

## Monitoring and mapping fungal diversity for nature conservation

Danny Haelewaters<sup>1,2</sup>, Sergio de-Miguel<sup>3,4</sup>, Bálint Dima<sup>5</sup>, Vasco Fachada<sup>6,7</sup>, Susana C. Gonçalves<sup>8</sup>, Jacob Heilmann-Clausen<sup>9</sup>, Reda Iršėnaitė<sup>10</sup>, Tuula Niskanen<sup>6</sup>, Viktor Papp<sup>11</sup>, Oleh Prylutskyi<sup>12</sup>, Andrea Rinaldi<sup>13</sup>, Małgorzata Ruszkiewicz-Michalska<sup>14,15</sup>, Alfredo Vizzini<sup>16</sup>, Tea von Bonsdorff<sup>6</sup>, Georgios Zervakis<sup>17</sup>, Julia Pawłowska<sup>14,18</sup>

Citizen science has historically played an important role in mycological research. For centuries, leading taxonomic experts in mycology did not hold academic positions. Ecologists and conservationists have used citizen science data to enrich fungal monitoring. Additionally, molecular techniques have become standard in fungal research, but are usually unavailable to amateur mycologists, leading to a lack of comparability of data generated from academic and citizen science-based projects. To close this gap, we will develop a collaboration network between different stakeholders across the continent. We will provide access to DNA barcoding, standardized protocols, and training to increase the amount and quality of fungal records. This includes the use of common tools, apps, and joint web portal to display records. All activities will be organized through: (1) discovery missions engaging citizen scientists to aid with structured monitoring, (2) typification missions to obtain candidate material for typification of taxa without an existing, sequenceable type, and (3) barcoding missions to involve citizen scientists in generating sequence data. We are creating a network of representatives of different mycological communities. This includes professional researchers, mycological societies and groups, amateur mycologists, and mycophiles. We started communicating with stakeholders through a dedicated webpage, https://fun-dive.eu/, which collates data in a standard manner and shares them with the Global Biodiversity Information Facility (GBIF). This project will result in a better understanding of pan-European fungal distribution patterns that are crucial to understand macroecological processes and improve fungal conservation efforts. We welcome more collaborators into this project; please join us!

Grab a sticker/flyer

Complete our surveys

Join our campaigns



## - FunDive Improving our understanding of fungal biodiversity by the involvement of citizen scientists

- Mycological communities across Europe are very diverse and the landscape of their activities is complicated
- A huge amount of data on fungal biodiversity is available in social media, groups, forums, citizen science platforms
- Different types of data recording tools exist, some of them are country-specific
- A recent paper presented a call for professional mycologists to engage with amateurs and local communities
- FunDive is an initiative to bring together professional mycologists, mycophiles, non-academics, and citizen scientists across Europe with regard to fungal monitoring and conservation
- People want to collaborate, FunDive provides a platform to do this!

Also check out our other FunDive poster by Nuytinck et al. (#1744)

Contact: danny.haelewaters@gmail.com

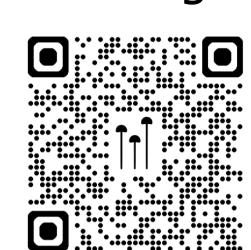
**Affiliations:** <sup>1</sup>University of South Bohemia, Czechia, <sup>2</sup>Biology Centre of the Czech Academy of Sciences, Czechia, <sup>3</sup>University of Lleida, Spain, <sup>4</sup>Forest Science and Technology Centre of Catalonia, Spain, <sup>5</sup>Eötvös Loránd University, Hungary, <sup>6</sup>University of Helsinki, Finland, <sup>7</sup>University of Porto, Portugal, <sup>8</sup>University of Coimbra, Portugal, <sup>9</sup>University of Copenhagen, Denmark, <sup>10</sup>Nature Research Centre, Lithuania, <sup>11</sup>Hungarian University of Agriculture and Life Sciences, Hungary, <sup>12</sup>V. N. Karazin Kharkiv National University, Ukraine, <sup>13</sup>University of Cagliari, Italy, <sup>14</sup>Polish Mycological Society, Poland, <sup>15</sup>University of Lodz, Poland, <sup>16</sup>University of Torino, Italy, <sup>17</sup>Agricultural University of Athens, Greece, <sup>18</sup>University of Warsaw, Poland

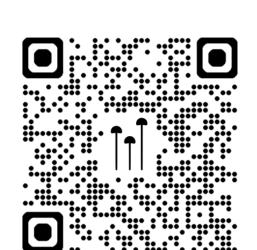




## Discovery missions – Citizen science sampling campaigns

The very first citizen science campaign within FunDive focuses on epigeous gasteroid fungi in the genera *Geastrum* and *Tulostoma*. Species in these genera will soon be evaluated for the European IUCN Red List so this campaign will have direct ramifications for fungal conservation.













## - Barcoding missions -

Our goal is to generate ITS sequences of target species from sampling campaigns and to engage participants through a mobile

molecular laboratory



