We need to explicitly include fungi and all living organisms in our legislation frameworks.

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Fungi are critical to human, ecosystem, and planetary well-being: it's time to include them within conservation frameworks

Fungi have long supported and enriched life on our planet and can help address many urgent environmental problems. It is time for fungi to be recognised within legal conservation frameworks and protected on an equal footing with animals and plants.

Fungi make up one of life's kingdoms' as broad a category as 'animals' or 'plants' and provide a key to understanding our planet. Yet fungi have received only a small fraction of the attention they deserve. The best estimate suggests that there are between 2.2 and 3.8 million species of fungi on Earth ,Äì as many as 10 times the estimated number of plant species' meaning that, at most, a mere 8 percent of all fungal species have been described. Of these, only 358 have had their conservation priority assessed on the IUCN Red List of Threatened Species, compared with 76,000 species of animal and 44,000 species of plant. Fungi, in other words, represent a meagre 0.2 % of our global conservation priorities.

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Mushrooms are only the reproductive organs of fungi: for the most part, they live their lives as branching, fusing networks of tubular cells known as mycelium. If you teased apart the mycelium found in a teaspoon of healthy soil and laid it end to end, it could stretch anywhere from 100 metres to 10km. Mycelium is ecological connective tissue, a living seam by which much of life is stitched into relation. Mycelial networks wind through plant roots and shoots, animal bodies, sediments on the ocean floor, grasslands and forests. Of the carbon that is found in soils ,Äì which amounts to more than the amount of carbon found in plants and the atmosphere combined ,Äì a substantial proportion is bound up in tough organic compounds produced by fungi. More than 90 percent of plants depend on symbiotic fungi, which weave themselves between plant cells, supply plants with crucial nutrients and defend them from disease. These fungi are a more ancient part of planthood than leaves, flowers, fruit or even roots and lie at the base of the food webs that support much of life on Earth. Besides their foundational ecological importance, the chemical accomplishments of fungi have long shaped human life: bread, cheese, alcohol, soy sauce, penicillin, a host of powerful antiviral and anti-cancer compounds, cholesterol-lowering statins and immunosuppressant drugs that enable organ transplants, to name but a few. When fungi suffer, so do the ecosystems and the humans that depend on them.

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There's a good reason why so much work goes into assessing the conservation status of different species: from the point of view of policymakers, if nothing is under threat, there's nothing to protect. But despite their minimal presence in our lists of endangered species, we know of many threats to fungi. Large swathes of the fungal kingdom are intimately associated with plants and so are killed off by the same activities, such as deforestation. Fungi are subject to additional disruptions, from ploughing to the overuse of fungicides and fertilisers. Of the grand total of six medicinal fungi that have had their conservation status assessed by

the IUCN, one is listed as vulnerable due to overharvesting. Another species, found to have powerful activity against a range of viruses including herpes and flu, is listed as endangered, threatened with extinction by the destruction of the forests it inhabits.

This year, the global community is gathering to develop strategies, plans and commitments to stem the threats to food systems, the climate and biodiversity. In May, state leaders will meet to negotiate the Post-2020 Global Framework on Biodiversity, which will define what states and other actors need to do protect biodiversity for years to come. In September, global leaders will consider means to strengthen the global food system at the UN Food Systems Summit. In November, the world will reconvene to tackle the climate emergency at the UN Climate Change Conference (COP26). These efforts will be incomplete , at best , if we continue to neglect fungi.

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As things stand, most environmental legislation and international assemblies, together with many large international NGOs, refer to the conservation of flora (plants) and fauna (animals). Adding a third 'F', funga to the list would write this neglected kingdom of life into conservation and agricultural policy frameworks and unlock crucial funding for mycological research, surveys and educational programmes. The opportunities to advance the protection of fungi this year are too precious to miss. We call on state leaders, civil society, scientists, and citizens of the world to seize them, and create legal protections for fungi under international, regional, and domestic law and policy, both to state the equal significance of fungi among the kingdoms of life and to help address the threats that jeopardise the ability of many fungal species to thrive and survive. We are unthinkable without fungi, yet seldom do we think about them. It is an ignorance we can't afford to sustain.