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An updated evaluation of Arab biodiversity action plans and reports with a focus on Fungi

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ABSTRACT

Although they are fundamental parts of ecosystems, fungi are still much underrepresented in efforts at biodiversity protection and planning. With an eye toward the inclusion of fungi, this work offers an updated assessment of biodiversity action plans and national reports sent by Arab League members to the Convention on Biological Diversity (CBD). Each document was evaluated for its reference to fungi, taxonomic clarity, strategic conservation efforts, coverage of fungal habitats and ecological roles, and awareness of knowledge gaps using a standardized five-point star rating system based on criteria developed by Abdel-Azeem and Minter (2011). Of the 22 member states, 12 got no stars, meaning no reference to fungus; five earned one star; one received two; and only Egypt got a three-star rating. Three nations had not turned in reports. The results draw attention to a general disregard of fungi in models of regional biodiversity. Suggestions are given to enhance the assessment mechanism and support more through inclusion of fungal diversity into next projects. This work emphasizes the need of raising knowledge, legal acceptance, and strategic integration of fungus in national and regional preservation programs.

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The Arab League spans 22 countries across North Africa and Western Asia, covering over 13 million square kilometers and home to nearly 418 million people. Despite ongoing efforts to conserve biodiversity through protected areas—totaling around 1,758 across the region—fungi remain largely neglected in national conservation agendas.

Fungi are essential to healthy ecosystems, serving as decomposers, symbiotic partners, and contributors to nutrient cycling and plant health. Yet, how well are they represented in Arab countries' biodiversity action plans? To answer this, we conducted an updated evaluation of National Biodiversity Strategies and Action Plans (NBSAPs) and reports submitted to the Convention on Biological Diversity (CBD) as of 2019, following the assessment framework developed by Abdel-Azeem and Minter (2011).

Using a simple star rating system, each report was scored from zero to five stars based on specific fungal-related criteria, including recognition of fungi, their

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ecological roles, strategic conservation measures, and acknowledgment of knowledge gaps. The findings reveal significant gaps and limited progress across the region.

Shockingly, 12 countries—Bahrain, Comoros, Djibouti, Jordan, Kuwait, Mauritania, Oman, Somalia, Sudan, Tunisia, the United Arab Emirates, and Yemen—completely failed to mention fungi in their reports, earning zero stars. This reflects a fundamental absence of awareness regarding the ecological importance of fungi.

Five countries—Iraq, Lebanon, Palestine, Qatar, and Saudi Arabia—received just one star, as they mentioned fungi but did not present any clear strategies or dedicated attention to fungal conservation.

Algeria earned two stars, demonstrating some recognition of fungi and their ecological functions, though still lacking comprehensive measures for their protection.

Egypt led the region with three stars, reflecting a more detailed understanding of fungal biodiversity and its significance, yet still falling short of achieving strong or excellent coverage as per the evaluation framework.

Meanwhile, Libya, Morocco, and Syria had not submitted national biodiversity reports by the time of this assessment, leaving their level of engagement in fungal conservation unknown.

These results underline the ongoing neglect of fungi across the Arab region's biodiversity policies. Despite fungi being critical to ecosystem health and functioning, they remain sidelined in official conservation frameworks. Raising awareness and integrating fungi into national plans is essential if countries are to fulfill global biodiversity commitments effectively.

Fungi play essential roles—as decomposers, partners with plants (Abdel-Azeem 2011, Abdel-Azeem & Soliman 2011), and much more—but most Arab biodiversity strategies don't yet reflect this (Mohamed et al. 2021). Key habitats and fungal functions are largely missing from conservation conversations. There's also a lack of clear legal protections and a big need to fill knowledge gaps (Abdel-Azeem 2010).

To change this, it's important for Arab countries to include fungi explicitly in their biodiversity goals, invest in fungal research, and work together across the region. This is where the Arab Society for Fungal Conservation (ASFC) comes in.

Back in 2010, a group of passionate Egyptian mycologists and volunteers started holding workshops to raise awareness about fungi and their conservation. In 2013, Abdel-Azeem founded ASFC—the first society dedicated to fungal conservation in the Arab world and North Africa—based at Suez Canal University. The society is a private, voluntary, non-governmental group focused on shining a light on fungi's role in ecosystems.

Building on this, Abdel-Azeem also launched the Egypt's Mycologists Network (EMN) in 2016 to bring together mycologists, amateur enthusiasts, conservation groups, and environmental agencies to collaborate on fungal issues. By 2020, ASFC helped set up similar networks in Iraq, Algeria, Libya and Pakistan, uniting experts, policymakers, and nature lovers to push fungal conservation forward.

Fungal conservation strategies in Egypt have seen gradual but meaningful development over the past decade. A key milestone was the founding of the Arab Society for Fungal Conservation (ASFC) in 2013, marking the first dedicated initiative to integrate fungi into conservation dialogue within the Arab region. ASFC's work has been instrumental in promoting national awareness, organizing expeditions, and encouraging research on fungal diversity, particularly in ecologically significant areas like the Nile Delta. The first systematic fungal surveys, targeting macrobasidiomycetes, were launched in 2013, laying the groundwork for future conservation action. However, despite these efforts, fungi remain underrepresented in Egypt's broader environmental policies. While Egypt's environmental legislation, including Law 4/1994 and its amendments, establishes frameworks for environmental impact assessments and ecosystem protection, there is still no specific legal framework or national strategy explicitly prioritizing fungal biodiversity. Strengthening fungal conservation in Egypt will require not only scientific research and public engagement but also clear incorporation of fungi into biodiversity action plans, legal protections, and habitat conservation strategies.

These growing efforts show a real momentum toward recognizing fungi's importance in the Arab region—and highlight how working together can protect these fascinating and essential organisms.

In short, if Arab countries want to protect biodiversity effectively, they need to give fungi a seat at the table. After all, healthy ecosystems depend on them.

Further Readings

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