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Ecotourism in Marine Protected Areas as a tool to valuate natural capital and enhance good marine governance: A review

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Marine Protected Areas (MPAs) are essential to reach the UN Ocean's Decade challenges and the Sustainable Development Goal 14 (life bellow water – conserve coastal and marine areas), and their crucial role for the health of the planet was highlighted in the United Nations Ocean Conference. However, often these MPA's are no more than Paper Parks, with poor financial and human resources, thus lacking effectiveness. Moreover, they frequently trigger conflicts with local communities, by imposing restrictions to their activities with no alternative or compensations, causing serious governance inefficiencies. Thus, within the UN Oceans Decade, MPA's must face simultaneously three of the challenges: Protect and restore ecosystems and biodiversity (Challenge 2); Develop a sustainable and equitable ocean economy (Challenge 4) and Change humanity's relationship with the ocean (Challenge 10). To address those challenges, it becomes clear that management models of MPA's had to find ways to value natural capital and, at the same time, involve local communities and stakeholders in the governance processes. The conservation of biodiversity has both direct and indirect economic benefits for many sectors of the economy, namely tourism, being ecotourism considered one of the segments particularly adequate to value natural capital. Ecotourism, defined as "environmentally responsible travel and visitation to relatively undisturbed natural areas", to enjoy and appreciate nature, is often used to enhance the natural capital, while protecting and promoting protected areas. Several studies have been carried out about ecotourism in MPA's all over the world, particularly in the 21st century. In this article, we analyzed several case studies focusing ecotourism in MPAs, to better understand the connection between the development of this industry, the development of sustainable blue economy, and the efforts for ocean

conservation. From the analysis conducted, we conclude that ecotourism development and community participation are of paramount importance in achieving sustainable development in MPAs, although there is still room to new advances improving good marine governance.

KEYWORDS

Marine Protected Areas, blue economy, ecotourism, conservation, sustainability, governance

1 Introduction

Marine Protected Areas (MPAs) are vital for biodiversity (Agardy et al., 2003). The UN Ocean's Decade challenges, the Sustainable Development Goal 14, and several other global and European agendas, policies and agreements, identify as a major goal for the protection of the marine environment and biodiversity the establishment of MPAs (European Commission, 2019; European Commission, 2020). The EU Biodiversity strategy for 2030 sets the goal for 30% of the seas to be under protection by 2030 (European Commission, 2020; UNOC, 2022).

There are many types of MPAs, and they can vary in several aspects such as size, conservation goals, governance, level of protection, among other factors (Pham, 2020). MPAs are favorable areas for the development of environmental education actions, scientific research, and tourism activities (Abbad et al., 2022).

MPAs and other diverse coastal ecosystems all have a great potential for nature-based ecotourism, due to their natural and cultural heritage, landscape, seascape, and recreational opportunities. Coastal and marine protected areas have natural capital stocks that provide several ecosystem services vital to humans. The delivery of these benefits depends on the protection and sustainable management of natural capital through effective nature conservation strategies (Gollier, 2019; Hooper et al., 2019). Since the United Nations General Assembly has designated 2002 as the International Year of Ecotourism (IYE), this type of tourism has been seen as a sustainable way to value natural capital (Eagles et al., 2002). Furthermore, the IUCN considers Ecotourism as a key tool for the financing of protected areas while contributing to improve incomes of local communities and the involvement of stakeholders. Since than ecotourism, particularly in protected areas, has greatly evolved all over the world and MPA's have shown to have great potential. Effective management of MPAs involves high costs and human resources, with the financial funds usually coming from national public funds devoted to the creation and management of MPAs, but also from International or European projects, private funds (foundations), and revenues generated on-site for some MPAs (entrance fees, development of ecotourism activities - example: in the Galapagos Marine Reserve tourism is a major economic activity) (Drumm, 2003; Balmford et al., 2004; Gabrié et al., 2012; BlueSeeds, 2020).

Tourism is a major economic activity in the European Union, and the EU Blue Economy Report (2022), establishes tourism as the EU "*third-largest economic sector with a wide-ranging impact on economic growth, employment, and social development*", and coastal areas and islands tend to be major tourism hotspots (European Commission, 2022). The increasing number of tourists rises some concerns regarding the environmental impacts that tourism has on marine ecosystems, and the sustainable development of coastal areas, since the more attractive a place is the more tourists it will attract, which may diminish the quality of the experience (Hillery et al., 2001; Queiroz et al., 2014; Kurniawan et al., 2022).

However, tourism is an important economic asset for many countries, especially in small islands' states (Seetanah, 2011), with a wide-ranging impact on economic growth, employment, and social development (Scheyvens and Momsen, 2008; Queiroz et al., 2014; Bhuiyan et al., 2016). Increased environmental awareness of the public, who is increasingly looking for more sustainable and responsible options, both for the environment and local communities, has provided the rise of ecotourism. Ecotourism is often considered a potential approach to strengthen conservation of natural ecosystems while, at the same time, enhancing a more sustainable local development (Ross and Wall, 1999; Chen et al., 2020). Therefore, ecotourism is an alternative solution that aims to protect natural resources, especially biodiversity, to promote the sustainable use of those resources, to create an ecological experience and environmental awareness for tourists and, at the same time, protect and respect the natural heritage of destinations and benefit the local communities (Mosammam et al., 2016; Chen et al., 2020).

Ecotourism rapidly expanded across the world and can be a key component to ensure a more sustainable and equitable Blue Economy (Cisneros-Montemayor et al., 2019; Stronza et al., 2019).

Around the world, the number of tourists seeking destinations where they can enjoy natural spaces and biodiversity is increasing (Moniz et al., 2009; Drumm et al., 2016; Noll et al., 2019). An example of the increased valuation of biodiversity is the observation of whales and dolphins in their natural habitat, the so-called "whale watching", which has become a relevant and growing marine ecotourist activity worldwide (Hoyt, 2005; Silva, 2015; Vieira et al., 2018). There is thus a need to align the goals of conservation and protection of nature with the enhancement of its natural capital, through Ecotourism and Nature-based Tourism, safeguarding nature, but making the protection and enhancement become an asset to the surrounding communities (Laulhe et al., 2012). The valorization of natural capital through ecotourism and nature tourism will actively contribute to achieve the goals established in the EU strategy for Biodiversity and the UN Ocean's Decade challenges.

In this article, we reviewed several studies focusing on ecotourism in MPAs, to understand the governance models that best enhance the relationship between ecotourism and the good management/effectiveness of MPAs, based on the valuation of natural capital.

2 Methods

In May 2022 we used the database Web of Science to identify studies about ecotourism in MPA's all over the world, from 2011 to 2022, in all languages and published as articles. The systematic literature review followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guide (Moher et al., 2009). The search query looked for studies with titles, abstracts, and/or keywords that included the words: "ecotourism" and "marine governance" and "natural capital" and "MPA" or "marine protected area*" and "nature tourism" or "conservation "marine area*". The asterisk (*) symbol was used for the truncation and its effect is to retrieve all the words that contain the part of the word preceding the asterisk. The selection of words is representative of the focus of this research: ecotourism targeting MPAs, as a way to value the potential natural capital of those areas, and search for models of good governance that can make compatible ecotourism and conservation. This query generated a list of 404 publications with these criteria, and no publication was discarded due to the language. The PRISMA model was used to filter documents obtained from the databases according to the eligibility criteria. We discarded 33 of the publications before the screening process since they were not available (free access was not available). During the screening process, through peer review to minimize bias risk, 273 of the publications were excluded, since they did not include a clear reference to marine protected areas (MPAs) governance models, a reference to ecotourism in MPAs, or a reference to the economy or financing of MPAs (see Figure 1). In the end, 98 publications were included in the analysis.

We will analyze the spatial distribution by region/continent of the selected articles, whenever possible (since there must be some articles that are more global), to infer about representativity regarding the input for the research from different areas and continents.

Four main criteria of research were defined: Governance, Ecotourism, Stakeholders involvement, and Economy, to code the studies regarding the inclusion of these criteria.

2.1 Governance (C1)

Governance consists of the interactions between structures, processes, and traditions, which determine how responsibilities are exercised, how decisions are taken, and how the views of citizens and interest groups (stakeholders) are integrated into the decision-making process.

The concept of marine governance, mostly began to be elaborated during the second half of the 90's of the last century, particularly during the UN 1998 International Year of the Oceans, where the issues of ocean governance and sustainability were a key stone of the report "The Ocean Our future" of the Independent World Commission on the Oceans (Independent World Commission on the Oceans, 1998). Following, Paquet developed one of the first theoretical concepts defining marine governance: *"The governance of marine spaces is the management of stakeholder activities in these spaces. To optimize this management and to address stakeholder issues requires that effective governance frameworks be in place. Collaborative, cooperative, and integrative governance are improved frameworks for dealing with stakeholder issues. Traditional governance models have been based on a management science approach where the premise is that leadership of organizations (public, private or civic) is strong, and have good understanding of their environment (future trends, rules of the game, and the organization's goals)"* (Paquet, 1999).

Governance can also be defined as "the structural, institutional, ideological, and procedural umbrella under which development programs and management practices operate" (Bennett and Dearden, 2014), and it also determines "how and if the interaction between structures, processes, and institutions merges to solve social and environmental problems" (Plummer and Fennell, 2009).

Thus, the governance of MPAs is a determining factor for their success. Governance applies a systems' perspective on MPAs, both as a "governing system" and as a "system-to be-

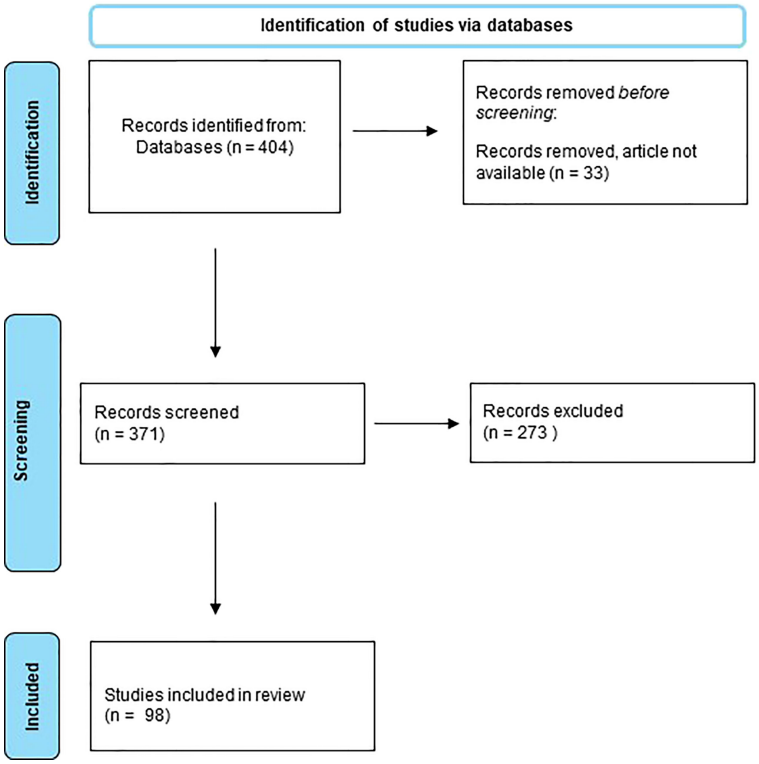

FIGURE 1
Screening process of the literature sample. Diagram of selection and eligibility criteria, including sample sizes, using the PRISMA model.

governed". In this studied we searched for information regarding the institutional and legal framework for the governance and management of MPA's in the sample of articles.

2.2 Ecotourism in MPAs (C2)

Marine ecotourism is an important sector for the development of sustainable tourism, that considers environmental conservation efforts, by reducing environmental impacts and promoting the local communities' needs and involvement (Eagles et al., 2002; Spenceley, 2017; Wiltshier et al., 2022). It is considered a growing and profitable sector. In the analyzed studies, we searched for the reference and examples of ecotourism in marine protected areas.

2.3 Stakeholder involvement in MPAs (C3)

Stakeholder engagement is vital for the success of MPAs. Stakeholder is essentially "*any group or individual with a direct or indirect interest, or stake, in the resources of that the MPA has authority to manage. Stakeholders may include government agencies, non-governmental agencies (NGOs), local community groups, local communities, and other resource management agencies*" (Walton et al., 2013). Stakeholder involvement is an ongoing process that intends to include the interested parties in the assessing, planning, and implementation of the MPA, and is widely known as an indicator of success for MPAs and marine conservation (Pomeroy and Douvere, 2008; Hoelting et al., 2013; Cárcamo et al., 2014). The concept of integrated frameworks involving stakeholders in a collaborative and cooperative approach of management made its path and reached the governance and management of protected areas. In the analyzed studies we searched for references or indications of active engagement of stakeholders in every stage of the development of MPAs.

2.4 Economy of MPAs (C4)

Ecological benefits can translate into economic benefits, and this includes market benefits (goods or services observed through a market transaction; example: the increase in tourism) and non-market benefits (not achieved by a market transaction; example: the benefit to people from knowing that a threatened species is protected). We searched for references or indications to the funding and economic benefits of MPAs.

The publications were coded to identify the defined criteria. The content of each publication was further analyzed to establish the clear presence of the defined criteria.

3 Results

Using the PRISMA model to filter documents obtained from the databases according to the eligibility criteria, we obtained 98 publications to analyze. Of these publications, 393 were in English, 8 were available in Spanish and 3 in Brazilian Portuguese, and no article was discarded based on the language.

Table 1 summarizes the characteristics identified for each of the 98 studies reviewed in terms of criteria compliance of particular interest in this review.

The distribution of the articles sample by Region (geographic continent) is shown in Figure 2, revealing that 19% of the analyzed studies were from Europe, 17% from South America, 12% from Asia,11% from Oceania, 11% from Africa, 10% from North America, 3% from Central America and

TABLE 1 Description of the literature sample based on the criteria (n= 98).

Author(s) and Year	C1	C2	C3	C4
Afonso et al., 2019	–	+	–	–
Amengual and Alvarez-Berastegui, 2018	+/-	–	–	+/-
Aswani et al., 2017	+	–	–	–
Barragan-Paladines and Chuenpagdee, 2017	+	–	+	–
Batel et al., 2014	–	+/-	–	+/-
Bax et al., 2016	+/-	–	–	–
Biggs et al., 2016	–	+	–	+/-
Bond, 2019	–	–	–	+/-
Brouwer et al., 2016	–	–	–	+/-
Buonocore et al., 2020	+/-	–	–	+/-
Calado et al., 2012	+/-	–	+	–
Carvache-Franco et al., 2019	–	+	–	–
Cerveny et al., 2020	+/-	+/-	–	–
Cheng et al., 2018	–	+/-	–	–
Cheung et al., 2022	–	+	–	–
Chimienti et al., 2017	–	+/-	–	+/-
Cini and Saayman, 2013	–	+/-	–	–
Cisneros-Montemayor et al., 2020	–	+	–	+/-
da Silva, 2019	+	–	+/-	–
Davis et al., 2019	–	–	–	+/-
Dube and Nhamo, 2021	–	+/-	–	–
Estradivar et al., 2022	+/-	–	–	–
Estradivar et al., 2022	+	–	+/-	–
Fache and Breckwoldt, 2018	+/-	–	+/-	–
Fernandez-Llamazares et al., 2020	–	+	–	–
Figueiroa et al., 2016	+/-	–	–	–
Gairin and Andrefouet, 2020	+/-	–	–	–

(Continued)

TABLE 1 Continued

Author(s) and Year	C1	C2	C3	C4
Gallacher et al., 2016	+/-	–	–	–
Galparsoro and Borja, 2021	+/-	–	–	–
Gardner et al., 2020	+	–	–	–
Gelcich et al., 2013	–	+	–	+
Giraldo et al., 2014	+/-	–	–	–
Gladun, 2015	+/-	–	–	–
Gonzalez-Bernat and Clifton, 2017	+	–	+/-	–
Gownaris et al. 2019	+/-	–	–	–
Harris et al., 2022	+/-	–	–	–
Hiriart-Bertrand et al., 2020	+/-	–	–	–
Huang et al., 2015	+/-	–	–	–
Hughes et al., 2021	+/-	–	–	–
Hunt and Vargas, 2018	–	+	+/-	–
Ison et al., 2018	–	–	+/-	+
Johnson et al., 2019	+/-	–	–	–
Katikiro et al., 2015	+/-	–	+/-	–
Kawaka et al., 2017	+/-	–	+/-	–
Kessel et al., 2017	–	+	–	+
Kirkman et al., 2019	+/-	–	–	–
Kusumawati and Visser, 2014	+	–	+/-	–
Kyvelou and Ierapetritis, 2021	+/-	+/-	–	–
Lai and Leone, 2020	+	–	–	–
Lemelin and Dawson, 2014	–	+/-	–	–
Li and Fluharty, 2017	+	–	–	+/-
Lima et al., 2021	+	–	+	–
Llausas et al., 2019	+/-	+/-	+/-	–
Lucrezi et al., 2019	+	+	+	–
Mackelworth et al., 2013	+	+	+	+
Mackelworth et al., 2013	+/-	–	–	–
MacKinnon et al., 2015	+/-	–	–	–
Maretti et al., 2019	+	–	+/-	+
McKinley et al., 2019	–	+	–	+/-
Mills et al., 2011	+/-	–	–	–
Morzaria-Luna et al., 2020	+/-	–	+/-	–
Murphy et al., 2018	–	+	–	+/-
Navarro-Martinez et al., 2020	–	+	–	–
Nicoll et al., 2016	–	+/-	+/-	–

(Continued)

TABLE 1 Continued

Author(s) and Year	C1	C2	C3	C4
Noble et al., 2019	+/-	+/-	+/-	–
Padash et al., 2016	–	+/-	–	–
Patrizzi and Dobrovolski, 2018	+/-	–	–	–
Perera-Valderrama et al., 2020	+/-	–	–	–
Qiu, 2013	+	+	–	+
Quintana et al., 2021	–	–	+/-	–
Ratsimbazafy et al., 2019	+/-	–	+	–
Rees et al., 2018	+/-	–	–	–
Robb et al., 2015	+	–	+/-	–
Rodriguez-Rodriguez et al., 2015	–	–	+	+
Rodriguez-Rodriguez et al., 2016a	+/-	–	–	–
Rodriguez-Rodriguez et al., 2016b	+/-	–	–	–
Santos et al., 2021	+/-	–	+/-	–
Scheske et al., 2019	+/-	+/-	–	–
Schiavetti et al., 2013	+/-	+/-	–	–
Schoning, 2021	+	–	–	–
Schram et al., 2019	+/-	–	+/-	–
Sciberras et al., 2015	+/-	–	–	–
Scully-Engelmeyer et al., 2021	+/-	–	–	+/-
Smallhorn-West et al., 2020	+/-	–	–	–
Spenceley, 2017	–	+/-	–	+/-
Steinfurth et al., 2020	+/-	–	–	–
Strickland-Munro et al., 2016	+/-	+/-	–	–
Syakur et al., 2012	–	–	+	–
Nur Syamsi and Lee, 2021	–	+	+/-	–
Teh et al., 2012	+/-	–	+/-	–
Turner et al., 2016	+/-	+/-	–	–
Tyllianakis et al., 2019	–	+	–	–
Ullah et al., 2022	+/-	–	+	–
Vilar et al., 2020	+/-	–	–	–
Virtanen et al., 2018	+/-	–	–	–
Watson and Hewson, 2018	+/-	–	–	–
Zoppi, 2018	+/-	–	–	–
Zorondo-Rodriguez et al., 2019	+/-	–	–	–

The table is organized by author(s) and year. Complete references are in Supplementary Table 1. Columns C1 to C4 correspond to the criteria used to analyze the literature sample. C1 – Governance in MPAs; C2 – Ecotourism in MPAs; C3- Stakeholder involvement in MPAs; and C4 – Economy or finances of MPAs. + indicates that the study satisfies the column category; - indicates that it does not; and +/- indicates that partially meets the criteria (some references about the topic, but not enough related to the main objectives of the criteria).

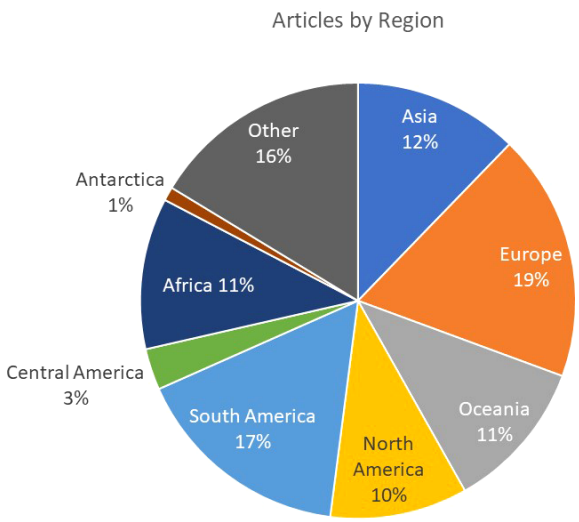

FIGURE 2
Distribution by region/continent of the articles sample.

1% from Antarctica. There's a 16% of studies labeled with "others" meaning that those articles were not confined to a specific continent, mostly being worldwide examples. The results show that there is a significant balance between the number of analyzed articles by region, only with Antarctica with a low representation, which was expected, given the fact that it is a continent with no permanent human inhabitants.

The broader spectrum of our literature analysis is available in Figure 3, demonstrating that only a small percentage of studies fully includes the topics of the defined criteria in spite of governance being essential for MPA effectiveness. Criteria C1 (governance) is completely included in only 16 studies of the universe among the 98 analyzed.

Regarding governance, most studies identify as a major challenge the complexity of governance structures, demanding institutional cooperation and collaboration to avoid overlaps, and most of them identified a top-bottom approach to governance in most MPAs, governed primarily by the state under a clear legal framework (Mackelworth et al., 2013; Qiu, 2013; Lucrezi et al., 2019; Pereira da Silva, 2019). Multilevel governance is also referred in some studies that support that a multilevel governance is necessary for good governance practice in MPAs (Zoppi, 2018). As an interpretive framework concerning intertwined relationships between different governmental levels (international, national, regional, local), non-governmental organizations and private enterprises and stakeholders, multilevel governance stands for the need of interactions at various levels and the need for cooperation and participation (Bache, 2010). Multilevel governance processes are particularly important, regarding policies concerning economic and social cohesion and nature conservation, since they are intrinsically connected to mutual relationships between municipalities, provinces, regions and national states (Bache, 2010; Zoppi, 2018). For example, in Brazil, the governance of large scale marine protected areas is a challenge, since it requires good institutional collaboration and involves a wide range of agencies and shared accountability, which often lead to overlaps of roles (Pereira da Silva, 2019). In Croatia, in the Cres-Lošinj special marine reserve, it is possible to have an example of how governance made without the cooperation and involvement of local communities and local authorities, leads to unsuccess and unbalanced governance. A legal change made by the government

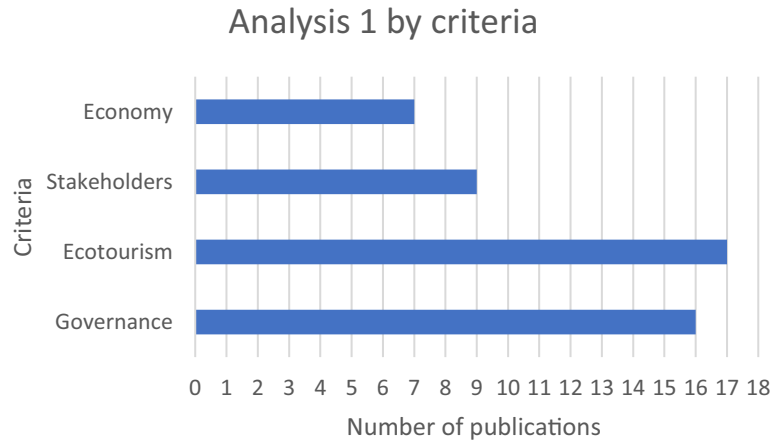

FIGURE 3
Number of publications in which the articles fully meet the criteria.

in 2006, led to a discrepancy between the objectives of local development and the international commitments, which led to a proposed downgrading of the MPA (Mackelworth et al., 2013).

The analysis of the literature sample identified 17 studies that completely include the criteria C2 (ecotourism), with clear examples of ecotourism development in MPAs. Tourism is broadly known as a major economic driver for MPAs and their communities (Hunt and Vargas, 2018; Tyllianakis et al., 2019; Cisneros-Montemayor et al., 2020). Some of the activities developed in marine protected areas mentioned in the studies are diving, marine mammal observation and tours (whales, dolphins, turtles, sharks, etc.), recreational fishing, surfing, and beach based tourism (Kessel et al., 2017; Cisneros-Montemayor et al., 2020; Fernández-Llamazares et al., 2020). Some MPAs plans include cooperative management for the conservation and protection of their natural values, including the endorsement of activities that are aligned with objectives of the MPA, such as well-managed ecotourism (Lucrezi et al., 2019). The management plan of Ponta do Ouro Partial Marine Reserve, in Mozambique, endorses activities that are aligned with the objectives of the plan, such as ecotourism activities of scuba diving, shark diving, whale watching and others (Lucrezi et al., 2019).

Stakeholders' involvement (criteria C3) is mostly recognized as an indicator of effectiveness and success of MPAs, but only nine of the analyzed studies openly indicated the direct involvement of stakeholders in the development, implementation, and management phases of MPAs. Some MPAs management plans detail stakeholder involvement in their governance schemes and in all phases of the implementation of a MPA (Lucrezi et al., 2019; Ullah et al., 2022). Most studies recognize that usually stakeholders are NGOs, local communities, local authorities, governmental agencies, tourism operators, fisheries operators, and scientists (Calado et al., 2012; Mackelworth et al., 2013; Ratsimbazafy et al., 2019).

Regarding the criteria C4, economy and finance of MPAs, only seven of the literature sample had some reference to economic values and finance of MPAs. Some studies identified that the most important 'economic' variables in MPAs are linked to fishing, shipping and aquaculture activities (Rodríguez-Rodríguez et al., 2015), and other studies clearly indicate that the development of tourism, mainly ecotourism, has in general changed and improved the livelihoods of the communities that live in the MPA, providing job opportunities and a significant increase in the annual income of local residents, as for example in the Sanya Coral Reef National Marine Reserve in China (Qiu, 2013; Kessel et al., 2017; Wiltshier et al., 2022). The application of tourist fees to MPAs is also generally mentioned as a way to finance MPAs (Gelcich et al., 2013; Batel et al., 2014).

Most studies ended up being assessed as "partially meet the defined criteria, since they have some references about the topic, but not enough related to the main objectives of the defined criteria" (Figure 4), since they were lacking essential information to fulfil the criteria; e.g. some might refer that governance is important, but they do not present the governance structures or frameworks (institutional and/or legal), not including ecotourism examples or products, stakeholder engagement was just briefly mentioned and not indicating specifically economic or financing information about MPAs.

4 Discussion

The increased interest in oceans as vectors for strategic development, within the framework of the Ocean Science for Sustainable Development decade and in view of the global

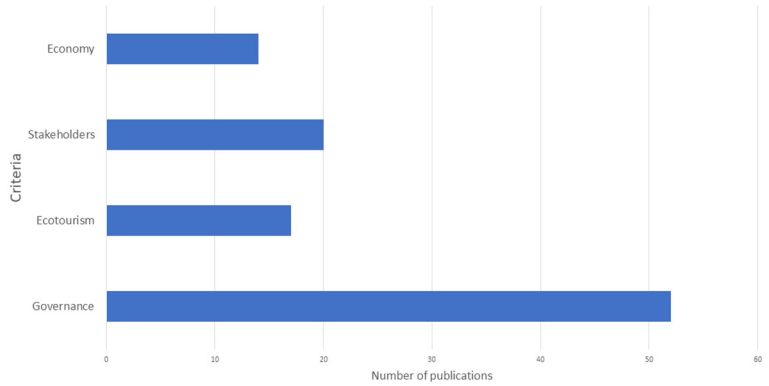

FIGURE 4
Number of publications in which the articles partially meet the defined criteria.

goals established by the Sustainable Development Goals (SDGs), particularly SDG 14 "*Conserve and sustainably use the oceans, seas and marine resources for sustainable development*", makes it essential to value marine natural resources to achieve a sustainable future. The conservation of Biodiversity has potential direct economic benefits for many sectors of the economy, including tourism, which is why it is necessary to slow down the biodiversity loss of the recent decades, through valuing natural capital. In this context, ecotourism arises as an opportunity to reconcile nature conservation policies with the economic and social needs of the population. The marine protected areas are generally established with a firm understanding that their management will involve balancing the relationship between people and marine ecosystems (Pomeroy and Douvere, 2008; Lucrezi et al., 2019). Due to their elevated management costs, some MPAs are appealing to ecotourism to achieve some economical sustainability and to bring benefits for their local communities (Drumm, 2003; Balmford et al., 2004; Gabrié et al., 2012; BlueSeeds, 2020). Tourism is a major contributor for the economy of MPAs and their gateway communities, with a wide range of benefits (Spenceley, 2017; Wiltshier et al., 2022).

First, we find that ecotourism products in protected areas can help to integrate local communities and stakeholders (e.g. local guides, restaurants, NGOs, travel agencies, etc.), and when this integration is successful, it creates strong incentives for local communities for nature conservation, by linking economic benefits to healthy and well-managed protected areas (Drumm et al., 2016; Pham, 2020). Several of the studies analyzed identified ecotourism as an economic driver for MPAs and their communities. A practical example of valuing nature through ecotourism was the creation of the organization MEET, an EU organization (founded by IUCN-Med), which works as a consultant for the Protected Areas of the Mediterranean in the area of ecotourism ideals (Figueiredo, 2020). This network is constantly developing, continually including new protected areas in its program, and currently has 44 Protected Areas from 10 different Mediterranean countries. MEET ecotourism products rely on the creation of a local cluster, which includes at least one protected area, a tour operator and several local providers of tourist services (eg accommodation, recreation, transport, food, etc.). In addition, the purchase of a MEET product contributes to a conservation fund for the protected area involved and to the distribution of capital fairly to the surrounding communities (Drumm et al., 2016; Noll et al., 2019). MEET is a good example of how MPAs and ecotourism can benefit local communities and try to achieve an effective connection between tourism and conservation.

Second, we recognized that despite all the benefits, tourism can also have impacts on biodiversity and that's why it is important that MPAs managers and tourist operators work together regarding ecotourism (Qiu, 2013; Silva, 2015; Spenceley, 2017; Hampton and Jeyacheya, 2020). There are also some negative impacts for the gateway communities such as the increased of the living cost in these major tourist areas (Wolf et al., 2019; Wiltshier et al., 2022). For example, in Fernando de Noronha, the application of high taxes to access the Island has increased and impacted the prices of goods and services (Wiltshier et al., 2022) and in Croatia, the increased of tourism boosted issues related to housing affordability since the prizes of rentals and real estate became too high for the residents (Mikulić et al., 2021).

Third, we find that MPA governance faces many challenges partially related to a complex institutional and legal framework, difficulties to adapt to changes, a wide range of stakeholders involved, and social-natural relations. Several studies identified that a fair and effective collaborative governance model can enhance positive socio-economic benefits to the community through ecotourism (Keyim, 2018; Forje and Tchamba, 2022). From the articles analyzed, most governance models when defined, do not consider the component of natural capital appreciation, and it makes it look as if governance and management models of MPA might not be in line with the product of ecotourism. Moreover, even though there was a global movement towards a new approach to the governance and management of protected areas, shifting from a centralized/state model to a model involving stakeholders and local communities, more adapted to the needs of the XXIst century (Phillips, 2003), most of the analyzed studies still identify a top-bottom, governed centered approach to governance models in MPAs (Qiu, 2013; Lucrezi et al., 2019). Ineffective governance leads to failure to deliver the estimated socioeconomical and environmental outcomes expected from MPAs (Hughes, 2011; Turner et al., 2016). More research into understanding the interconnection between MPA governance models and the ecotourism product is needed to better enhance the natural capital of these protected areas.

Fourth, we conclude that stakeholders' involvement in the MPAs processes of planning and management is very important (Lucrezi et al., 2019), and usually referred in several of the studies, from all the regions. Stakeholders' involvement creates an environment for exchange and interaction between different stakeholder groups, allowing early identification of potential conflicts and enabling collaborative problem solving. MPAs with active stakeholders tend to be more effective (Walton et al., 2013; Rodríguez-Rodríguez et al., 2015). The financial sustainability of MPAs is a challenge worldwide and a cornerstone to achieve effective management (Reid-Grant and Bhat, 2009; Thur, 2010).

Regarding the analysis by geographical region, we concluded that there was representativity regarding the input for the research from different areas and continents.

The concepts of participatory governance and management models are being subsequently adopted by IUCN as a way to make more effective the management of protected areas (Borrini-Feyerabend et al., 2013) but, at the same time, to help sustainable financing of protected areas, particularly by favoring economic activities compatible with nature conservation, such as ecotourism (Eagles et al., 2002; Emerton, 2006; Shiiba et al., 2022). These trends were particularly important in marine protected areas where marine ecotourism revealed to be critical, not only for economical revenue based on the natural assets, but also by involving local communities in the management process. Furthermore, marine ecotourism showed to be a keystone economic activity, particularly in small island development states (SIDS). For example, in Seychelles, a stakeholder driven process involving dive and boat operators, conservation organizations and governmental agencies instigated and enabled the sustainable use of whale sharks as an ecotourism resource (Rowat and Engelhardt, 2007).

This literature review aimed to understand the governance models that best enhance the relationship between ecotourism and a good management/effectiveness of MPAs, based on the enhancement of natural capital through ecotourism. A combination of good governance model, that brings stakeholders into the decision making process, can help ecotourism to boost the value of the natural capital of MPAs, without compromising their conservation values and priorities (Eagles et al., 2002; Borrini-Feyerabend et al., 2013; Long et al., 2021; Shiiba et al., 2022). The concept of sustainability stated in the sustainable development goal 14 (SDG 14) – Life Below Water, highlights the need to balance the three essential dimensions of sustainability – economic, social and environmental (Recuero Virto, 2018), with the first two pillars being somehow dependent on the environmental priorities (Scott Cato, 2009).There is no successful conservation without the involvement and support of local communities (Eagles et al., 2002), and to attain that goal, communities need to develop sources of income to compensate for economic restrictions that arise from the conservation goals of the MPAs. In this context, ecotourism appears as an excellent opportunity to improve the livelihoods of the communities whose income comes from these MPAs, through the creation of job opportunities (Qiu, 2013; Kessel et al., 2017; Wiltshier et al., 2022). We conclude that there is a knowledge gap regarding the enhancement of natural capital though ecotourism, and that governance models of MPAs might not be ready to fully support ecotourism has a booster of the sustainability of MPAs so, there is an opportunity for further development of research in this area.

Data availability statement

The original contributions presented in the study are included in the article/Supplementary Material. Further inquiries can be directed to the corresponding author.

Author contributions

DC wrote the manuscript. MV, JG, and AB provided guidance and feedback on data analysis, peer review and revised the manuscript. All authors contributed to the article and approved the submitted version.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Publisher's note

Supplementary material

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fmars.2022.1002677/full#supplementary-material

SUPPLEMENTARY TABLE 1
Description of the literature sample based on the criteria (n=98).

SUPPLEMENTARY TABLE 2
References of literature sample (n=98).

SUPPLEMENTARY TABLE 3
Search criteria for the databases.

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