant since the locals were not benefiting from it. Emerging issues that require more research include the competing needs of tourists and host communities in the face of climate change (Chen, 2020) and the involvement of tourists and communities in conservation efforts (Santos et al., 2019; Zhang et al., 2023). Managing tourism pressures on CES and improving adaptability under climate change is also critical in protected areas (Chen, 2020; Monz et al., 2021; Zeng et al., 2022). As posited by Pandy and Rodgeron (2023), nature-based destinations such as protected areas are very vulnerable to climate change. Research has been conducted to examine the adverse effects of extreme weather events on cultural ecosystem services and tourism (Wilkins et al., 2021). However, adaptation and mitigation strategies are often missing in these contexts; hence, more research is needed. Furthermore, tourism stakeholders do not perceive climate change as a threat to tourism (Pandy & Rodgeron, 2023). Bartlett et al. (2022) argue that though climate change affects the supply and demand of coastal tourism, social adaptation can minimise the effects. In contrast, Schirpke and Ebner (2022) posited that climate change may positively impact tourism as a cultural ecosystem service.

Another emergent theme was land use management and spatial distribution of natural and cultural CES. Most studies focused on rural protected areas, with the urban areas left out. It was also evident that unregulated changes in land use management negatively affect the supply of CES and tourism (García-Llamas et al., 2019). For instance, planting woodlands in protected areas to promote recreational tourism might enhance the aesthetic appeal of the environment. However, it is



important to acknowledge that adverse ramifications are associated with this practice once a certain threshold is surpassed (Iversen et al., 2023). Thus, it should be done in moderation to avoid negative impacts. In some instances, tourism was not the preferred land use, especially by the local community, who do not perceive it as having direct benefits to them (Muhati et al., 2018). While earlier research was based on nature-based tourism in terrestrial protected areas, recent studies also considered coastal and marine protected areas. In terms of methodology, there is an increasing tendency to use social media for research in this discipline. Photo-sharing websites such as Flickr and Panorama websites have been used to collect data on consumer preferences, tourist flows, landscape changes under climate change and to quantify the supply of CES (Fox et al., 2022; Gosal et al., 2019; Schirpke et al., 2018; Sinclair et al., 2019; Wilkins et al., 2021). WEIBO posts have been used to assess the value of the various CES, including tourism (Wang et al., 2023). Comments from Twitter were analysed using sentiment analysis to get stakeholders' perceptions and engagement (da Mota & Catherine Pickering, 2021). Trip Advisor has also been used as a data source for various studies, including visitor flows, consumer reviews and the effect of climate change on the supply and demand of CES (Bartelet et al., 2022; Spalding & Parrett, 2019). Therefore, it is apparent that social media use for research is an emerging trend in tourism studies within protected areas.

## Conclusion

It is evident that most studies conducted on tourism and cultural ecosystem services (CES) in protected areas originate from the global North, with the global South lagging in research output. Most studies are housed under ecosystem, conservation, and general environmental journals, indicating tourism journals' lack of attention to the area. This trend may impact the perspectives examined as current studies lean more toward ecology, landscape, and other components of CES, such as recreation. This excludes tourism issues such as product development, destination management, and sustainability. Thus, there is a need for more tourism journals to publish about CES. There is also a need for more collaboration from regions such as Africa. There are also shifts in trends that show research moving away from the initial focus on ecology and conservation to including the humanistic or social perspectives. From the study, current trends include assessment methods, mapping, supply and demand of CES, land use planning, conservation, social media research, human-nature interactions, climate change, and sustainable development. To shift the focus to tourism, the study identified the following research gaps: niche tourism product development, sustainable tourism initiatives in protected areas, willingness of tourists to pay for cultural ecosystem services programs, impacts of tourism on CES in protected areas, climate change adaptation and mitigation, tourism stakeholder engagement and management of competing needs, use of social indicators for assessments of tourism in CES, spatial distribution of CES and land use in urban protected areas, and efficacy of using social media for tourism research. This study was limited to journal articles in Scopus over the past decade. Future bibliometric studies should be based on multiple databases to cover a wider scope since this study only covered Scopus. In addition, other methodologies, including systematic reviews and empirical studies, should also be conducted on the topic to inform policy and practice.

## Reference

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