Acknowledgements

Many thanks to Kare Liimatainen and Martyn Ainsworth for their help with identification, to David Harries and University of Aberystwyth staff for DNA extraction and sequencing of the *Thaxterogaster subporphyropus* material, to staff at Alvalab for sequencing the material of all three collections and to Nigel Brown for information on geology.

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Fungal Futures: Conservation news and views

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Species recovery in England

Species conservation stole the spotlight in August with the launch of Natural England's new Threatened Species Recovery Actions (TSRA) database (Wilkins *et al.*, 2025). It maps out what more than a thousand species need when broad-brush habitat improvements—even at a landscape scale—aren't enough.

The database draws together England's 'priority species' from Section 41 and those classed as threatened or near-threatened on official GB Red Lists (for fungi, this is only the boletes and lichens and their associated fungi). In all, TSRA includes actions for 129 fungi, made up of 66 non-lichenised macro-fungi, 49 lichens, 7 lichenicolous fungi, and 7 non-lichenised micro-fungi.

The actions vary dependent on the species and its needs. For example, actions include survey and production of species dossiers for *Amanita friabilis* and *Desarmillaria ectypa*; autecology research for *Cotylidia pannosa*, *Tremella moriformis* and *Myriostoma coliforme*; establishing the taxonomic status of *Boletus immutatus* and *Microglossum olivaceum*; and trialling management and reintroductions for *Puccinia scorzonerae*, *Chlorencoelia versiformis* and *Hericium coralloides*. One action all non-lichenised macro-fungi share is the urgent need for a conservation assessment (or re-assessment for the boletes) under the IUCN criteria.

Crucially, the TSRA is not a one-off publication. It is a dynamic database designed to help hit the Government's extinction risk targets under the Environment Act, and as such will be the focal point for species-level funding within Natural England. It will also be regularly updated to ensure it stays relevant. It currently accounts for around 20% of the threatened lichens in England with the remaining 80% of species to be given actions in future updates. Similarly, as new GB Red Lists for fungi are adopted, newly assessed threatened species will be added.

Many individual experts have either contributed to or reviewed TSRA data. Chris Knowles, Shelley Evans and Peter Roberts, in particular, have made significant contributions on the fungi side—to give credit where credit's due.

Fig 1. Observation of escaped Golden Oyster Mushroom (GOM) in the UK made by Heather Clarke (2025). Photograph © Heather Clarke.

The invasive Golden Oyster Mushroom

The Golden Oyster Mushroom (GOM), *Pleurotus citrinopileatus* (Fig. 1), is an attractive, easy-to-cultivate, and popular edible wood saprotroph originating from Eastern Asia. Today it is cultivated worldwide and is a mainstay for both small- and large-scale commercial mushroom growers in the UK, as well as being favoured by home cultivators. However, GOM is also one of the first commercially cultivated fungi known to have escaped from controlled environments into natural habitats, and it has been recognised as invasive in several countries.

The species rose in popularity among American growers in the early 2000s and was first recorded as an escape into North American forests around 2010. Since then, it has spread rapidly across eastern North America (Bruce, 2018; Veerabahu *et al.*, 2025). In the UK, golden oysters are now established at three sites in northern England and the Midlands. At least one of these populations has been present for several years, and the species is already well established in a number of European countries.

Despite its subtropical origin, GOM has proven adaptable to cooler temperate regions, tolerating winter freezes and producing sporocarps from early spring onwards in some places (Bruce, 2018).

Like native oyster mushrooms, it is most often found on hardwoods such as beech, oak, elm, and ash. While its fruiting seasonality in the UK is not yet clear, current observations suggest that early summer fruiting is possible, with multiple flushes following.

A recent paper by Veerabahu *et al.* (2025) has

confirmed that aggressive commercial strains of GOM, selected for their rapid substrate colonisation and prolific sporocarp production, displace other wood-inhabiting saprotrophs. Genetic evidence from American populations also suggests repeated escapes of commercial strains. Concerns are heightened by the potential for hybridisation with native British *Pleurotus* species, which has already been demonstrated to be possible with *P. pulmonarius* (Rosnina *et al.*, 2016) and *P. cornucopiae* (Yoo *et al.*, 2006).

Alongside other work the authors are undertaking to address this threat, an informal meeting was held with members of the fungi cultivation community at the recent *All Things Fungi Festival*. The session went very well, with many supportive and thoughtful responses from small- and medium-scale growers, who shared concerns for the health of our habitats. The festival organisers had already shown foresight by requesting a site-wide ban on GOM this year, which greatly helped in getting the message across.

This species raises a number of wider issues around biosecurity, cultivation practices, and the applied use of fungi in our environment. It is through two-way communication at this community level that the most rapid and effective changes can be made to respond to the threat, and we hope this will encourage larger growers to follow suit.

If you think you have spotted GOM, we would very much like to receive your records. Please submit them through the usual routes: FRDBI, iNaturalist, or iRecord, and also post on the British Mycological Society Facebook page (https://www.facebook.com/groups/18843741618/) so that we can be notified promptly.

Launch of the Underground Atlas

Researchers from the Society for the Protection of Underground Networks (SPUN) have published a new Underground Atlas: Mycorrhizal Biodiversity Map v1.0—a digital map showing predictions of the diversity of mycorrhizal fungi across the globe at 1 km^2 resolution (Van Nuland *et al*, 2025). The 4-year project to create the map is based on 2.8 billion DNA sequences taken from locations all over the world. The map identifies key diversity hotspots for arbuscular and ectomycorrhizal fungi, with one crucial finding being that >90% of these hotspots are not within the existing protected areas, leaving them vulnerable to land-use change.

The Underground Atlas is a free resource for everyone and will help to inform policy on soil and fungal conservation. It's really cool – go check it out here: https://www.spun.earth/underground-atlas/mycorrhizal-biodiversity.

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