

## Marine Protected Areas: safeguarding marine life & our planet

### Context

From tiny plankton to 30-meter whales, **marine biodiversity is the vital foundation for the functioning of ocean ecosystems, providing benefits to humanity.**<sup>1,2</sup> These benefits range from visible and hidden services, by being the world's largest carbon sink and supporting the local livelihoods (Pike et al., 2024; United Nations, n.d.).<sup>3,4</sup> However, **overexploitation, habitat destruction, pollution, invasive species, and the resulting increasing effects of climate change have negatively impacted marine ecosystems,** contributing to a growing number of extinct and threatened species.<sup>29,30</sup> According to the International Union for the Conservation of Nature (IUCN) Red List, over 1,550 out of the 17,903 assessed marine animals and plants are at risk of extinction.

**Conservation efforts are crucial to protect marine biodiversity,** despite challenges related to lower levels of scientific knowledge, public awareness, and practical experience compared to terrestrial ecosystems, as well as the interconnectivity with High Seas areas outside any national jurisdiction.<sup>30</sup>

Since the 1960s, **Marine Protected Areas (MPAs) - defined sea areas with higher levels of protection compared to surrounding areas** - have been part of the conservation efforts, mostly in national waters.<sup>30,31</sup> The goals of these protected areas vary depending on the policy framework, ranging from not only the conservation of species but also the maintenance of ecosystem services and cultural values.<sup>5</sup> In the EU, MPAs are established in the EU Biodiversity Strategy for 2030, the Marine Strategy Framework Directive, **and particularly closely linked with Nature 2000 under the Birds and Habitats Directives, making it the largest framework contributor to their establishment.** International cooperation is important with recent MPA coverage global target set to at least 30% through the Kunming-Montreal Global Biodiversity Framework.<sup>32,6</sup> However, there are 5 widely different degrees of protection, from fully protected - in which no extractive or destructive activities are allowed - to other degrees, in which some activities are allowed or in which the protection level has not been fully assessed. Furthermore, while some are actively managed, other MPAs are implemented with no management plan or are still in the process of being created (Figure 1).

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<sup>1</sup> Sala, E., Mayorga, J., Bradley, D., Cabral, R. B., Atwood, T. B., Auber, A., Cheung, W., Costello, C., Ferretti, F., Friedlander, A. M., Gaines, S. D., Garilao, C., Goodell, W., Halpern, B. S., Hinson, A., Kaschner, K., Kesner-Reyes, K., Leprieur, F., McGowan, J., . . . Lubchenco, J. (2021). Protecting the global ocean for biodiversity, food and climate. *Nature*, 592(7854), 397–402. <https://doi.org/10.1038/s41586-021-03371-z>

<sup>2</sup> Lotze, H. K. (2021). Marine biodiversity conservation. *Current Biology*, 31(19), R1190–R1195. <https://doi.org/10.1016/j.cub.2021.06.084>

<sup>3</sup> European Commission. (2015). *Report from the Commission to the European Parliament and the Council on the progress in establishing marine protected areas* (as required by Article 21 of the Marine Strategy Framework Directive 2008/56/EC). EU Monitor. Retrieved from <https://www.eumonitor.eu/9353000/1/j9vvik7m1c3gyxp/vjxwz77s65ym> on 5/12/2024.

<sup>4</sup> Pike, E. P., MacCarthy, J. M. C., Hameed, S. O., Harasta, N., Grorud-Colvert, K., Sullivan-Stack, J., Claudet, J., Costa, B. H. E., Gonçalves, E. J., Villagomez, A., & Morgan, L. (2024). Ocean protection quality is lagging behind quantity: Applying a scientific framework to assess real marine protected area progress against the 30 by 30 target. *Conservation Letters*, 17(3). <https://doi.org/10.1111/conl.13020>

<sup>5</sup> Russi, D., Pantzar, M., Kettunen, M., Gitti, G., Mutafoglu, K., Kotulak, M., Brink, P. T., & Institute for European Environmental Policy. (2016). *Socio-Economic benefits of the EU marine protected areas*. Institute for European Environmental Policy. [https://www.europarc.org/wp-content/uploads/2018/12/Socio-Economic-Benefits-of-EU-MPAs-2016\\_IEEPEC.pdf](https://www.europarc.org/wp-content/uploads/2018/12/Socio-Economic-Benefits-of-EU-MPAs-2016_IEEPEC.pdf)

<sup>6</sup> Aminian-Biquet, J., Gorjanc, S., Sletten, J., Vincent, T., Laznya, A., Vaidianu, N., Claudet, J., Young, J., & Costa, B. H. E. (2024). Over 80% of the European Union's marine protected area only marginally regulates human activities. *One Earth*, 7(9), 1614–1629. <https://doi.org/10.1016/j.oneear.2024.07.010>

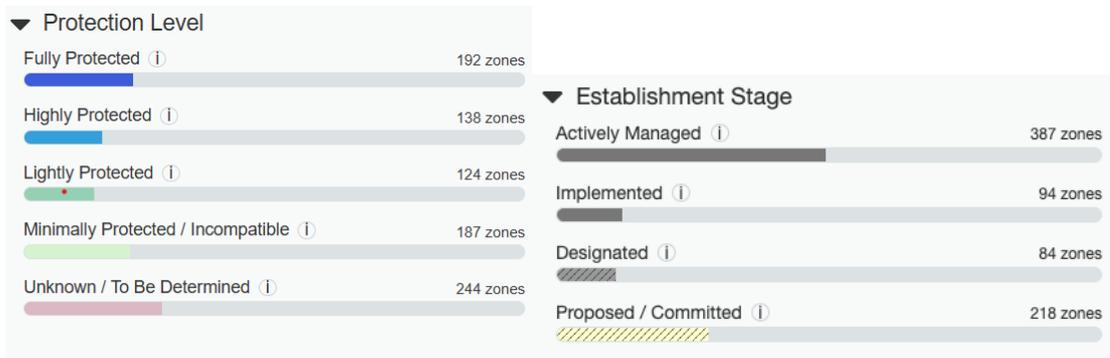


Figure 1: MPAs' data on protection level and management. Image from Marine Protection Atlas<sup>7</sup>.

## Status

On a global scale, 2.9% of the ocean is fully or highly protected and 8.4% is protected.<sup>37</sup> In the EU, **the total area covered by MPAs has increased from 5.9% in 2012 to 12.1% in 2021 with a contribution of 22 coast members.**<sup>8</sup> These numbers are still far from the targets set out by the aforementioned policy instruments and their implementation is not necessarily successful due to:<sup>37</sup>

- 1) **MPAs' broad definition:** Only 0.2% of EU MPAs were fully or highly protected. Additionally, 86% were either lightly protected, minimally protected, or incompatible with conservation objectives, across all EU members. As a result, human activities remain insufficiently regulated and MPAs coverage alone may not represent an adequate metric for marine conservation.<sup>9</sup>
- 2) **Weak enforcement:** Even where MPAs exist, enforcement of regulations is often weak, leading to illegal activities such as overfishing and habitat destruction.
- 3) **Socioeconomic factors:** Conflicts between conservation goals and local livelihoods can complicate MPA management.

The success of MPAs is closely linked to effective management strategies, including enforcement of regulations, local community engagement, and adequate funding. There is a need for improved monitoring, integrative approaches by combining MPAs with other conservation strategies (sustainable fisheries management and habitat restoration), and policy support (strengthening legal frameworks and securing funding to ensure long-term sustainability).<sup>10</sup>

## Why is it important for biodiversity and climate?

MPAs can be effective management tools to provide positive ecological services to marine areas while generating socioeconomic benefits, especially in highly protected areas.<sup>11</sup>

<sup>7</sup> *MPA Guide Marine Protection*. (n.d.). Marine Protection Atlas. <https://mpatlas.org/mpaguide/>

<sup>8</sup> Aminian-Biquet, J., Gorjanc, S., Sletten, J., Vincent, T., Laznya, A., Vaidianu, N., Claudet, J., Young, J., & Costa, B. H. E. (2024). Over 80% of the European Union's marine protected area only marginally regulates human activities. *One Earth*, 7(9), 1614–1629. <https://doi.org/10.1016/j.oneear.2024.07.010>

<sup>9</sup> Pike, E. P., MacCarthy, J. M. C., Hameed, S. O., Harasta, N., Grorud-Colvert, K., Sullivan-Stack, J., Claudet, J., Costa, B. H. E., Gonçalves, E. J., Villagomez, A., & Morgan, L. (2024). Ocean protection quality is lagging behind quantity: Applying a scientific framework to assess real marine protected area progress against the 30 by 30 target. *Conservation Letters*, 17(3). <https://doi.org/10.1111/conl.13020>

<sup>10</sup> Aminian-Biquet, J., Gorjanc, S., Sletten, J., Vincent, T., Laznya, A., Vaidianu, N., Claudet, J., Young, J., & Costa, B. H. E. (2024). Over 80% of the European Union's marine protected area only marginally regulates human activities. *One Earth*, 7(9), 1614–1629. <https://doi.org/10.1016/j.oneear.2024.07.010>

<sup>11</sup> Pike, E. P., MacCarthy, J. M. C., Hameed, S. O., Harasta, N., Grorud-Colvert, K., Sullivan-Stack, J., Claudet, J., Costa, B. H. E., Gonçalves, E. J., Villagomez, A., & Morgan, L. (2024). Ocean protection quality is lagging behind quantity: Applying a scientific framework to assess real marine protected area progress against the 30 by 30 target. *Conservation Letters*, 17(3). <https://doi.org/10.1111/conl.13020>

- 1) **Effective restoration of marine ecosystems.** Well-managed and highly protected European MPAs show a 19% increase in species richness, an average 116% increase in species density and a 238% biomass increase for plants and animals.<sup>12</sup> MPAs can effectively support the successional recovery of marine communities, as well as the re-establishment of lost predatory interactions and food-web structure, and support migratory routes of marine communities. Moreover, in some cases, marine recoveries can even benefit terrestrial ecosystems, as in the recovery of seabird colonies.<sup>13</sup>
- 2) **Climate change mitigation.** Coastal ecosystems such as salt marshes, seagrasses and mangroves are among the most efficient carbon sinks, and the protection and restoration of these ecosystems are key to mitigating the climate-altering effects of carbon emissions. At the same time, marine organisms and seaweeds that consume CO<sub>2</sub>, trap carbon into the trophic chain, removing it from the atmosphere.<sup>14</sup>
- 3) **Socioeconomic benefits** There is evidence that the increased biomass and fish stocks in MPAs can benefit neighbouring fisheries populations, with some reporting 10% increased yields.<sup>41</sup> MPAs also contribute to the local economy (e.g. eco-tourism, creation of recreational areas) and can improve flood management and coast protection.<sup>41</sup> In 2011, the marine Natura 2000 network generated benefits of 1.5 billion EUR, which could increase to 3.2 billion EUR by doubling its size.<sup>41</sup>

## Youth engagement

Youth engagement in MPAs is crucial for ocean stewardship. Initiatives like the European Blue Schools Network and the Youth4Ocean Forum promote ocean literacy, empowering youth, students and educators to participate in marine conservation, including hands-on projects with MPAs.<sup>15</sup> For instance, during the project Atlantic Youth, students from different countries were involved in exploring the maritime cultures through watersport activities.<sup>16</sup> Similarly, programs like Sea Rangers in the UK provide training for youth (ages 18-29) to actively protect and restore MPAs.<sup>17</sup>

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<sup>12</sup>European Commission. (2015). *REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND THE COUNCIL on the progress in establishing marine protected areas (as required by Article 21 of the Marine Strategy Framework Directive 2008/56/EC)*. [https://eur-lex.europa.eu/resource.html?uri=cellar:ab67fcb8-6827-11e5-9317-01aa75ed71a1.0008.02/DOC\\_1&format=PDF](https://eur-lex.europa.eu/resource.html?uri=cellar:ab67fcb8-6827-11e5-9317-01aa75ed71a1.0008.02/DOC_1&format=PDF)

<sup>13</sup> Lotze, H. K. (2021). Marine biodiversity conservation. *Current Biology*, 31(19), R1190–R1195. <https://doi.org/10.1016/j.cub.2021.06.084>

<sup>14</sup> Van de Riet, J., & Molenaar, A. (2020). *Status and benefits of marine protected areas in Europe: Final report*. Noordzeeloket.

<sup>15</sup> *Network of Blue Schools | Little waves make a big ocean!* (n.d.). Maritime Forum. [https://maritime-forum.ec.europa.eu/theme/ocean-literacy-and-blue-skills/ocean-literacy/network-european-blue-schools\\_en](https://maritime-forum.ec.europa.eu/theme/ocean-literacy-and-blue-skills/ocean-literacy/network-european-blue-schools_en)

<sup>16</sup> *Youth4Ocean Forum | Become a changemaker for the ocean!* (n.d.). Maritime Forum. [https://maritime-forum.ec.europa.eu/theme/ocean-literacy-and-blue-skills/ocean-literacy/youth4ocean-forum\\_en](https://maritime-forum.ec.europa.eu/theme/ocean-literacy-and-blue-skills/ocean-literacy/youth4ocean-forum_en)

<sup>17</sup> SeaRangers. (n.d.). *Conservation*. SeaRangers. Retrieved December 5, 2024, from <https://searangers.org/conservation/>