MANAGING THE SURGE: SUSTAINABLE TOURISM APPROACHES IN MEDITERRANEAN MARINE PROTECTED AREAS

SCIENCE FOR MPA MANAGEMENT - MEDPAN SPECIAL EDITION

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Tyre Natural Reserve - © M.BEN GHAZI/MEDPAN.

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EDITORIAL

The Mediterranean is the world's leading tourist destination. The beauty of its coastal and marine landscapes, especially found in Protected Areas, attracts visitors seeking nature-based holidays from all corners of the world.

Though economically, tourism brings an array of financial opportunities to the local communities, ecologically it puts a heavy pressure on the fragile ecosystem of the region.

This edition of "Science for MPA Management" delves into the strategies already employed and recommendations to best tackle this paradox and achieve a harmonious balance between conservation imperatives and sustainable tourism in the Mediterranean MPAs. Happy reading

CITATION

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MedPAN

The Mediterranean network of Marine Protected Areas Managers

Sailboats in the Aegean Sea ©Kayihan Bolukbasi

HIGHLIGHTS

A sea turtle nest in the Kuriat Island © Hedi Chouchen

- The growing demand **for nature-based tourism** and the development of associated businesses has transformed many protected areas into tourism destinations.
- **Overtourism** occurs when the impact of tourism, at certain times and in certain locations, exceeds physical, ecological, social, economic, psychological, and/or political capacity thresholds.
- **When well-managed, tourism can deliver positive outcomes to MPAs** by fostering environmental awareness, providing sustainable economic opportunities for local communities, and facilitating conservation efforts through visitor education and engagement.
- **Tourism in MPAs can be approached as a symbiotic relationship.** If well managed, tourism can benefit MPA effectiveness, while the results of a healthy MPA (e.g., healthy ecosystems attractive for scuba divers) will in turn benefit tourism.
- **Monitoring tourism activities and related effects and impacts on the ecosystem should be a priority** in any MPA, as having this information is key to adequately managing tourism in protected sites.
- MPAs should include **sustainable tourism strategies** in their management plans.

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THE CHALLENGING CONTEXT OF TOURISM IN THE MEDITERRANEAN REGION

Beach goers on the shores of the Tyre nature reserve in Lebanon © Miriam Ben Ghazi MedPAN

The Mediterranean region has become the world's leading tourist area, accounting for 33% of all international tourist arrivals in 2021 (UNWTO 2022). Within Europe, it accounts for 40.8% of tourist arrivals (World Travel Organisation, 2019). In most of these Mediterranean countries, tourism has a significant role in sustaining the national economy (UNWTO 2018). Tourism activities exert considerable environmental pressure on the Mediterranean region and its invaluable yet delicate environmental resources. The Mediterranean stands out as one of the seas most impacted by plastic pollution globally. During the summer months, the density of marine litter is expected to surge by 40% due to the influx of high numbers of tourists (SoED 2020). Moreover, the water supply may face significant strain from tourist activities, with visitors consuming approximately one-third more water per day compared to local residents in the case of the Island of Ibiza in Spain for example (Perez *et al.* 2006).

The Mediterranean Sea, covered by 8.3% of Marine Protected Areas (MPAs), is a hotspot for nature-based tourism. Tourism has become one of the sectors mainly drawing benefits from MPAs, able to offer a series of services and activities, both cultural and wildlife, in a natural and healthy environment (Badalamenti *et al.* 2000, Sala *et al.* 2013, Casoli *et al.* 2017, Marconi *et al.* 2020). In fact, tourism is recognised as the most extensive use of protected areas, with positive and negative influences (Leung *et al.* 2018, Spenceley 2015). The growing demand for nature-based tourism and the development of associated businesses has transformed many protected areas into tourism destinations (Mandić 2019, Mandić and Petrić 2021).

And this trend seems to be growing, as post-COVID-19 tourism demand is likely to shift towards sparsely populated, nature-preserved destinations (Newsome 2020).

The emphasis on ecotourism in Mediterranean Protected Areas (PAs) has heightened since the onset of the COVID-19 crisis, given the substantial impact of the pandemic on the tourism sector (with a 60% decline in international tourism in 2020). Countries situated on both sides of the Mediterranean Sea have experienced the most significant repercussions from the crisis, demonstrating heightened vulnerability to the pandemic (Duro *et al.* 2021). This shift towards nature-based destinations, some of which are already experiencing over-tourism, could additionally aggravate established challenges, such as biological and socio-economic fragmentation (Mandić and Petrić 2021)

In this context, it is important to keep in mind that tourism is relevant for development, only if it is adequately managed, and if it contributes to the improvement of the local community's quality of life, visitor experiences and the preservation of nature and natural resources (Mandić and Petrić 2021).

DEFINITIONS

The definition of **sustainable tourism** by the United Nations World Tourism Organisation (https://www.unwto.org/) includes three significant points.

1. Makes optimal use of environmental resources that constitute a key element in tourism development, maintaining essential ecological processes and helping to conserve natural heritage and biodiversity.

2. Respects the socio-cultural authenticity of host communities, conserves their built and living cultural heritage and traditional values, and contributes to inter-cultural understanding and tolerance.

3. Ensures viable, long-term economic operations, providing socio-economic benefits to all stakeholders that are fairly distributed, including stable employment and income-earning opportunities and social services to host communities, and contributing to poverty alleviation.

Overtourism occurs when the impact of tourism, at certain times and at certain locations, exceeds physical, ecological, social, economic, psychological, and/or political capacity thresholds (Peeters *et al.* 2018).

According to the International Ecotourism Society (https://ecotourism.org/), **ecotourism** is responsible travel to natural areas that conserves the environment, sustains the well-being of the local people and involves education.

THE POSITIVE OUTCOMES OF TOURISM

Dolphin watching
© Renaud Dupuy de la Grandrive

When well-managed, tourism can deliver positive outcomes to MPAs by fostering environmental awareness, providing sustainable economic opportunities for local communities, and facilitating conservation efforts through visitor education and engagement.

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Delivering positive ecological outcomes requires more than just MPA designation, but also ongoing financial support for effective management (e.g., Giakoumi *et al.* 2018). However, the cost of effective management many times exceeds the available budget (Bohorquez *et al.* 2019, Ban *et al.* 2011). Tourism can be an important source of financial support for MPA management, thus improving their effectiveness (Brown *et al.* 2023). A recent study found that MPA entry fees benefit budget security and staff capacity to carry out critical management activities, thus increasing the effectiveness of MPAs (Brown *et al.* 2023). When reinvesting in the MPA, entry fees can support improved management capacity. However, financing management through tourism can come at a cost, protected areas financed by tourism are vulnerable to disruption of tourism, and tourism impacts need to be controlled (see next section). It must also be considered that, in many cases, MPAs do not have the financial structure to reinvest entry fees in MPA management, surveillance or outreach actions.

Tourism can have a positive economic impact in the area and by supporting local economies, tourism can also improve community perception of MPAs and potentially reduce poaching (Purwanto *et al.* 2021). Ecotourism products in protected areas can help to integrate local communities and stakeholders, 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).

Snorkelling tourist in the Mediterranean Sea ©Fernando Cortes

Tourism can be seen as an opportunity to communicate the importance of marine protection in situ. MPAs can raise awareness of environmental issues, which ultimately also contributes to social and political support for conservation (Hargreaves-Allen *et al.* 2017). In addition, with previous communication and training actions, MPA management can also benefit from tourism operators and tourists contributing to surveillance for enforcement of MPA rules and ecological monitoring (e.g., citizen science) (Brown *et al.* 2023).

In summary, tourism in MPAs can be approached as a symbiotic relationship. If well managed, tourism can benefit MPA effectiveness, while the results of a healthy MPA (e.g., healthy ecosystems attractive for scuba divers) will in turn benefit tourism (Sala *et al.* 2013).

MEET
Mediterranean Experience of EcoTourism

MEET NETWORK

A practical example of valuing nature through ecotourism is the creation of the organization MEET, an EU organization (founded by IUCNMed), which works as a consultant for protected areas in the Mediterranean in the area of ecotourism ideals. This network is constantly developing, continually including new protected areas in its program.

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. 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.

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 (Casimiro *et al.* 2023).

CASE STUDY

NATIONAL MARINE PARK OF ALONISSOS AND NORTHERN SPORADES- GREECE

Effective financing mechanisms are essential for the successful management of MPAs. The National Marine Park of Alonissos and Northern Sporades has introduced admission fees, following a Joint Ministerial Decision. Fees depend on the types of visitors (e.g., professional fishers, recreational fishers, tourists, researchers). However, since the implementation of the admission fees, the managers of the marine park observed a decline in visitor numbers.

A series of interviews conducted under the Interreg Med AMAre project and targeting domestic tourists yielded insightful results that might explain this decrease. A significant portion of respondents either felt they could not afford the fees or expressed distrust regarding the allocation of their payments. Respondents also demonstrated a higher willingness to pay for the conservation of the monk seal, than for ecosystem services provided by priority marine habitats.

This last result shows that many of the respondents were unfamiliar with the benefits of conserving marine habitats, while the monk's seal iconic status resonates more. These results also highlight the importance of stakeholder engagement and greater public awareness of ocean literacy and conservation. This case study demonstrates that ensuring sustainable funding for MPAs is a multifaceted challenge, extending beyond setting entrance fees.

TOURISM-RELATED IMPACTS

The Portokali Beach Also Called Orange Beach, near Sarti, on the East Coast of Sithonia Greece © Maria Kray

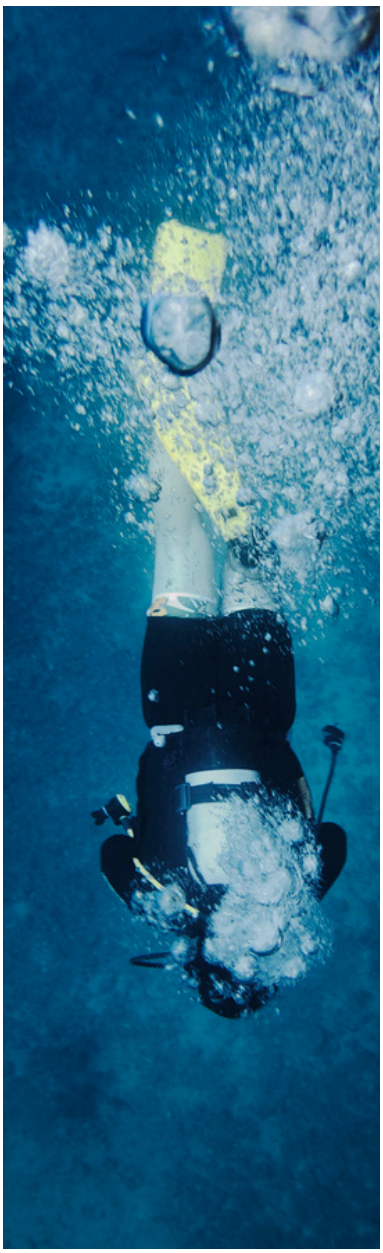
MPAs are being marketed for "ecotourism" (although tourism in MPAs cannot always be considered ecotourism, Steven 2018), and therefore tend to attract more visitors than unprotected areas. This leads to a potential direct disturbance by recreational activities, which have been already reported for marine organisms and habitats. In these cases, tourism can have significant impacts on the ecological outcomes in MPAs. Visitors to MPAs can hinder ecological conservation by damaging organisms and habitats, driving ecologically unsound coastal development, promoting increased fishing pressure to feed tourists local seafood, or negatively disrupting social structures (Lopes *et al.* 2015, Suchley and Alvarez-Filip 2018, Canty 2007, Basurto *et al.* 2016).

Excessive tourism can cause an aversion feeling or tourism-phobia in local communities, this is happening in many overcrowded Mediterranean destinations (Mandić and Petrić 2021). In this regard, a tourism destination can be sustainable if it serves the demands of present and future tourists, as well as those of residents (Nadalipour *et al.* 2019).

Among the numerous tourist sectors, SCUBA diving is one of the most important in the context of multiple-use MPAs. Although scuba diving is a potential low-impact recreational activity, with the potential to positively impact environmental conservation, generating revenue and supporting local communities (Lucrezi *et al.* 2017, Arcos-Aguilar 2021), overcrowded diving can have significant impacts. The lack of effective management that regulates diving tourism in MPAs can lead to the unsustainable development of mass scuba tourism.

High levels of diver frequentation might induce severe impacts on coastal megabenthic communities. Divers may directly damage organisms by accidental contact with fins or other parts of their equipment (e.g., Garrabou *et al.* 1998, Betti *et al.* 2019, Calo *et al.* 2022).

Scuba diving © EXTREME-PHOTOGRAPHER



Scuba Diving in Mediterranean Sea ©tunart

In addition, divers can be responsible for indirect impacts, such as the increase in suspended material due to fin kicks close to the sea floor and the accumulation of bubbles on the ceilings of caves and crevices (e.g., Lloret *et al.* 2006, Di Franco *et al.* 2010, Luna-Pérez *et al.* 2010).

Some of the most fragile habitats are also the ones more attractive to scuba divers. In the Mediterranean Sea, the coralligenous bioconstructions, which represent some of the richest coastal habitats in terms of both benthic diversity and complexity (Ballesteros 2006), are frequented by diving tourism.

Scuba diving impacts on coralligenous assemblages are well-documented (e.g., Coma and Zabala 1994, Garrabou and Zabala 1996, Garrabou *et al.* 1998, Betti *et al.* 2019) and prolonged impacts can lead to the modification of the entire coralligenous community (Sala *et al.* 1996).

The most vulnerable species are characterised by having fragile, erect calcareous skeletons with slow growth rates, thus being easily broken and unable to fully recover from year to year, e.g., large gorgonians and erect corals and bryozoans (e.g., Milazzo et al 2002, Coma *et al.* 2004, Lloret *et al.* 2006).

It is therefore fundamental to understand the level of diving frequentation that can be tolerated by the benthic communities inside MPAs and to take action to minimize the consequential impacts (see next section).

A global analysis of marine reserve regulations at 91 MPAs across 36 countries found that a majority of high-risk activities involved boats (Thurstan *et al.* 2012). In Europe, around 6 million boats are used for recreational purposes, for which 1.75 millions berths have been provided (Gonzalez *et al.* 2020). Almost 50% of these berths are located in the Mediterranean region (European Commission 2016). And it must be highlighted that small recreational boats (2,5 – 24 m in length) comprise 90% of the total Mediterranean leisure fleet (Carreño *et al.* 2019).

Many marinas with the highest visitor rates in the Mediterranean Sea are located near or by MPAs. In addition, the environmental attractiveness of MPAs is highly valued by recreational boaters. This explains the popularity of coastal MPAs among recreational boat users and the intense presence of maritime tourism in protected waters, making them also desirable for the construction of ports and installation of moorings. Carreño and Lloret (2021) stressed the urgent need to raise awareness of the potential impacts of leisure boating in coastal environments.

High levels of recreational boating in MPAs can pose serious environmental threats and raise conflict with other users (Gonzalez *et al.* 2020, Carreño and Lloret 2021). Surveys over the last 20 years have shown high-density figures such as 4.5 boats per ha in the Cap de Creus MPA (Spain) (Lloret *et al.* 2008). While these densities relate to smaller vessels, the impacts of large yachts are even greater.

More than 350 leisure boats and over a hundred superyachts were identified over one peak day in the Gulf of Saint-Tropez (France) (AFB 2019).

Conflicts between recreational boating and conservation normally stem from the unsustainable use and exploitation of marine ecosystems, which adversely hampers conservation efforts. Specifically, anchoring can cause severe damage to habitats like *Posidonia oceanica* beds or coralligenous assemblages, and to emblematic species like the fan mussel *Pinna nobilis* (Milazzo *et al.* 2004, Montefalcone *et al.* 2005, Hendriks *et al.* 2013). Boating is also a major source of pollution, from dumping litter to the discharge of untreated wastewater, oil and fuel leakages and toxic antifouling paints, and is one of the main invasive species vectors (González *et al.* 2020).

An excellent example of how MPAs attract boating tourism, resulting in negative environmental impacts, is the case of the osprey *Pandion haliaetus* in the Scandola MPA (Corsica). By monitoring the osprey's behaviour and employing physiological tests assessing stress levels, Monti *et al.* (2018) found that disturbance by tourist boats is the main cause of the osprey's decline in this location.

The authors observed significantly higher rates of alarm behaviour and associated disturbance events at sites with increased tourism-related boat traffic. These responses reduced the osprey's ability to provide resources for their offspring.

The authors of this study as well as others (Steven 2018) stress that these findings should certainly be viewed as a warning signal that something needs to be done. Steven (2018) also argues that the activities described in this paper, while certainly nature-based, cannot be considered ecotourism, and considers that applying such term to generic nature-based tourism operators is unfair to those operators that do ensure their activities are sustainable and that their negative impacts are mitigated, or at the very least minimized.

Other potential impacts associated with tourism in MPAs are wildlife feeding, which causes changes in fish behaviour (Milazzo *et al.* 2006) and noise pollution (Codarin *et al.* 2009, Williams *et al.* 2015).

Cruise Ship in the Grand Harbor, Valletta, Malta © cascoly

CASE STUDY

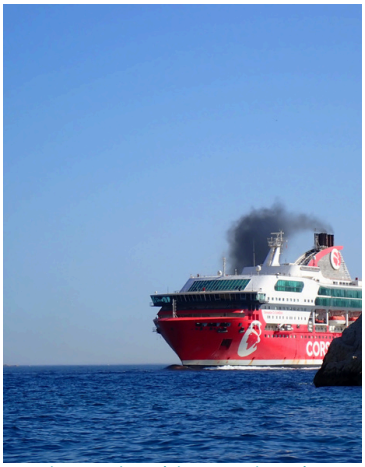
MEDES MARINE PARTIAL NATURE RESERVE- SPAIN

The Medes Islands, within the Montgrí, Medes and Baix Ter Natural Park, are probably the protected area with the highest density of dives in the world (Roncin *et al.* 2008). This high frequentation caused the degradation of the subaquatic environment, affecting mainly vulnerable communities and slow-growing species, and adding pressure to these already climate-impacted communities (Linares *et al.* 2010, Teixidó *et al.* 2013, Kersting et al. 2015, Ros and Gili 2015).

To tackle environmental degradation, in 2017 an adaptive management system was approved in which diving is regulated based on the results of an annual scientific monitoring. These regulations introduced a new approach to managing visitor access to the Medes Islands, based on biological and social carrying capacity numbers and on continuous monitoring that would allow an adaptive revision of the allowed access quotas at the end of each tourist season (Llausàs *et al.* 2019).

Also, the potential damage caused by inadequate visitor behaviour was addressed by introducing the obligation for every group of 8 divers to be accompanied, trained and supervised by an accredited guide (Llausàs *et al.* 2019). According to the MPA managers, sustainable tourism has also been encouraged and, for the management of the marine area, a co-management space has been created in which the different actors of the territory debate and propose tools to improve their management.

CARRYING CAPACITY



Corsica cruise ship crossing the Mediterranean

Carrying capacity is often regarded as an inherent property of ecosystems that naturally sets limits on exploitative human activities, enabling them to achieve sustainable rates of natural resource use (Seidl and Tisdell 1999). Since the emergence of mass tourism in the second half of the 20th century, research efforts have been made to determine the human carrying capacity of destination countries, regions, protected areas and even monuments and sacred sites (O'Reilly 1986, Butler 1996, Vishal *et al.* 2016).

In 1981, the World Tourism Organization proposed a definition of tourism carrying capacity as: The maximum number of people that may visit a tourist destination at the same time, without destroying the physical, economic, socio-cultural environment and an unacceptable decrease in the quality of visitors' satisfaction.

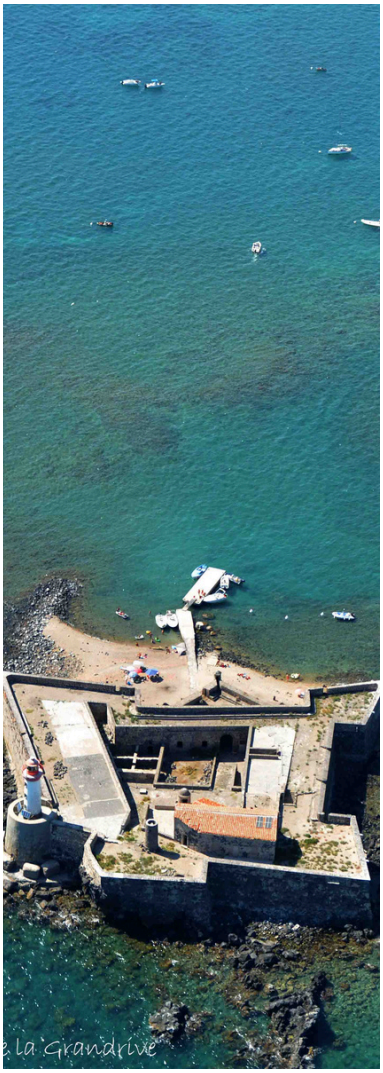
Carrying capacity has been criticized because of shortcomings related to certain social conflicts and changes in tourist behaviour. However, the simplicity and reassurances that the science behind the carrying capacity approach offers have made it one of the most commonly adopted tools in balancing conservation goals and tourism activities in natural protected areas worldwide (Llausàs *et al.* 2019). Studies on carrying capacity can help designate areas of high environmental risk and implement restrictions regarding recreational use to prioritise their conservation.

The idea of using carrying capacity as a management framework builds on the assumption that natural ecosystems are stable over time and their condition remains unaffected by either change in environmental conditions or by human action unless their intrinsic carrying capacity is exceeded, in which case they would rapidly degrade (Llausàs *et al.* 2019).

However, abundant scientific literature has challenged the validity of these assumptions, demonstrating the complexity of population dynamics in natural ecosystems and suggesting the need for a new paradigm that abandons the alleged notion of a natural balance and its associated carrying capacity and tipping points (Zimmerer 2000, Worboys *et al.* 2015).

Other approaches like Visitor Use Frameworks, Limits of Acceptable Change or Recreation Opportunity Spectrum have tried to solve these issues (Leung *et al.* 2018, Mandić and Petrić 2021). In any case, protected area managers require the tools and resources, which are necessary to prevail over the pressures before they even happen. There seems not to be a one-for-all solution, but some constituents of the established approaches could be useful to mitigate challenges related to over-tourism.

To be effective, approaches require change, related mainly to the management process, where greater involvement of stakeholders, a goal orientation arising from management outcomes, and monitoring of change through time is necessary (Mandić and Petrić 2021).



Brescou Fortress ©Renaud Dupuy de la Grandrive

MONITORING AND MANAGING TOURISM IN MPAS

KEY POINTS IN MONITORING AND MANAGING TOURISM IN MPAS:

- Implementation and maintenance of long-term environmental and ecological monitoring, in parallel to, and crossing information with monitoring of tourism activities and related impacts.
- Adopting adaptive co-management that allows to effectively adapt management plans to changes in tourism and the environment. This is of high relevance in the current global change context.
- Awaking conservation awareness on MPA visitors as a prevention mechanism.
- Adopting tourism regulation measures by applying the different mechanisms available (e.g., quotas, temporary or complete closures, activity restrictions) and considering habitats and species vulnerability.
- Prevention is better than cure. The precautionary principle should be applied, especially in highly vulnerable habitats.

Monitoring tourism activities and related effects and impacts on the ecosystem should be a priority in any MPA, as having this information is key to adequately managing tourism in protected sites.

MPAs should include sustainable tourism strategies in their management plans. Also, evidence-based decision-making, whereby MPAs use scientific knowledge to guide management decisions, should be enhanced to ensure the adoption of effective sustainable models to be applied for example to recreational boating or scuba diving (Gonzalez *et al.* 2020).

MedPAN's policy paper "Effective management of marine protected areas in the Mediterranean for an inclusive, resilient and coherent network of MPAs" (Martinez 2023) includes a series of nature-based sustainable tourism recommendations at four organisational levels, national and local, Mediterranean, European, and global.

MPA managers are challenged to harmonise biodiversity conservation, provision of leisure services and sustained local community development. Given ever-growing visitation, proactive management is needed to reconcile the goals of both conservation and recreation. The literature suggests that one of the solutions might be a transition from the traditional top-down governance of protected areas to adaptive co-management, which advocates participation, collaboration, and iterative learning (Mandić and Petrić 2021). The mitigation of over-tourism in protected areas requires an understanding of the complexity of ecosystems and the acknowledgement that relationships between causes and consequences are not purely linear.

In light of such challenges, the management process involving the assessment and evaluation of the area, the definition of the management objectives and activities that need to be carried out, and following the implementation of policies, with constant monitoring and evaluation of the effectiveness and adjustment, is required (Dudley 2008).

Prevention is better than the cure. Raising awareness among MPA visitors is key to avoiding unwanted behaviour. Information about restrictions should be easily accessible to users and tourists, especially in multiple-use MPAs. Concerning diving, Lucrezi *et al.* 2021 identify three levels of management that can affect diver behaviour positively: the dive centre level, the MPA level and the meta-governance level.

According to these authors, actions adopted on these different levels, could enhance proper underwater conduct by scuba divers and maintain diving tourism as a sustainable activity in non-tropical MPAs.

It is important to improve the knowledge and awareness of divers and dive guides regarding the location and fragility of the organisms and habitats at the diving spots through specific briefings (Betti *et al.* 2023). Other measures to manage diving-related impacts are temporary or complete closures of vulnerable diving spots, limiting the number of dives per location, the ban on inexperienced divers or the obligation to have a dive guide supervising divers' behaviour.

Therefore, it is essential to evaluate the vulnerability of the habitats existing in MPA's diving spots and to implement regular monitoring to adapt management actions.

Also, in the case of boating, raising awareness of potential impacts by engaging and educating the leisure boating industry and tourists can contribute to lowering impacts. However, Carreño and Lloret (2021) urge the need to accompany these engagement activities with new legislative actions and the financial resources required for their enforcement, in addition to research into and the use of more environmentally benign boats (e.g., related to paints, engines, etc.) and associated infrastructure (i.e., ports, marinas).

These authors also stress that only a holistic approach that considers all these different actions will enable the impacts of recreational boating to be lowered. Unlike the threats faced by many biodiversity hotspots in developing countries, Steven and Castley (2013) suggested that the negative effects of tourism in the Mediterranean Sea could be managed. Given the relatively advanced economies of the region, these countries would have the capacity to invest in practices that enhance sustainable tourism.

POLICY FRAMEWORK

The development of ecotourism in the Mediterranean is aligned with several international objectives of the UN Sustainable Development Goals (SDGs), and other important and relevant initiatives and strategies such as the European Green Deal, the European Union (EU) Digital Strategy, The 2021 Union for the Mediterranean (UfM) Ministerial Declaration on Sustainable Blue Economy and the EU new approach for a sustainable blue economy and follow the principles of marine and coastal activities regulatory instruments, such as Maritime Spatial Planning (MSP), Integrated Coastal Zone Management (ICZM), The Ecosystem-Based Management Approach and the European Charter for sustainable tourism in Protected Areas.

Moreover, EU funding and Cohesion Policy represent two key elements to support the long-term strategy for recovery, particularly in coastal and insular regional economies that are strongly dependent on tourism.

The European Parliament resolution on "Transport and Tourism in 2020 and Beyond" supports the development of a 2050 roadmap towards a sustainable, innovative, and resilient European tourism ecosystem ('European Agenda for Tourism 2050'). The European Commission and its Member States, through the Next Generation EU recovery funds, aim to boost this tourism recovery with a special focus on green and digital transition.

MEDITERRANEAN LEVEL

At the Mediterranean level, the main reference remains the decisions, protocols and strategies approved by the Contracting Parties of the Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean (Barcelona Convention), as well as the Post-2020 Mediterranean Marine Protected Areas (MPA) roadmap and the Blue Economy initiatives from the Union for the Mediterranean (UfM).

- Tangier declaration (2016, Rec. 14; 17; 42; 43; 44)
- Post-2020 Mediterranean MPA Roadmap (2022; Strategic objective 1)
- UNEP/MAP – Barcelona Convention Protocol on Integrated Zone
- Management in the Mediterranean (ICZM; 2008)
- UNEP/MAP – Barcelona Convention Mediterranean Strategy for Sustainable
- Development 2016-2025 (MSSD; 2016)
- UNEP/MAP – Barcelona Convention Action Plan for Sustainable Consumption
- and Production in the Mediterranean (2016)
- UNEP/MAP – Barcelona Convention Post-2020 SAPBIO (2021; Targets
- 1.8.; Goal 2.25)
- UNEP/MAP – Barcelona Convention Post-2020 Regional Strategy for
- MCPAs and OECMs (2021)
- UfM Ministerial Declaration on Sustainable Blue Economy (2021; 51-57)
- UfM 2030 GreenerMed Agenda (2021, Thematic Axis 1; 3)
- MED Network of Sustainable Tourism Observatories (NSTO) of BEST MED Interreg Med project
- The Conference of Peripheral Maritime Regions (CPMR) and the Task Force on Culture and Sustainable Tourism of its Intermediterranean Commission (IMC)

EUROPEAN LEVEL

At the European level, the European Commission (EC) and related European institutions have become world leaders in climate and sustainability policies, promoting ambitious strategies to deal with climate change and environmental degradation (European Green Deal), ensuring climate mitigation and adaptation (EU Climate Law and EU Adaptation Strategy), and supporting Blue Economy or sectoral transition pathways.

- EU Marine Strategy Framework Directive (MSFD) approved (2002)
- EU Water Directive (2006)
- European charter for sustainable tourism in protected areas (2010)
- EU Maritime Spatial Planning Framework Directive (2014)
- EU coastal and marine tourism strategy (2014)
- Natura 2000 marine network (5.6)
- EU Biodiversity Strategy for 2030 (2020)
- European Parliament resolution on establishing an EU strategy for
- sustainable tourism (2021)
- European Commission Transition pathway for tourism (2022)

GLOBAL LEVEL

A set of international environmental agreements, commitments and initiatives impacting the tourism and travel sector have been growing in the past decades.

- The 1992 Convention on Biological Diversity (CBD) set of guidelines on biodiversity and tourism (Hall, 2010)
- The 2015 Paris Climate Agreement
- The Glasgow Declaration: A Commitment to a Decade of Tourism Climate Action (2021)
- 2030 Agenda for Sustainable Development - UN SDG Goals (T.8.9; 12.b)
- UNEP Marine and Coastal Strategy (2019; Strategic objective 4)

There is a requirement to enhance the alignment of political strategies, initiatives, and institutions. Specifically, there is a need to improve coordination between the tourism and environmental sectors by engaging key stakeholders.

Strengthening the links between local tourism priorities, the EU Transition Pathway for Tourism, and global initiatives is crucial for aligning global, regional and European objectives with local realities. Additionally, it is essential to consider improving the transparency of collaboration agreements and objectives outlined in frameworks involving diverse stakeholders in the tourism sector, including the scientific community, decision-makers, civil society organisations, and the tourism industry (Plan Bleu 2022).

Beach of Milia in Alonnisos island, Sporades, Greece © Gatsi

REFERENCES

A.F.B. (2019). *Journal l'aire marine*, n°45. Agence Française pour la Biodiversité, France. Agence Française pour la Biodiversité (2017) Capitalisation sur les mesures de gestion au sein des aires marines protégées de Méditerranée.

Arcos-Aguilar *et al.* (2021). Diving tourism in Mexico-Economic and conservation importance. *Marine Policy* 126:104410.

Badalamenti *et al.* (2000). Cultural and socio-economic impacts of Mediterranean marine protected areas. *Environmental Conservation* 27:110-125.

Ballesteros. E. (2006). Mediterranean coralligenous assemblages: a synthesis of present knowledge. Oceanography and Marine Biology: *An Annual Review* 44:123-195.

Ban NC, Adams V, Pressey R, Hicks J.(2011). Promise and problems for estimating management costs of marine protected areas. *Conservation Letters* 4:241-252.

Basurto X, Blanco E, Nenadovic M, Vollan. B.(2016). Integrating simultaneous prosocial and antisocial behavior into theories of collective action. *Science Advances* 2:e1501220

Betti *et al.* (2019). On the effects of recreational SCUBA diving on fragile benthic species: the Portofino MPA (NW Mediterranean Sea) case study. *Ocean and Coastal Management* 182:104926.

Betti *et al.* (2023). Optimization of scuba diving activities in a Mediterranean marine protected area based on benthic vulnerability. *Aquatic Conservation: Marine and Freshwater Ecosystems* 33:191-201.

Bohorquez JJ, Dvarskas A, Pikitch EK. (2019). Filling the data gap – a pressing need for advancing MPA sustainable finance. *Frontiers in Marine Science* 6.

Brown *et al.* (2023). Entry fees enhance marine protected area management and outcomes. *Biological Conservation* 2083:110105.

Butler RW. (1996). The concept of carrying capacity for tourism destinations: dead or merely buried? *Progress in tourism and hospitality research* 2: 283-293.

Calo *et al.* (2022). Quotas regulation is necessary but not sufficient to mitigate the impact of SCUB diving in a highly visited marine protected area. *Journal of Environmental Management* 302:113997.
Canty.S. (2007). Positive and negative impacts of dive tourism: *The case study of utila, Honduras*. Lunds University, Lunds, Sweden.
Carreño A, Lloret J. (2021). Environmental impacts of increasing leisure boating activity in Mediterranean coastal waters. *Ocean and Coastal Management* 209:105693.
Carreño *et al.* (2019). Safeguarding Marine Protected Areas in the Growing Mediterranean Blue Economy—*Recommendations for Leisure Boating*. PHAROS4MPAs project.
Casimiro *et al.* (2023). Ecotourism in Marine Protected Areas as a tool to valuate natural capital and enhance good marine governance: A review. *Frontiers in Marine Science* 9:1002677
Casoli *et al.* (2017). Scuba diving damage on coralligenous builders: bryozoan species as an indicator of stress. *Ecological Indicators* 74, 441-450.
Codarin *et al.* (2009). Effects of ambient and boat noise on hearing and communication in three fish species living in a marine protected area (Miramare, Italy). *Marine Pollution Bulletin* 58:1880-1887.
Coma R, Zabala M. (1994). Efectos de la frecuentación sobre una población de *Paramuricea clavata* de las Islas Medes: densidad, reclutamiento y mortalidad. Resúmenes del VIII Simposio Ibérico de Estudios del Bentos Marino, Blanes. *Publicacions de la Universidad de Barcelona, Barcelona*: 170-171.
Coma R, Pola E, Ribes M, Zabala M. (2004). Long-term assessment of temperate octocoral mortality patterns, protected vs. unprotected areas. *Ecological Applications*, 14(5), 1466–1478.
Di Franco A, Ferruzza G, Baiata P, Chemello R, Milazzo M. (2010). Can recreational scuba divers alter natural gross sedimentation rate? A case study from a Mediterranean deep cave. *ICES Journal of Marine Science* 67:871-874.
Drumm A, Rodríguez A, Danelutti C, Santarossa L. (2016). Mediterranean Experience of ecotourism manual. *A guide to discover the MEET approach*. https://portals.iucn.org/library/node/46252.
Dudley N(ed) .(2008). *Guidelines for applying protected area management categories*. IUCN, Gland, Switzerland.
Duro *et al.* (2021). Covid-19 and tourism vulnerability, *Tourism Management Perspectives*, Volume 38, 2021, 100819.
European Commission. (2016). Assessment of the impact of business development improvements around nautical tourism. Final report, 281 pp.
Garrabou J, Sala E, Arcas A, Zabala M (1998) The impact of diving on rocky sublittoral communities: a case study of a bryozoan population. *Conservation Biology* 12:302-312.
Giakoumi *et al.* (2018) Revisiting 'Success' and 'Failure' of marine protected areas: a conservation scientist perspective. *Frontiers in Marine Science* 5:223.
González DA, Campanales S, Grimalt M. (2020). Managing the environmental sustainability of nautical tourism in Mediterranean MPAs. *Capboating Project*. Edited by eco-union 24 pp.

Hargreaves-Allen VA, Mourato S, Milner-Gulland EJ (2017). Drivers of coral reef marine protected area performance. *PLOS ONE* 12:e0179394.
Hendriks *et al.* (2013). Boat anchoring impacts coastal populations of the pen shell, the largest bivalve in the Mediterranean. *Biological Conservation* 160:105-113.
Kersting *et al.* (2015). Experimental evidence of the synergistic effects of warming and invasive algae on a temperate reef-builder coral. *Scientific Reports* 5:18635.
Leung *et al.* (2018). Tourism and visitor management in protected areas: guidelines for sustainability. *In Tourism and visitor management in protected areas: guidelines for sustainability* (Issue 27).
https://doi.org/10.2305/iucn.ch.2018.pag.27.en
Linares *et al.* (2010). Assessing the impact of diving in coralligenous communities: the usefulness of demographic studies of red gorgonian populations. *Scientific Reports of The Port-Cros National Park* 24: 161-184.
Llausàs *et al.* (2019). Carrying capacity as a tourism management strategy in a marine protected area: a political ecology analysis. *Conservation and Society* 17:366-376.
Lloret J, Marin A, Marin-Guirao L, Carreno .M.F. (2006). An alternative approach for managing scuba diving in small marine protected areas. Aquatic Conservation: *Marine and Freshwater Ecosystems* 16:579-591.
Lloret J, Zaragoza N, Caballero D, Riera .V. (2008). Biological and socioeconomic implications of recreational boat fishing for the management of fishery resources in the marine reserve of Cap de Creus (NW Mediterranean). *Fisheries Research* 91:252-259.
Lopes *et al.* (2015). Fisheries, tourism, and marine protected areas: conflicting or synergistic interactions? *Ecosystem Services* 16:333-340.
Lucrezi S, Ferretti E, Milanese M, Sarà A, Palma M. (2021) Securing sustainable tourism in marine protected areas: lessons from an assessment of scuba divers' underwater behaviour in non-tropical environments. *Journal of Ecotourism* 20:165-188.
Lucrezi *et al.* (2017). Scuba diving tourism systems and sustainability: perceptions by the scuba diving industry in two marine protected areas. *Tourism Management* 59:385-403.
Luna-Pérez B, Valle C, Fernández TV, Sánchez-Lizaso JL, Ramos-Espla AA. (2010) Halocynthia papillosa (Linnaeus, 1767) as an indicator of SCUBA diving impact. *Ecological Indicators* 10:1017-1024.
Mandić A, Petrić L (eds.) (2021). *Mediterranean protected areas in the era of overtourism*. Springer.
Mandić A .(2019). Nature-based solutions for sustainable tourism development in protected natural areas: a review. *Environment Systems and Decisions.* https://doi.org/10.1007/s10669-019-09718-2
Marconi M, Giglio VJ, Pereira Filho GH, Motta FS. (2020). Does quality of scuba diving experience vary according to the context and management regime of marine protected areas? *Ocean and Coastal Management* 194:105246.

Martinez C. (2023). *Policy Paper of the MedPAN Network* 66pp
Milazzo, M., Badalamenti, F., Ceccherelli, G., Chemello, R. (2004). Boat anchoring on Posidonia oceanica beds in a marine protected area (Italy, western Mediterranean): effect of anchor types in different anchoring stages. *Journal of Experimental Marine Biology and Ecology* 299:51-62.
Milazzo *et al.* (2006). Recreational fish feeding affects coastal fish behavior and increases frequency of predation on damselfish Chromis chromis nests. *Marine Ecology Progress Series* 310:165-172.
Montefalcone, M. *et al.* 2005. Anchoring damage on Posidonia oceanica meadow cover: A case study in Prelo cove. *Chemistry and Ecology* 22:207-2017.
Monti *et al.* (2018). The price of success: integrative long-term study reveals ecotourism impacts on a flagship species at a UNESCO site. Animal Conservation 21:448-458.
Nadalipour Z, Khoshkhoo MHI, Eftekhari AR (2019). An integrated model of destination sustainable competitiveness. Competitiveness Review. *An International Business Journal* 29:314-335.
Newsome D .(2020). The collapse of tourism and its impact on wildlife tourism destinations. *Journal of Tourism Futures* 7:295-302.
O'Reilly AM (1986) Tourism carrying capacity: concept and issues. *Tourism Management* 7:254-258.
Peeters *et al.* (2018). Research for TRAN Committee—Overtourism: impact and possible policy responses. October.
http://www.europarl.europa.eu/RegData/etudes/STUD/2018/629184/IPOL_STU(2018)629184_EN.pdf
Pérez *et al.* (2022). An Analysis of the Cost of Water Supply Linked to the Tourism Industry. An Application to the Case of the Island of Ibiza in Spain. *Water* 12:2006.
Pham TTT .(2020). Tourism in marine protected areas: Can it be considered as an alternative livelihood for local communities? *Marine Policy* 115:103891.
Plan Bleu. (2022). State of play of tourism in the Mediterranean. *Interreg Med Sustainable Tourism Community project.*
Purwanto *et al.* (2021). The bird's head Seascape Marine protected area network—preventing biodiversity and ecosystem service loss amidst rapid change in Papua, Indonesia. *Conservation Science and Practice* 3:e393.
Roncin *et al.* (2008). Uses of ecosystem services provided by MPAs: how much do they impact the local economy? a southern Europe perspective. *Journal for Nature Conservation* 16: 256-270.
Ros J, Gili .(2015). Four decades of research on the Medes Islands. *Contributions to Science* 11: 75-83.
Sala E, Garrabou J, Zabala M. (1996). Effects of diver frequentation on Mediterranean sublittoral populations of the bryozoan Pentapora fascialis. *Marine Biology* 126:451-459.
Sala *et al.* (2013) A general business model for marine reserves. *Plos ONE* 8:e58799.

Seidl I, Tisdell CA. (1999). Carrying capacity reconsidered: from Malthus' population theory to cultural carrying capacity. *Ecological Economics* 31:395-408.
SoED, State of the Environment and Development in the Mediterranean . (2020). Plan Bleu, Galgani F, Barnes DKA, Deudero S, Fossi MC, "Marine litter in the Mediterranean and Black Sea - Executive Summary" in *Marine litter in the Mediterranean and Black Sea* (2014), 7-20.
Spenceley A. (2017). Tourism and protected areas: Comparing the 2003 and 2014 IUCN world parks congress. *Tourism and Hospitality Research* 17:8-23.
Steven R, Castley JG .(2013). Tourism as a threat to critically endangered and endangered birds: global patterns and trends in conservation hotspots. *Biodiversity Conservation* 22:1063-1082.
Steven R. (2018). Long-term study highlights the conundrum of nature-based tourism in marine protected areas. *Animal Conservation* 21:459-460.
Suchley A, Alvarez-Filip L. (2018). Local human activities limit marine protection efficacy on Caribbean coral reefs. *Conservation Letters* 11:e12571.
Teixidó N, Casas E, Cebrian E, Linares C, Garrabou J. (2013). Impacts on coralligenous outcrop biodiversity of a dramatic coastal storm. *Plos ONE* 8:e53742.
Thurstan RH, Hawkins JP, Neves L, Roberts CM. (2012). Are marine reserves and non-consumptive activities compatible? A global analysis of marine reserve regulations. *Marine Policy* 36:1096-1104.
UNWTO. (2018). *European Union Tourism Trends*. https://doi.org/10.18111/9789284419470
UNWTO. (2022). *Global and regional tourism performance.* https://www.unwto.org/global-and-regional-tourism-performance
Vishal S, Vardhan BH, Amruta A, Swapnil R, Rao PS. (2016). A case study of Taj Mahal's visitor satisfaction and carrying capacity. *Journal of Hospitality Management and Tourism* 7: 43-49.
Williams *et al.* (2015). Quiet(er) marine protected areas. *Marine Pollution Bulletin* 100:154-161.
Worboys GL, Lockwood M, Kothari A, Feary S, Pulsford I (eds). (2015). *Protected area governance and management*. ANU Press, Canberra.
World Travel Organization. (2019). *International Tourism Highlights*. Unwto, 1-24.
Zimmerer KS. (2000). The reworking of conservation geographies: nonequilibrium landscapes and nature-society hybrids. *Annals of the Association of American Geographers* 90:356-369.