

Marine Protected Areas in the United States

What they are, why they matter, and how to maximize their effectiveness

"Listen to science and meet the moment"

– Conserving and Restoring America the Beautiful, 2021

The ocean is critically important to the planet and to human wellbeing, and its sustainable management is increasingly urgent. As the climate and biodiversity crises continue to grow, and recognizing the importance of nature for the wellbeing of all people, the United States has committed to conserve at least 30% of its lands and waters by 2030, or "30x30". Marine protected areas (MPAs) have a central role to play in reaching this target in the ocean.

But while the primary goal of all MPAs is the long-term conservation of nature¹, their characteristics and effectiveness vary a great deal. Simply knowing the overall area they cover tells us very little. That is why a group of researchers recently used a science-based framework – *The MPA Guide*² – to complete the most detailed assessment of US MPAs to date. Their findings, summarized in this paper, reveal an urgent need to improve the quality, quantity, and representativeness of US MPA ocean protection.

Protected areas: effective tools when used well

MPAs can protect specific ocean areas from destructive and extractive activities. When effectively and equitably planned and managed, they have been shown to bring broad ecological and social benefits that can extend to local communities, fisheries, and economies.

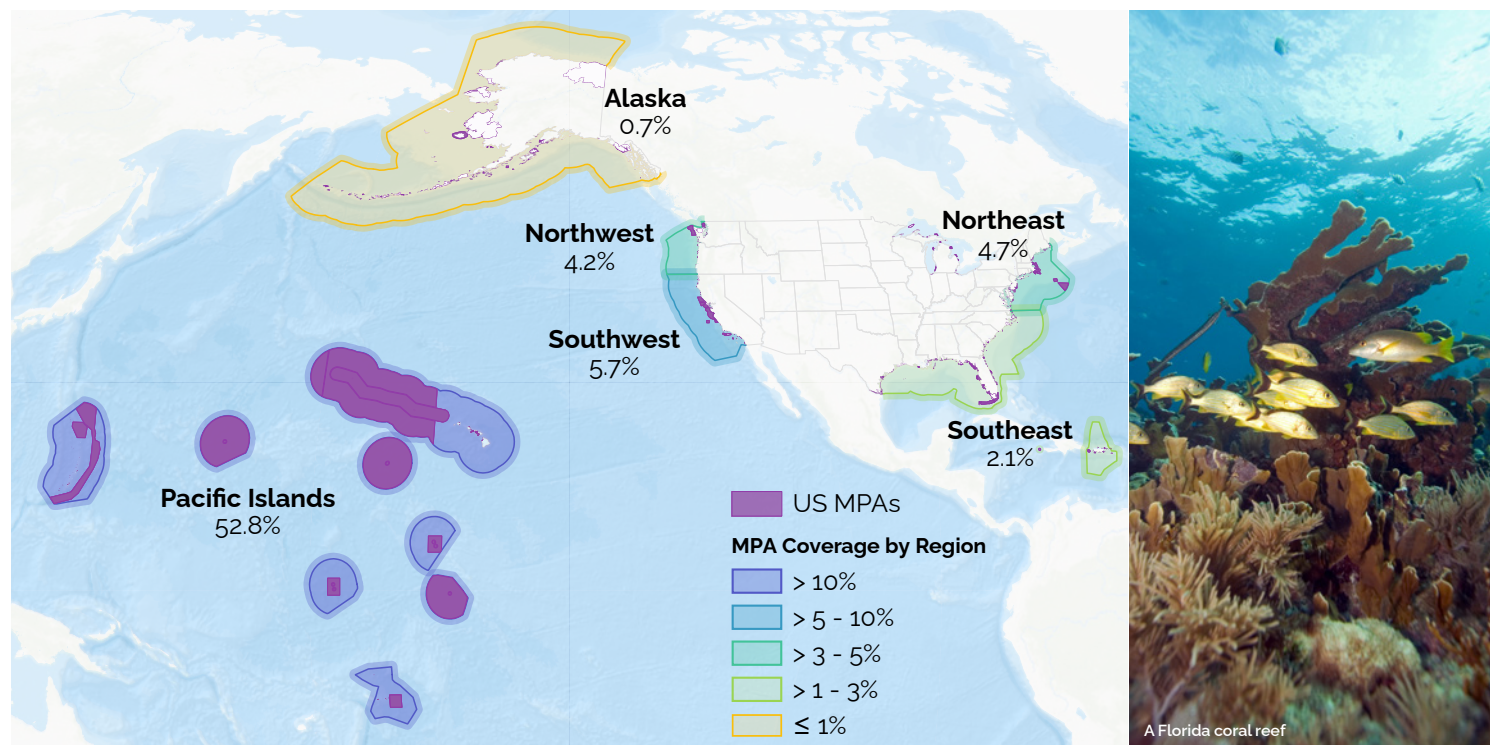
Key benefits from fully and highly protected MPAs include:

Biodiversity – Well-designed and -managed MPAs protect marine life and critical habitats, supporting more and bigger fish and more diverse ecosystems. This can build resilience against a range of stressors, including climate change, and can create a positive 'spill-over' effect of biomass into surrounding areas over time. Well-connected networks of MPAs can protect species through different life stages, and they can support populations through climate-induced range shifts.

Climate change – Protected "blue carbon" marine habitats such as seagrass beds and mangroves can sequester and store carbon at rates up to ten times greater than forests on land, safeguarding it from release into the atmosphere. Healthy habitats including coral reefs and tidal wetlands can protect humans from some of the key impacts of climate change, for example by buffering communities from waves and storm surge.

Social justice – The positive biological and ecological outcomes of fully and highly protected MPAs can directly improve human wellbeing. Equitable, effective MPAs can provide long-term support for livelihoods, cultural identity, and physical, mental, and emotional health – including for vulnerable coastal populations. MPAs can also support ongoing stewardship by Indigenous peoples, using knowledge systems and management practices that effectively protect biodiversity.

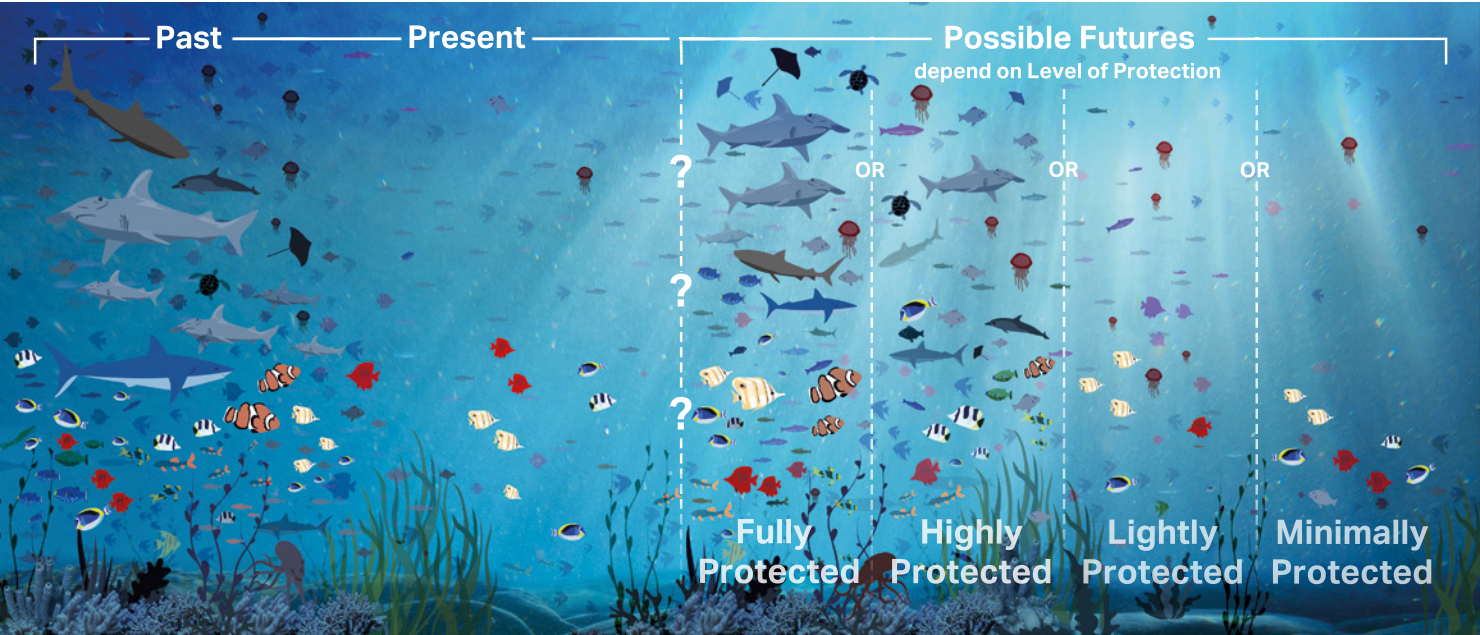
Percent marine area in any kind of implemented MPA by US region



1. IUCN, WCPA, "Applying IUCN's Global Conservation Standards to Marine Protected Areas (MPAs). Delivering effective conservation action through MPAs, to secure ocean health & sustainable development. Version 1.0" (IUCN, 2018).

2. J. Sullivan-Stack, O. Aburto-Oropeza, C.M. Brooks, R.B. Cabral, J.E. Caselle, F. Chan, J.E. Duffy, D.C. Dunn, A.M. Friedlander, H.K. Fulton-Bennett, S.D. Gaines, L.R. Gerber, E. Hines, H.M. Leslie, S.E. Lester, J.M.C. MacCarthy, S.M. Maxwell, J. Mayorga, D. McCauley, F. Micheli, R. Moffitt, K.J. Nickols, S.R. Palumbi, D.R. Pearsall, E.P. Pike, E.K. Pikitch, G. Sancho, A.K. Spalding, D.O. Suman, S.T. Sykora-Bodie, and K. Grorud-Colvert. 2022. A Scientific Synthesis of Marine Protected Areas in the United States: Status and Recommendations. *Frontiers in Marine Science*. <https://doi.org/10.3389/fmars.2022.849927>

The future relies on effective protection. Which ocean do you want?



From Grorud-Colvert et al., *Science*, 2021 (DOI: 10.1126/science.abf0861). Reprinted with permission, AAAS.

Study finds urgent need for more, and more effective, US MPAs

Not all MPAs are the same. They vary enormously in size, location, management, governance, age, and level of protection. Science shows that fully and highly protected MPAs bring greater conservation benefits – and when well-designed and managed, often better social outcomes, too.

Researchers used *The MPA Guide*² to evaluate the current status of ocean protection in the US. They focused their work on the 50 largest US MPAs, accounting for 99.7% of the total MPA area in the US.³

The top-line finding – that 26% of the US ocean is protected in MPAs, and the majority is fully or highly protected – highlights that important conservation actions have occurred. However, critical gaps remain:

- More than 98% of waters around the continental US have no protection in any kind of MPA, and the 1.9% that do are largely either “lightly” or “minimally” protected from extractive or otherwise damaging human activity.
- There is wide regional variation within US waters. The central Pacific accounts for over 96% of US MPA area and 99% of the fully and highly protected area. No other region is close to achieving a 30% MPA coverage target. For example, in the northeast, 4.7% is protected, and two-thirds of this is highly protected. In the northwest, 4.2% is protected but most has only a minimal level of protection. The mid-Atlantic has a mere 0.3% in any type of MPA.
- A significant proportion of US MPAs are very small, with 48% covering an area less than 0.4 mi² (1 km²). A lack of holistic planning means many of these MPAs remain isolated, severely limiting their benefits. Integration into larger, functional ecological networks would make their collective impact far greater.

- Biogenic habitats – like corals, seagrasses, mangroves, and kelp forests – are both particularly vulnerable to environmental stressors and particularly beneficial for biodiversity and blue carbon. They should be made an urgent priority for widespread and effective protection.

Durable MPAs for People and Nature

It's not enough for an MPA to be in the right place with the right regulations. It also has to work for local communities and rights holders, and the MPA must be designed and managed in a way that is equitable and effective. Examples from the US context can help illustrate how to achieve these objectives.

The current Marine Life Protection Act network of MPAs in California was created through an innovative, science-guided, stakeholder-driven process. However, only the third attempt was successful – largely because regional stakeholder groups and local communities were not consulted in the first two attempts. The MPA network was successfully designed and established when community and stakeholder engagement was incorporated into the process.

In the highly protected Papahānaumokuākea Marine National Monument, Native Hawaiian knowledge systems, values, practices, and leadership have been integral to planning and managing the MPA since the beginning. The Papahānaumokuākea Marine National Monument has produced one of the first climate vulnerability assessments that incorporates Indigenous perspectives. Equity is particularly important when designing and implementing MPAs for climate resilience, and it requires considering the needs and values of local communities to support climate justice.

The MPA Guide

The MPA Guide is a new, science-based tool developed by more than 100 marine scientists, managers, and policy experts to assess how effective an MPA can be at meeting its goal to conserve biodiversity and its benefits for people. *The MPA Guide* links four key aspects of any given MPA:

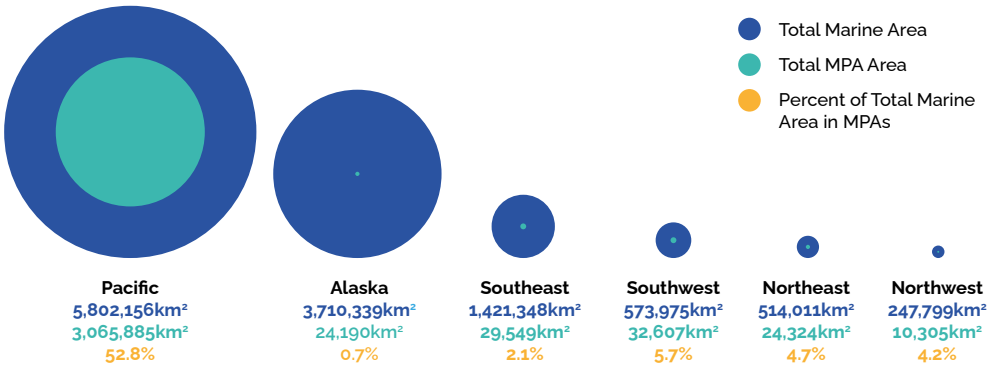
- **Stage of establishment** – whether an MPA is proposed, designated, implemented, or actively managed
- **Level of protection** – whether an MPA is minimally, lightly, highly, or fully protected
- **Enabling conditions** – consider equity and effectiveness and must be in place for an MPA to achieve its goals
- **Outcomes** – the social and ecological outcomes expected based on the level of protection, if implemented or actively managed with enabling conditions in place

Find out more at <https://mpa-guide.protectedplanet.net/>

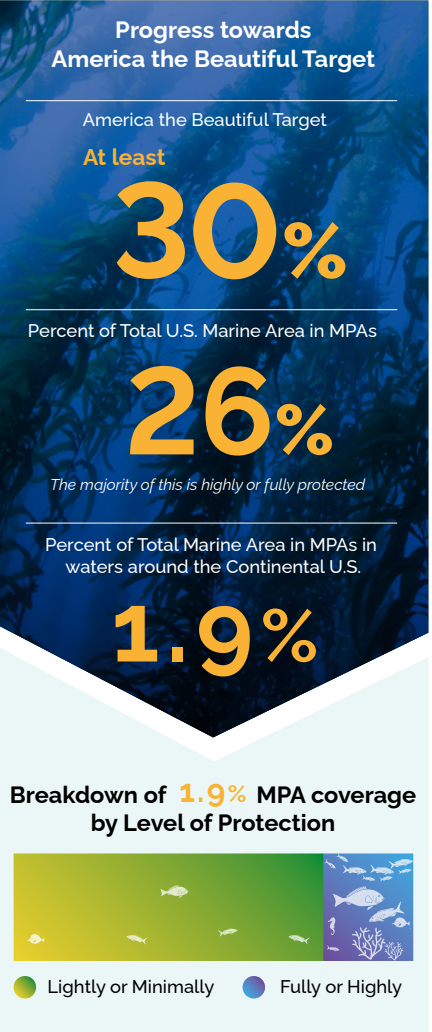
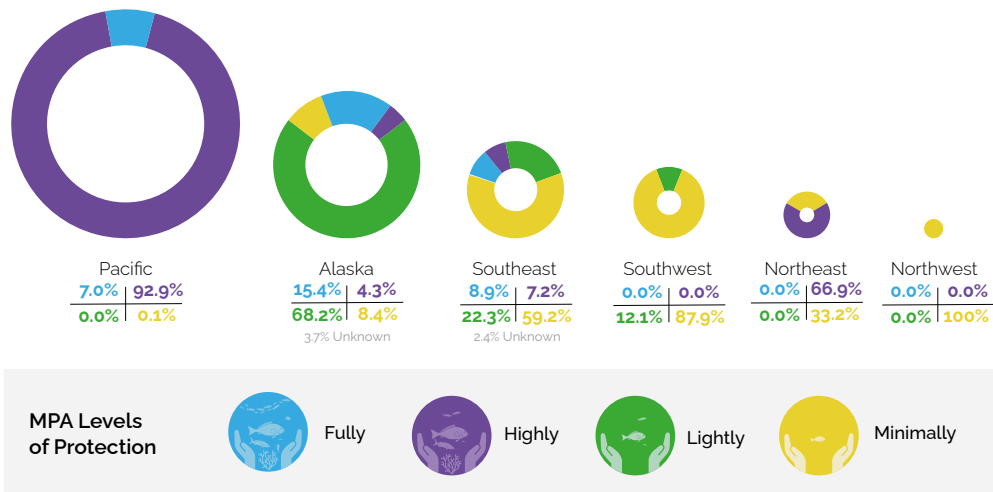


Photo: Dr. Evan D'Alessandro

Total Area of MPAs in each U.S. Region



Percent MPA Coverage in this Analysis by Level of Protection



3. Grorud-Colvert, K., J. Sullivan-Stack, C. M. Roberts, V. Constant, B. Horta e Costa, E. P. Pike, N. Kingston, D. Laffoley, E. Sala, J. Claudet, A. M. Friedlander, D. A. Gill, S. E. Lester, J. C. Day, E. J. Gonçalves, G. N. Ahmadi, M. Rand, A. Villagomez, N. C. Ban, G. G. Gurney, A. Spalding, N. J. Bennett, J. Briggs, L. E. Morgan, R. A. Moffitt, M. Deguignet, E. Pikitch, E. S. Darling, S. Jessen, S. Hameed, G. Di Carlo, P. Guidetti, J. Harris, J. Torge, Z. Kazilkaya, T. Agardy, P. M. Cury, N. Shah, K. Sack, L. Cao, M. Fernandez, and J. Lubchenko. 2021. *The MPA Guide: A framework to achieve global goals for the ocean*. *Science*. eabf086. <https://www.science.org/doi/10.1126/science.abf0861>

4. As per *The MPA Guide*. Fully Protected means no extractive or destructive activities are allowed; all abatable impacts are minimized. Highly Protected means only light extractive activities with low total impact are allowed, such as low-impact cultural and traditional activities such as sustainable fishing by Indigenous communities, with all other abatable impacts minimized. Lightly Protected means some protection of biodiversity exists but moderate to significant extraction and other impacts are allowed. Minimally Protected means that extensive extraction and other impacts are allowed, but the site still provides some conservation benefit the area (Grorud-Colvert et al. 2021).

Recommendations

Coordinated action is needed to make the most of US MPAs, both to create more of the right kinds of MPAs in the places that need them, and to ensure that all established MPAs are effective, equitable, and climate-resilient. Only then can US ocean conservation achieve the goals laid out in the America the Beautiful initiative. This study's findings lead to the following specific recommendations for US decision-makers:



Establish more, and more effective, MPAs. The US needs to create more fully and highly protected MPAs to reach national conservation goals. Current MPAs with weak protection need re-evaluating. All MPAs need to be actively managed to optimize results.



Establish new highly and fully protected, networked MPAs, especially in underrepresented geographic regions and habitats. The Central Pacific MPAs are valuable and should be celebrated and strengthened,

including with plans for management. But the US needs to create effective MPAs and networks in other areas too, to reflect the diversity of its marine ecosystems. This will bring biodiversity protection and the social benefits of MPAs within reach of more communities.



Improve attention and commitment to equity in new and existing MPAs. Close engagement with diverse rights-holders and stakeholders in inclusive planning and management processes – particularly

with Indigenous and other historically excluded communities – increases MPA equity, utility, and effectiveness.



Track both total percent of MPA area and percent in each of the four levels of protection. Frameworks like *The MPA Guide* help identify the activities allowed and clarify the level of protection offered, to help observers

understand whether positive outcomes related to biodiversity and climate resilience can be expected. Outcomes from sites that are not MPAs but provide effective biodiversity conservation should also be tracked as the US works to achieve its 30x30 target.



Ensure MPAs are durable so they will continue to work in the future. Governance structures and long-term capacity – including funding support for staffing, monitoring, and collaboration – should be established

and strengthened. More research and adaptive management are needed to ensure MPAs are 'climate-ready' and provide climate mitigation.



Build on existing state MPA initiatives and coordinate federal and state MPA actions. State

support will be needed to achieve the federal goals of America the Beautiful. Initiatives could include executive and legislative actions, outreach and education, and stakeholder coordination. Some states have already passed resolutions relating to 30x30.



Reinstate and empower the MPA Federal Advisory Committee (MPA FAC).

Until it was terminated in 2019, the MPA FAC provided expertise for agencies across the federal government by advising, reviewing, and assessing MPA implementation. By including members representing Tribal and state governments, conservation bodies, scientific researchers, commercial and recreational fishers, offshore energy, and other sectors, the Committee played a vital role. It needs to be made operational again.



Strengthen the NOAA MPA Center with increased and long-term funding to support US MPA design, stewardship, and effectiveness.

Key priorities to improve US MPAs rely on a centralized source for the latest data. There's a growing need for cross-sector cooperation to align effective MPAs in comprehensive marine spatial planning frameworks. The NOAA MPA Center can provide the information needed to underpin these efforts – if given sufficient resources to do so.



Revisit and update the US National Ocean Policy (NOP) for an integrated, whole-government approach.

Created in 2010 to enable a more cohesive, ecosystem-based, and scientifically informed approach to policymaking, the NOP connected national and regional ocean management processes. Even though it was repealed in 2018, the need for a national ocean policy remains.

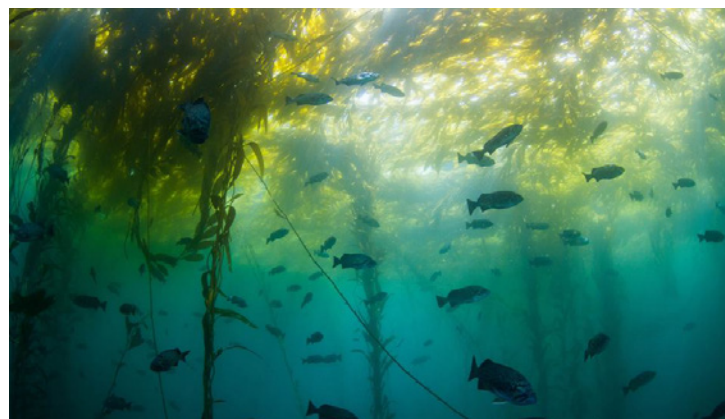


Photo: Ian Markham

What is the bottom line?

- MPAs that are well-designed and managed can bring broad benefits to human communities and marine life. But not all MPAs are the same; the type of MPA determines the outcomes it can provide. Fully and highly protected areas provide the greatest conservation outcomes.
- More than 98% of waters around the continental United States have no protection in any kind of MPA, and the 1.9% that do are largely either "lightly" or "minimally" protected from extractive or otherwise damaging human activity.
- To achieve national goals for biodiversity conservation, climate resilience, and equity, the US needs to establish more, and more effective MPAs, that are equitable and representative of marine biodiversity and regions.