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Review Article

Trends and Focal Areas in the Scuba Diving Tourism Literature

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Abstract

This study examines dominant themes, emerging trends, and collaboration patterns in scuba diving tourism research to assess the field's evolution and inform future studies. Using a qualitative document analysis design supported by bibliometric techniques, 250 publications indexed in the Web of Science database between 1993 and 2025 were analyzed with VOSviewer (v1.6.17). Keyword co-occurrence and country collaboration analyses reveal that the literature is structured around core themes such as coral reefs and dive tourism, marine protected areas, and resource management. Sustainability, stakeholder engagement, and marine ecology occupy central and strongly interconnected positions, while niche topics—such as anthropology, cryptic species, and localized case studies—remain peripheral. Temporal patterns indicate a growing emphasis on sustainability and tourism economics, alongside enduring interest in dive centers and marine tourism. International collaboration is organized around three main axes: a Pacific cluster led by Australia, Malaysia, and New Zealand; an Africa–Europe–Latin America corridor centered on South Africa; and smaller bilateral networks, including Türkiye–Wales. Overall, scuba diving tourism research has evolved into an interdisciplinary domain integrating ecological, economic, and socio-cultural perspectives, with sustainability and geographically concentrated international collaborations shaping its contemporary knowledge structure.

Keywords: Scuba diving, Sustainability, Dive tourism.

Introduction

Scuba diving tourism has emerged in recent years as a rapidly expanding sub-sector of global tourism, generating significant economic, cultural, and environmental impacts in coastal regions (Dimmock & Musa, 2013). The exploration of marine ecosystems (Mangelli et al., 2021), the promotion of underwater biodiversity (Cattaneo-Vietti, 2021), and the growing popularity of adventure tourism (Dai et al., 2021; Sumanapala et al., 2023) have positioned scuba diving as a subject of increasing interest for both tourism researchers and destination managers. Operating across a wide geographic spectrum—from tropical and subtropical regions to the Mediterranean, the Red Sea, and Pacific islands—the scuba diving tourism sector has been examined through diverse lenses, including sustainability, environmental protection, destination management, and visitor experience (Albayrak et al., 2021; Cater et al., 2021; Giglio et al., 2019; Lucrezi et al., 2018; Musa et al., 2006).

The broader growth trajectory of the tourism industry has directly influenced scuba diving tourism. Advances in travel opportunities, the development of diving technologies, and the impact of social media have made underwater experiences accessible to

larger audiences (Musa & Dimmock, 2013). This expansion has encouraged a diversification of academic research and attracted scholars from various disciplines to engage with the topic.

Scuba diving tourism is studied not only within the context of sport and recreation but also in connection with environmental management and ecotourism (Krieger & Chadwick, 2013), local economic development (Prayag et al., 2010), and the preservation of cultural heritage (Bruno et al., 2020) (Firman et al., 2023). Consequently, the literature spans a broad spectrum of topics, ranging from environmental sustainability and destination marketing to visitor motivations and local community participation. The rapid growth of this field underscores the need for a systematic examination of prevailing research trends and focal areas. Without a holistic perspective, fragmented studies risk overlooking critical research gaps. A comprehensive understanding of the social, economic, and environmental impacts of scuba diving tourism is of strategic importance for both policymakers and industry stakeholders. Identifying the dominant themes in scuba diving tourism research and the regions that attract the most scholarly attention is therefore a crucial step toward evaluating the field's current state.

Existing studies on scuba diving tourism are often limited to destination-specific case studies (Cavallini et al., 2023; Yaşar & Konurhan, 2019), investigations of tourist behavior (Hodeck et al., 2021), or analyses focused on sustainability policies (Guo et al., 2024). While valuable, these works sometimes fall short in reflecting broader trends or capturing the holistic development of the field, as scuba diving tourism is addressed in a fragmented manner across different geographies and disciplines. In this context, a systematic review of the scuba diving tourism literature is essential not only to consolidate existing knowledge but also to provide fresh perspectives that can guide the theoretical and practical advancement of the field. This article seeks to evaluate the current state of scuba diving tourism research by identifying key trends and focal areas, thereby offering insights to inform future scholarly and practical endeavors

Material and Methods

Research Design

This study was conducted within the framework of a qualitative research design using the document analysis method and employed bibliometric analysis techniques. The Web of Science (WoS) database served as the sole source of data collection. Based on predefined search criteria, relevant records (n=250) published between 1993 and 2025 were retrieved from WoS. Following the data collection phase, the exported bibliographic records were analyzed using the VOSviewer software (version 1.6.17). Two primary bibliometric analyses were performed. First, a keyword co-occurrence network was constructed to identify thematic focuses and emerging trends within scuba diving tourism research. Second, a country collaboration network was examined to evaluate leading nations in the field and the patterns of cooperation among them.

Data Collection

The data collection process was carried out on 19 September 2025 using the "Advanced Search" function of the Web of Science (WoS) database. The search aimed to identify scholarly publications focusing on scuba diving tourism by employing English-language keywords specifically tailored to the topic. To ensure the inclusion of relevant studies, several filtering criteria were applied. The keywords "scuba diving" (Topic) and

"tourism" (Topic) were used as search terms. All subject categories were selected, the document type was limited to articles or reviews, the time span was set to all years, and no index restrictions were applied. As a result of applying these filtering criteria, a total of 250 articles were identified. During the export process, the WoS interface's "Export" function was used, and the "Tab Delimited File" format was selected. Within the export options window, "All records on page" was checked, and under "Record Content," the "Full Record and Cited References" option was chosen. After completing these selections, the "Export" command was executed, and the bibliographic records were downloaded and prepared for bibliometric analysis. In the subsequent stage, the retrieved data were analyzed using VOSviewer (version 1.6.17) software. Keyword co-occurrence and country collaboration networks were generated and visualized to reveal thematic focuses, emerging trends, and patterns of international cooperation within scuba diving tourism research.

Data Analysis

The data analysis process for this study was carried out using VOSviewer (version 1.6.17), a software tool designed for visualizing bibliometric relationships. Data obtained from the WoS database were analyzed through a series of steps within the VOSviewer interface. On the main screen, the "File" menu was opened, and the "Create" option was selected. In the following window, the "Create a map based on bibliographic data" command was chosen. Subsequently, "Web of Science" was specified as the data source, and the Tab-Delimited files derived from the selected studies were uploaded to the program. In accordance with the aim of the study, two main bibliometric analyses were conducted. The first involved the creation of a keyword co-occurrence network to identify thematic focuses and trends within scuba diving tourism research. The second entailed the analysis of a country collaboration network to evaluate the leading countries in the field and the patterns of international cooperation. For each analysis type, the configurations for type of analysis and unit of analysis were set as presented in Table 1.

Table 1. VOSviewer analysis types and parameters.

Analysis Type	Analyzed Parameters	Counting Method	Threshold Value
Keyword Co-occurrence	All keywords	Full counting	1
Countries	Country	Full counting	1

A minimum occurrence threshold of one was applied for all analyses. During the visualization phase, the number of items considered for each analysis unit was restricted to the maximum value automatically determined by VOSviewer.

Results

Based on the data obtained in this study, visualizations were generated for two different collaboration networks. Figure 1 presents the Keyword Co-occurrence Network Visualization, which illustrates the relationships among the key concepts within the research field. This network highlights the keywords that dominate the literature and the strength of the connections between them, thereby emphasizing thematic concentrations in the field. Figure 2 displays the temporal distribution of the Keyword Co-occurrence Network, allowing for an analysis of how the literature has evolved over time and providing deeper insights into the processes of conceptual development and shifting research directions. Figure 3 depicts the Country Collaboration Network Visualization, which examines joint research conducted by different countries and identifies those positioned as central nodes in terms of international cooperation.

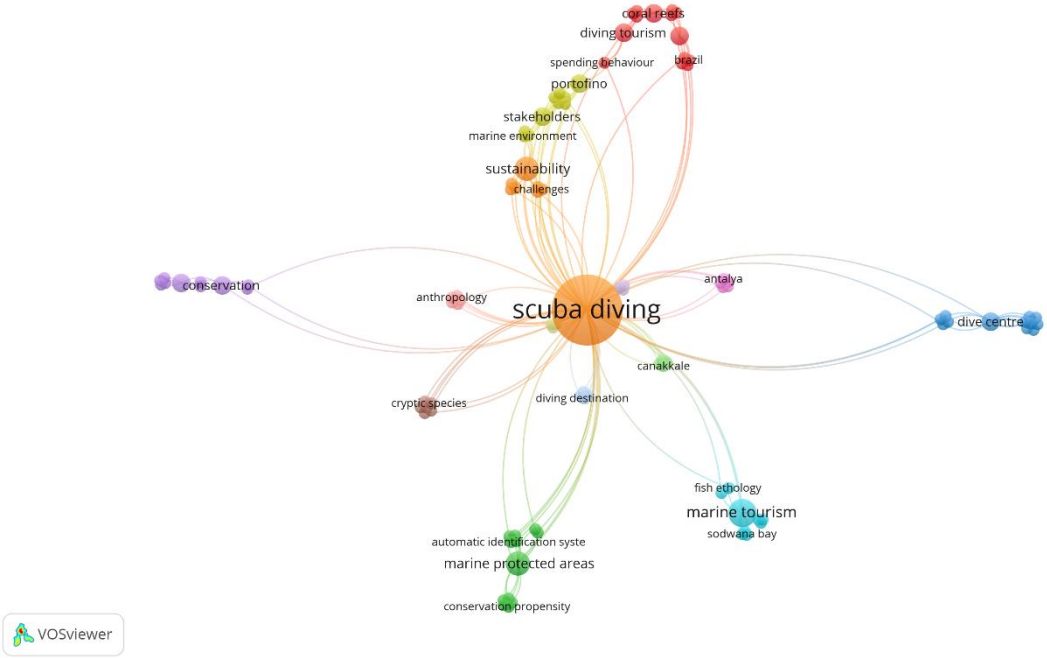

Figure 1. Relationships among core concepts in the research field.

Figure 1 presents the multidimensional network of keyword relationships shaped around the concept of "scuba diving," clearly revealing the thematic focuses and subtopics of the field. Positioned as a large central node, "scuba diving" demonstrates its role as an integrative concept within the literature, linking major themes through its dense surrounding connections and the distinctly colored clusters. The colored clusters represent subtopics grouped according to thematic proximity. The red cluster, containing terms such as "coral reefs," "diving tourism," and "Brazil," reflects research on diving tourism shaped around coral reefs within specific spatial contexts. The green cluster, which includes terms such as "marine protected areas," "conservation propensity," and "automatic identification system," emphasizes themes of marine conservation areas and resource management. This structure highlights the intersection of topics such as ecological conservation, tourism economics, and local governance. Additionally, terms like "sustainability," "stakeholders," and "marine environment" positioned close to the central node indicate that sustainability and stakeholder participation are directly connected to diving activities. Peripheral terms such as "anthropology," "cryptic species," "Çanakkale," and "Antalya" suggest the diversification of the field into socio-cultural dimensions, elements of biodiversity, and region-specific studies. Furthermore, clusters including "marine tourism" and "dive centre" point to the economic and operational aspects of recreational diving, while terms such as "fish ethology" indicate the presence of ecologically oriented behavioral research within the network.

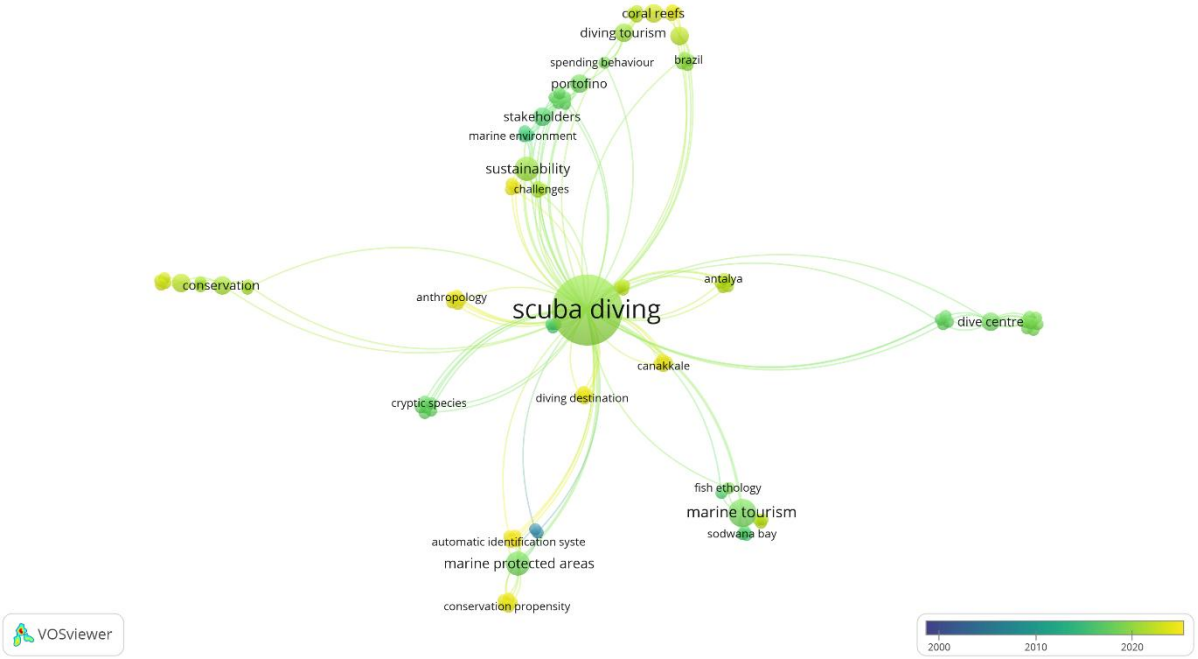

Figure 2. Temporal distribution of relationships among core concepts in the research field.

Figure 2 illustrates the temporal distribution of keyword co-occurrences for the concept of "scuba diving," reflecting the chronological development of the literature. The central position of the "scuba diving" node, which continues to exhibit the highest density of connections, indicates that the concept has remained a primary focal point across all periods. The color scale shows that yellow tones represent more recent studies, while green and blue tones correspond to earlier research. This distribution reveals how the thematic directions within the field have evolved over time. Notably, nodes such as "sustainability," "stakeholders," "spending behaviour," and "diving tourism" appear in yellowish hues, suggesting that topics related to sustainability, economic behavior, and tourism have become prominent in recent years. Similarly, the presence of "coral reefs" and "Brazil" in contemporary tones signals a growing focus on tropical ecosystems and regional tourism destinations in recent research. In contrast, nodes like "dive centre," "marine tourism," and "marine environment" appear in greener shades, indicating that these subjects were explored earlier but remain integral to the network. Peripheral nodes such as "anthropology" and "automatic identification system" display transitional colors, suggesting niche topics either carried forward from earlier studies or regaining attention in recent years. Meanwhile, the intermediate positioning of terms such as "conservation" and "marine protected areas" within the color spectrum demonstrates that ecological conservation and marine management have been enduring and consistently relevant areas of interest over time.

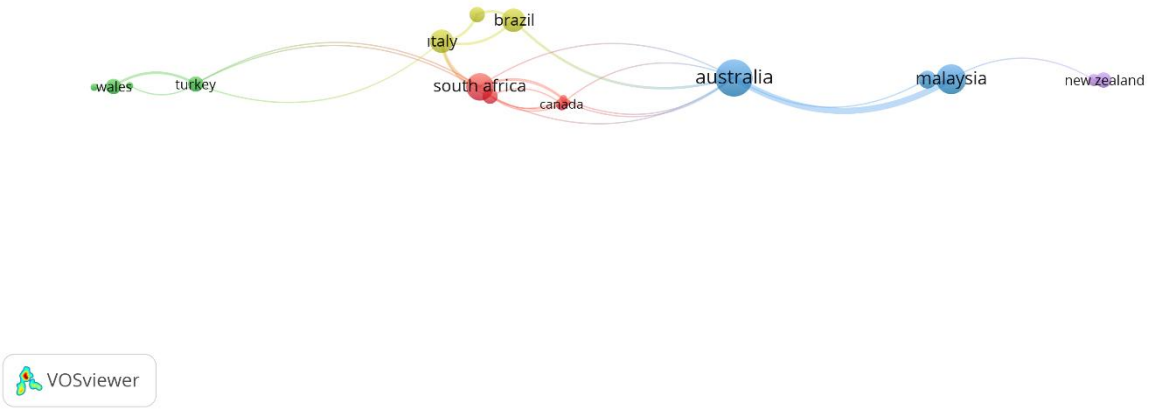

Figure 3. International research collaboration network among countries.

Figure 3 presents the network of international research collaborations among countries, illustrating the spatial distribution and intensity of partnerships in areas such as scuba diving tourism and marine ecology. Examination of the network structure reveals that the Australia node has the largest size and the densest connections, indicating Australia's role as a central actor in both regional and global collaborations. Australia's strong ties with Malaysia and New Zealand reflect an active scientific exchange within the Pacific-Asia axis, while the Malaysia-New Zealand connection appears to play a complementary role within this interaction. The South Africa node functions as a bridge linking two subclusters of the network, primarily through its connections with Australia, Canada, and Italy. This bridging role demonstrates South Africa's strategic position, connecting partners within the African continent to actors on other continents. Similarly, Italy and Brazil connect to the network through South Africa, representing contributions from Latin America and Europe. The link between Türkiye and Wales indicates a relatively small but regionally significant European subgroup. Several countries located on the periphery of the network are represented through weaker yet meaningful connections with the central nodes, suggesting their more limited but strategically important contributions. Overall, the network structure reveals three primary orientations: a Pacific axis centered on Australia and Malaysia, an Africa-Europe-Latin America pathway connected through South Africa, and smaller-scale regional collaborations such as Türkiye-Wales. This configuration indicates that, although geographically widespread, research collaborations in scuba diving tourism and marine conservation are concentrated within specific regions.

Conclusions

The network visualizations developed in this study provide a comprehensive assessment of the conceptual concentrations, temporal evolution, and geographic collaboration patterns within scuba diving tourism and marine ecology research. The keyword co-occurrence network clearly demonstrates that the concept of scuba diving in the literature is not merely approached as a recreational activity but functions as a multilayered focal

point that integrates sustainability, environmental protection, economic behavior, and socio-cultural dimensions. The strong associations of concepts such as sustainability and stakeholder participation with the central node indicate that diving activities are increasingly discussed within frameworks of environmental awareness and governance. Furthermore, the peripheral positioning of more niche terms such as anthropology and cryptic species underscores the interdisciplinary diversity of scuba diving research, spanning environmental and cultural perspectives.

The visualization reflecting temporal distribution reveals that ecological conservation and marine management have remained stable, long-term focal points in the historical development of the literature. By contrast, the recent prominence of themes such as tourism behavior, coral reefs, spending patterns, and destination management suggests that scuba diving tourism is increasingly being examined as a strategically significant economic sector. This trend offers important insight into how sustainable development goals and tourism policies may, in the future, reconceptualize scuba diving tourism not only as an economic activity but also as one linked to ecological integrity and community participation.

The country collaboration network indicates that Australia and Malaysia, positioned at the center of the network, generate strong scientific interaction within the Pacific-Asia axis. South Africa's connections with Australia, Canada, Italy, and Brazil highlight its role as a critical bridge facilitating the flow of knowledge across diverse geographic regions. The inclusion of comparatively smaller nodes such as Türkiye and Wales emphasizes the value of regionally distinctive collaborations that enrich the literature. These patterns suggest that, in the coming years, research in this field may evolve toward a more balanced and diversified global network structure.

Overall, the results demonstrate that scuba diving tourism and related ecological research are becoming increasingly complex in the contexts of sustainability and international partnerships. Thematic diversity and interdisciplinary approaches underscore the importance of holistic strategies that account not only for ecological and economic dimensions but also for cultural and governance-related dynamics. Moreover, countries and regions currently less central to existing collaborations may, through strategic participation, become more actively integrated into knowledge production and policy development in this area. Within this framework, the network structures and temporal trends identified by the study strongly indicate that future developments in scuba diving tourism will be shaped by inclusive, sustainable, and regionally diverse approaches.

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