Lack of Staffing, Funds Prevent Marine Protected Areas from Realizing Full Potential

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Marine protected areas (MPAs) are an increasingly popular strategy for protecting marine biodiversity, but a new global study demonstrates that widespread lack of personnel and funds are preventing MPAs from reaching their full potential. Only 9 percent of MPAs reported having adequate staff.

The findings are published in the journal *Nature* [1] on March 22.

MPAs, which include marine reserves, sanctuaries, parks, and no-take zones, are areas designated to protect marine species and habitats from both global and local threats.

After four years compiling and analyzing data on site management and fish populations in 589 MPAs around the world, Dr. David Gill and his co-authors discovered that shortfalls in staffing and funding are hindering the recovery of MPA fish populations. While fish populations grew in 71 percent of MPAs
studied, the level of recovery of fish was strongly linked to the management of the sites. At MPAs with sufficient staffing, increases in fish populations were nearly three times greater than those without adequate personnel. Despite the critical role of local management capacity, however, only 35 percent of MPAs reported acceptable funding levels and only 9 percent reported adequate staff to manage the MPA.

“Our study identified critical gaps in the effectiveness and equity of marine protected areas,” said Gill, who conducted the research during a postdoctoral fellowship supported by the National Socio-Environmental Synthesis Center (SESYNC) and the Luc Hoffmann Institute. “We set out to understand how well marine protected areas are performing and why some perform better than others. What we found was that while most marine protected areas increased fish populations, including MPAs that allow some fishing activity, these increases were far greater in MPAs with adequate staff and budget.”

Marine protected areas are rapidly expanding in number and total area around the world. In 2011, 193 countries committed themselves to the Convention on Biological Diversity Aichi Targets, including a goal of “effectively and equitably” managing 10 percent of their coastal and marine areas within MPAs and “other effective area-based conservation measures” by 2020. In the last two years alone, over 2.6 million km$^2$ have been added to the portion of the global ocean covered by MPAs, bringing the total to over 14.9 million km$^2$.

As countries continue to expand their coverage and create new MPAs to achieve national targets, many unanswered questions remain: Are MPAs meeting their social and ecological objectives? Are they being managed “effectively and equitably”? How can we ensure that MPAs deliver the ecological and social benefits they were designed to produce?

Led by Gill, a multinational and multidisciplinary research team worked to answer these key questions. The study used rigorous statistical methods to identify changes in fish populations attributable to the MPA and not due to other pre-existing factors, such as preferentially locating MPAs where threats are low.

“These results highlight the potential for an infusion of resources and staff at established MPAs – and at MPAs in the pipeline – to enhance MPA management and ensure that MPAs realize their full potential,” said Dr. Helen Fox of the National Geographic Society, who led the research initiative together with Dr. Michael B. Mascia of Conservation International. “The good news is that this is a solvable problem. MPAs perform better when they have enough staff and an adequate budget.”

“The risk is that MPAs proliferate without further investment in MPA management, leaving new sites without the resources they need to deliver on their promises. If resources are reallocated to new MPAs from currently protected areas, that could weaken these older sites, too,” added Mascia.

The authors propose policy solutions including increasing investments in MPA management, prioritizing social science research on MPAs, and strengthening methods for monitoring and evaluation of MPAs.

“SESYNC is a leader in bringing together scholars to address emerging problems--such as issues around marine protected areas and conservation--through new interdisciplinary research partnerships to improve understanding,” said Margaret Palmer, Director of SESYNC and a Distinguished University Professor at the University of Maryland. “The scholarship that David Gill and his team have highlighted in their *Nature* study is a reminder that interdisciplinary synthesis research can foster actionable science.”
“While the momentum around the creation of new marine protected areas is exciting, it’s essential that we don’t leave existing MPAs behind,” said Gabby Ahmadia, WWF’s lead marine scientist. “This research highlights the need to be thoughtful and critical about how we support existing MPAs to optimize benefits for both people and nature.”

“There are huge expectations of MPAs in protecting marine biodiversity, but until this study we didn’t have a truly comprehensive picture of whether, and under what conditions, they are likely to be effective,” said Jon Hutton, Director of the Luc Hoffman Institute. "The study in some ways points out the obvious - that investing in management and capacity is key for biodiversity outcomes in MPAs. But it is alarming to see how few MPAs have sufficient financial and human capacity, pointing to a clear need for further investment."

"People around the world depend on marine resources that are managed fairly and effectively. With global collaborations, we can identify strategic future investments in marine protected areas, and track progress towards better outcomes," said Dr. Emily Darling, Associate Conservation Scientist at Wildlife Conservation Society, who leads a global coral reef monitoring program.

NOTES TO EDITORS

The research paper, “Capacity shortfalls hinder the performance of marine protected areas globally” was published in *Nature* on March 22; [DOI: 10.1038/nature21708](https://doi.org/10.1038/nature21708) [1]

David Gill is currently a David H. Smith Research Fellow at Conservation International and George Mason University. Helen Fox and Mike Mascia began the work from the Conservation Science Program of WWF; they are now at National Geographic Society and Conservation International, respectively.

[Click here to read the study](https://doi.org/10.1038/nature21708) [1]

[Click here for an infographic of the study’s findings](#) [2]

### About the study

This research was supported by the National Socio-Environmental Synthesis Center (SESYNC) under funding received from the National Science Foundation DBI-1052875, as part of the working group: Solving the Mystery of Marine Protected Area (MPA) Performance: Linking Governance, Conservation, Ecosystem Services and Human Well Being. David Gill was jointly supported by postdoctoral fellowships from the Luc Hoffmann Institute and SESYNC.

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**About Conservation International**

Conservation International (CI) uses science, policy and partnerships to protect the nature people rely on for food, fresh water and livelihoods. Founded in 1987, CI works in more than 30 countries on six continents to ensure a healthy, prosperous planet that supports us all. CI’s first VR film ‘Valen’s Reef’ tells the story of one of the most successful community-driven conservation projects in the world in the world, the Bird’s Head Seascape Initiative. “Valen’s Reef” has been viewed by more than 1.7M people since its release in the end of June 2016. Learn more about CI and the "Nature Is Speaking" campaign, and follow CI's work on Facebook, Twitter, Instagram and YouTube.

**About SESYNC**

SESYNC’s mission is to support synthetic, actionable team science on the structure, functioning and sustainability of socio-environmental systems. The center’s five core objectives are to: enhance the effectiveness of interdisciplinary collaborations among natural and social science research teams focused on environmental problems; build capacity and new communities of socio-environmental researchers; provide education programs to enhance interdisciplinarity and understanding of socio-environmental synthesis; enhance computational capacity to promote socio-environmental synthesis; and enhance relevance of socio-environmental research to decisions and behaviors via actionable scholarship. For more information on SESYNC and its activities, please visit www.sesync.org.

**About the Luc Hoffmann Institute**

The Luc Hoffmann Institute is an independent research hub catalysing new approaches to help address some of the planet’s most complex environmental challenges. Working with WWF and other partners around the globe, our aim is to accelerate research impact in policy and on the ground. We develop, test and promote a range of methods that help to break down the boundaries between scientists, policy experts and other key stakeholders so that knowledge is ‘co-created’. This collaborative process is critical to support learning, for ourselves and our partners. We also invest in the future. Our Fellows Programme recruits early-career researchers to help lead the projects we are engaged in, helping them develop knowledge and skills that will make them more effective and influential in their careers.
About WWF

WWF is one of the world's leading conservation organizations, working in 100 countries for over half a century. With the support of almost 5 million members worldwide, WWF is dedicated to delivering science-based solutions to preserve the diversity and abundance of life on Earth, halt the degradation of the environment, and combat climate change. Visit [www.worldwildlife.org](http://www.worldwildlife.org) [15] to learn more and follow our news conversations on Twitter [@World_Wildlife](https://twitter.com/World_Wildlife) [16].

Associated SESYNC Researcher(s):

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Associated Project:
[Solving the Mystery of Marine Protected Area (MPA) Performance](https://www.sesync.org/mpa-performance) [18]

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