https://doi.org/10.1038/s41564-025-02113-5

Launching the IUCN Microbial Conservation Specialist Group as a global safeguard for microbial biodiversity

Despite its importance[1,2], microbial life is largely absent from global conservation frameworks[3,4]. Launched in July 2025, the Microbial Conservation Specialist Group (MCSG) was established as a Species Survival Commission (SSC) by the International Union for Conservation of Nature (IUCN). The IUCN is the world's leading authority in environmental science and policy, renowned for shaping conservation priorities across governments, non-governmental organizations and international treaties. The MCSG convenes a coalition of microbiologists, ecologists, traditional knowledge experts and conservation leaders to develop and advocate for conservation tools, strategies and policies that explicitly integrate microbiology into global biodiversity governance. Despite the importance of microorganisms for ecosystem function, their role has been seen as too abstract or complex to integrate into policy. Elevating microbial perspectives within global conservation has required overcoming a deep-rooted tendency to overlook the invisible[5].

The first 5 years

First, we will build a global network, including experts from low- and middle-income countries and Indigenous communities, to advise on conservation targets and build an evaluation schema for assessing conservation priorities. To ensure broad and inclusive representation, we are actively inviting experts through a snowball approach, encouraging nominations from our members, and issuing open calls for participation via the IUCN and MCSG websites. We will also prioritize language accessibility, regional balance, and engagement with early-career researchers and traditional knowledge holders to foster equitable participation. Second, we will map conservation priorities by compiling and visualizing global data on microbial ecosystems that are currently threatened by habitat destruction and anthropogenic activity[6,7]. Third, we will develop microorganism-specific Red List criteria, the globally recognized system used by the IUCN to classify species at high risk of extinction. Our aim is to incorporate microbial features, including metabolic and ecological resilience, rather than individual species abundance, which is more typical with Red List criteria for macroorganisms. Finally, we will map existing microbial conservation projects, such as microorganism-assisted coral restoration[8] and soil microbiome rewilding[9], and develop criteria to incorporate them into current IUCN efforts[10], optimize their application and assess their success. Throughout, we will integrate microbial experts into other IUCN SSC groups (such as those exploring conservation priorities for threatened fungi and wildlife, including corals, amphibians and insects) to ensure that specific microbiological considerations are consistently represented wherever conservation decisions are made. These deliverables create the foundation — data, tools, success stories and people — that we will build on over the next 5 years. The MCSG steering committee is composed of appointed vice-chairs representing diverse expertise and geographies (initially, these will be the co-authors of this comment, chaired by Jack Gilbert and Raquel Peixoto). This committee will guide strategic decisions through structured consensus-building processes and, when needed, formal votes.

Long-term vision

A key objective of the MCSG is to embed microbial criteria into the IUCN Red List and the Red List of Ecosystems, ensuring that microbial life is assessed and protected. We will also develop robust risk assessment frameworks to guide the responsible use of probiotic, engineered or transplanted microorganisms in conservation efforts, balancing innovation with ecological safety. To elevate microbial perspectives within international environmental policy, the MCSG will actively engage with and communicate to a tailored network of international conventions and forums — such as United Nations Conference of the Parties (COP) meetings, the IUCN World Conservation Congress and key thematic workshops organized by the MCSG — through regular participation, applications for side events, white papers and policy briefs.

We will ensure microorganisms are given a platform by embedding microbial priorities into biodiversity targets, advocating for microbial language in global frameworks and partnering with influential delegates to amplify messaging at every stage of policy development. Through targeted policy briefs and regular participation in key events (for example, COP, the World Conservation Congress and society meetings), we will encourage policies that are supportive of microbial conservation. In parallel, we aim to establish sustained funding to support the implementation of microbial conservation strategies and assessment. The MCSG is currently supported by funding from the Gordon & Betty Moore Foundation and administrative and financial support from the International Society for Microbial Ecology, the American Society for Microbiology and Applied Microbiology International. This enables coordination and administration, conservation hotspot mapping, pilot risk assessments and cataloguing of existing microbial conservation efforts. Additional proposals are currently in development. By 2030, our goal is for microbial metrics to stand alongside those of charismatic megafauna in every major habitat monitoring and restoration plan, signalling a profound shift in how biodiversity is measured, valued and protected.

Building a community

Regardless of your microbiological expertise, we invite the global scientific and conservation communities to participate in this initiative by joining as an SSC member or collaborator; sharing data on threatened microbial habitats, biobanking and/or culture collection resources; sharing information on microorganism or microbiology-informed conservation projects; and advocating through social media, traditional press, government, academia, industry and beyond to support the mission.

Correspondence

Protecting microbial life is a planetary necessity. The IUCN SSC programme has been successful in protecting global ecosystems and macroscopic species from extinction[10]. We will build on this by integrating microbiology into conservation programmes and establish the international support and visibility required to ensure success.

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Published online: 12 September 2025

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Competing interests

The authors declare no competing interests.