

<https://doi.org/10.1038/s44183-025-00169-8>

Quality of marine protected areas is critical to achieving global biodiversity targets

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Summarising CBD target 3 to “30 × 30” emphasizes area coverage, but conservation success depends on MPA quality. Many existing MPAs are under-protected, and rapidly designating new areas risks creating ‘paper parks’ without ecological or social benefits. Prioritizing strictly or fully managed MPAs, supported by a clear and shared definition, is essential to achieve meaningful biodiversity outcomes. Quality-focused strategies ensure that global targets benefit both nature and people, rather than merely meeting numerical goals.

also deliver biodiversity conservation outcomes, while being effectively managed, ecologically coherent, and socially equitable⁵.

The challenge: a rush to designate without ensuring effectiveness

As of 2025, approximately 9.6% of the global ocean is covered by MPAs (with a further very small percentage of OECMs), far below the 30% target⁶. While the urgency to expand MPA and OECM coverage is undeniable, the pressure to meet the areal component of the 30 × 30 target risks incentivizing even further the designation of areas that are easy to establish but offer little conservation value because they allow activities that have negative ecological impacts⁷. While much attention has recently been given to OECMs, they should be seen as complementing MPAs. With limited time and resources, and the evidenced conservation benefits of well-managed MPAs (where MPAs are the chosen strategy) strengthening existing MPAs or designating additional high-quality areas should be the focus⁸, with OECMs only considered where they meet similar quality criteria as well-protected MPA⁹.

A recent assessment of the world’s 100 largest MPAs (which represent 90% of the global ocean surface currently claimed as protected), found that a quarter of these areas are not implemented, and one-third allow activities that are incompatible with nature conservation¹⁰. In the European Union, for instance, over 80% of MPAs only marginally regulate human activities, allowing activities that are incompatible with conservation¹¹. This includes industrial-scale operations such as high-impact fishing, large-scale aquaculture, mining (mineral oil and/or gas prospecting or exploration), dredging, high intensity anchoring and sometimes also emerging sectors under ‘blue growth’ strategies (e.g., offshore renewable energy)^{12,13}. One of the most pervasive of these human activities within MPAs is fishing, including in some cases, high-impact fishing practices such as bottom trawling¹⁴. For example, a 2018 study found that 59% of MPAs in northern Europe (727 MPAs) were bottom-trawled with an average intensity at least 1.4-fold higher compared to surrounding unprotected areas¹⁵. Using sensitive species as ecological indicators of conservation success, sharks, rays, and skates were found to have decreased within these European MPAs by 69% between 1997 and 2016¹⁵. Similarly to high-impact fishing, industrial aquaculture, including high-density cage salmon farming is allowed to occur within several MPAs of Chile’s Patagonia (MPAs categories II and IV), despite IUCN technical recommendations to restrict this activity¹⁶. Indeed, nearly a third ($n = 416$) of total salmon farming takes place within MPAs in Patagonia, and is now identified as one of their main stressors¹⁷.

While the urgency of the 30 × 30 Target requires a global response, we nevertheless recognise that national contexts vary significantly. The

Target 3 of the GBF: balancing quantity and quality in marine protection

The Convention on Biological Diversity’s (CBD) Kunming-Montreal Global Biodiversity Framework (GBF) has set an ambitious target: to effectively conserve at least 30% of the Earth’s lands and waters by 2030 (Target 3). This target is one of 23 targets within the GBF, negotiated globally to reflect diverse national contexts and priorities. Target 3, underscores the critical role of Marine Protected Areas (MPAs) and Other Effective area-based Conservation Measures (OECMs) in safeguarding marine biodiversity and the ecosystem services it provides to humanity, while recognizing and respecting the rights of Indigenous Peoples and local communities. While there are some qualitative elements to Target 3 (i.e., conserved areas need to be effectively managed, well connected and equitably governed), it is often referred to as “30 × 30” referencing, and focusing attention on, the quantitative target of protecting 30% of Earth’s lands and waters by 2030. However, as the global community races to meet this target, there is a growing risk that the focus on area-based metrics alone could undermine the very objectives the framework seeks to achieve. Indeed, there is long-standing literature warning that area-based targets alone risk prioritising coverage over biodiversity outcomes and other societal needs^{1–4}. To truly deliver on the promise of the GBF, we must prioritize the quality of management and regulatory area-based conservation over mere quantity. Thus, ensuring these areas are not only designated but

challenges associated with achieving high quality MPAs are particularly well documented in Europe. Countries differ in their socioeconomic priorities, institutional capacities, dependence on marine resources, and unregulated threats^{18,19}. Consequently, the optimal mix of conservation strategies (including MPAs, OECMs, fisheries management, pollution control, amongst others) to achieve the GBF's multiple targets will necessarily differ by context¹⁸. The focus here on MPA quality reflects its critical role where MPAs are implemented, not a presumption that they are universally the primary solution.

The weak (and in some cases absent) regulations for MPAs clearly fail to deliver meaningful conservation outcomes. Nor do they play a useful role in maintaining fish stocks or valuable marine food sources. Science-based definitions for “fully” and “highly” exist (e.g., as in The MPA Guide, 12), and show MPAs with these protection levels cannot include destructive activities if they aim to achieve ecological effectiveness²⁰. While continuing to implement new MPAs to meet international targets, there is now an urgent need to ensure that existing MPAs have levels of protection strict enough to meet their conservation objectives.

Drivers of effective MPAs: protection, management, and engagement

Evidence consistently shows that MPAs with full and high levels of protection¹², strong management capacity²¹, compliance²², and stakeholder engagement and support²³ deliver not only the greatest ecological benefits²⁰ but also positive social and economic outcomes^{24,25}. For example, MPAs closed to fishing can sustain or revitalize declining coastal fisheries (i.e., through spillover of adults and larvae), making them more profitable and sustainable^{26,27}. These benefits (where visible), in turn, foster greater public support and compliance, creating a positive feedback loop that enhances MPA effectiveness²². A regular criticism of MPAs is that they simply displace activities such as fisheries, so the impacts of these activities are moved elsewhere²⁸, yet a recent global study found this is not a general pattern²⁹. In all cases, equitable governance must be in place to achieve positive social-ecological outcomes, as top-down, exclusionary MPA implementation and management can both erode conservation support, and lead to severe social harm and injustices^{30,31}.

The level and type of activities that should be permitted within MPAs requires a nuanced discussion with stakeholders. This complexity is explicitly recognised by the different management approaches defined in the IUCN Protected Area Management categories¹³ and the evidencing of positive conservation outcomes for partially protected MPAs that have sufficient management capacity and compliance²¹. However, the greatest conservation benefits (and resulting social, cultural and economic benefits) can be achieved through high levels of protection in key areas if well managed (Figure 1). There is therefore a clear need for stronger protection levels and more equitable management practices to ensure that MPAs deliver on their promises.

The path forward: Prioritizing quality in policy and practice

The tools and knowledge needed to design and implement effective MPAs already exist and are well-evidenced in the literature and international guidance (e.g., The MPA Guide,¹² IUCN-WCPA guidelines¹³; and equity frameworks³²). What is still lacking in many parts of the world is political will, capacity, and policy frameworks to prioritize quality over quantity³³. However, there are some recent examples that suggest that quality is being considered within environmental policies. For example, a recent review of the EU policies and spending programmes by the European Court of Auditors concluded that EU actions had not restored seas to good environmental status nor fishing to

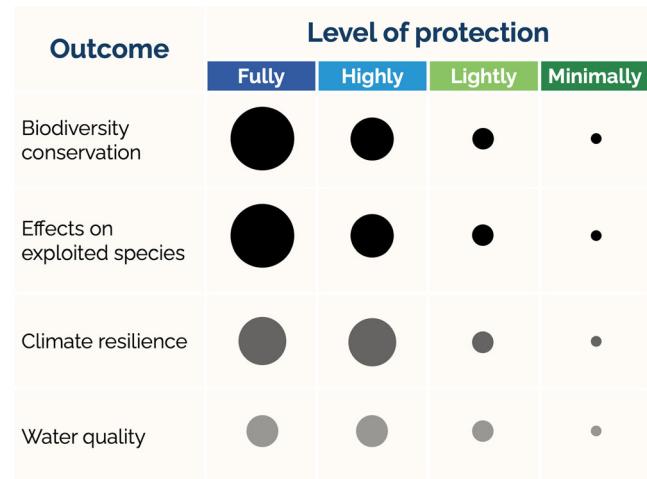


Fig. 1 | Expected ecological outcomes of MPAs as a result of level of protection. Larger circles represent stronger expected outcomes. The size of circles was derived by experts summarising key metrics for the MPA Guide and assuming enabling conditions are met, as detailed in Figure 2 of Grorud-Colvert et al. (2021). Levels of confidence based on available evidence are indicated by the shaded circles with darker circles indicating higher confidence.

sustainable levels in all seas³⁴. As a result, the European Commission put in place a requirement that 30% of EU seas be legally protected, and of this, one-third (10% of EU seas), should be “strictly protected” (EU Biodiversity Strategy for 2030). Such policies explicitly acknowledge the critical role of qualitative indicators (associated to levels of protection) in fostering positive conservation and societal outcomes. However, the non-binding definition of “strict protection” introduces uncertainty regarding the conservation outcomes of this two-tier target, as some European Member States are flexible in how they adapt strict conservation measures to their national contexts. Where ecologically warranted and socioeconomically viable, implementing a target for a given proportion of strict protection globally (accompanied by a precise definition of compatible and non-compatible uses), would demonstrate a stronger commitment by countries to achieving the qualitative dimensions of the 30 × 30 target, thereby enhancing the likelihood of success³⁵. This approach must be sensitive to national contexts and ensure equitable governance, recognizing that strictly protected areas may not be feasible or the primary need everywhere¹⁸. Working with fishing communities to measure and recognise the fisheries benefits of a well-managed MPA system is critical¹⁹. As is the implementation of codes of conduct (e.g., 33) and similar safeguards to ensure the recognition of rights for local rightsholders and stakeholders, their meaningful inclusion in decision-making processes, and the equitable distribution of costs and benefits arising from conservation efforts (themselves essential requirements of GBF Target 3). These equity considerations will be essential for successful implementation of strict protection.

Having a minimum coverage of MPAs with the highest level of protection (i.e., “strictly” as defined in EU Biodiversity Strategy for 2030, or “fully” as defined in *MPA Guide*) does not mean that these are the only types of MPAs which should be considered. Rather, it recognises the importance and historical success of MPAs that prevent resource extraction as part of a wider strategy that also considers other types of MPAs and OECMs, allowing a variety of activities (including fishing) if they are managed to

ensure they are ecologically sustainable, do not degrade the ecosystem and do not compromise the primary conservation objectives. Furthermore, achieving the GBF's goals requires a portfolio of actions beyond area-based conservation, including effective fisheries management (e.g., GBF Target 5 and 10)³⁶, pollution control (e.g., GBF Target 7), and addressing other direct drivers of biodiversity loss, tailored to national circumstances and priorities (GBF Targets 1, 2, 9, 10)³⁷. Where MPAs are part of the portfolio of actions, a combination of protection levels within an MPA or MPA networks may be appropriate in many contexts, particularly in places where strictly or fully protected areas are not socioeconomically or politically viable or ethical¹² (e.g. locations where sustainable Indigenous and small-scale uses may be critical¹²). However, strictly or fully protected areas should form the core of any MPA or MPA network.

Conclusion

The area-based headline indicator of the 30×30 target is a critical target in global conservation efforts but quantity should not come at the expense of quality³⁸. Many existing MPAs are already unmanaged or under-protected. Increasing their level of protection would help ensure that the very objectives the GBF seeks to achieve are not undermined and MPAs are effective at achieving conservation outcomes. The designation of new MPAs and recognition of OECMs is expected to greatly accelerate, as countries try to meet the 2030 target, with a real risk that these areas are simply 'paper parks' and do not deliver social-ecological benefits³⁸. Explicitly prioritising appropriately managed strictly or fully protected MPAs or MPA networks, will be key to meeting the 30×30 target with meaningful conservation outcomes for both nature and people. However, achieving these outcomes requires policy frameworks that prioritise quality over quantity. While strategies such as the European Commission's requirement for strictly protected areas are steps in the right direction, we urge countries to consider implementing strictly or fully protected MPAs with clear and transparent definitions.

Data availability

No datasets were generated or analysed during the current study.

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Received: 6 April 2025; Accepted: 12 November 2025;

Published online: 28 November 2025

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Acknowledgements

BHC acknowledges the support from Portuguese national funds from FCT - Foundation for Science and Technology through projects UIDB/04326/2020 (DOI:10.54499/UIDB/04326/2020) and LA/P/0101/2020 (DOI:10.54499/LA/P/0101/2020) to CCMAR, as well as the support of MARHAB (EU HORIZON, grant no. 101135307), MarPlus2024 (Algarve 2030, ALGARVE-FSE+-01177700) and MOVE (Biodiversa+, DivProtect/0009/2021) projects.

Author contributions

All authors (F.S., B.H.C., J.C., A.M.A., P.B., M.J.C., N.D., P.A.E.-K., H.E.F., D.G., C.G.-V., K.G.-C., C.K., P.J.M., L.E.M., K.B.N., F.P., E.P.P., M.R., J.S.-S., H.S.W.W., L.W., S.W.) contributed to the conceptualization and development of the research ideas. FS, BHC and JC led the writing. All authors reviewed and edited the manuscript.

Competing interests

The authors declare no competing interests.

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