

# Above- and below-ground detection of *Phellodon secretus*, a tooth fungus new to Britain

Matt Wainhouse\*, Andrew P. Detheridge\*\*, Gareth W. Griffith\*\*,  
Alexandra Dombrowski\*\*\*, Roseina Woods\*\*\* & A. Martyn Ainsworth\*\*\*

## Hydnoid hotspots on the Windsor Crown Estate

The Windsor Crown Estate includes Windsor Great Park, several farms, lakes and the vast conifer plantations of Swinley Forest stretching between Ascot and Sandhurst. The Estate lies mainly within Berkshire (VC22) but extends across the border into Surrey (VC22) between Egham and Camberley. Around Virginia Water (lake) and southwest of Ascot, the Estate's acidic soils become noticeably sandy and patches of heathland develop where management allows. This habitat, presumably wooded heath and moorland at one time, is now dominated by formal gardens within the Great Park and pine plantations south of Ascot. Surprisingly, however, it is this apparently mycologically unpromising habitat, not the oak-dominated vistas of Windsor Great Park, that holds several small hotspots for the assemblage of stipitate hydroids (tooth fungi) found with trees in *Fagaceae* (*Castanea*, *Fagus* and *Quercus*). This anomaly is explained by the presence of surviving patches of *Castanea sativa*, often formerly coppiced trees, which punctuate the regimented rows of planted pines. Each of these isolated patches is potentially a site for ectomycorrhizal stipitate hydroids in the genera *Hydnellum*, *Phellodon* and *Sarcodon* (*Thelephorales*).

## Conservation importance

The Crown Estate's hydroid sites are of national importance. Support for this statement comes from several sources, as outlined below. Following field surveys and an analysis of existing sporophore records, Ainsworth (2004) ranked British *Fagaceae*-associated hydroid sites by their species richness. Sharing the top spot alongside the best hydroid sites in the New Forest were two *Castanea* sites in Swinley Forest. Adopting the site names and subdivisions used in an earlier survey by E.E. (Ted) Green (2001, unpubl.), these were Buttersteep and Rapley 2–4 (the numbers refer to three contiguous subunits of a single site). This *Fagaceae*-associated hydroid assemblage was subsequently incorporated in the official guidelines for SSSI selection (Bosanquet *et al.*, 2018). The guidelines recommended that if at least five hydroid species

were recorded in a broadleaved site in southern England, it could be proposed for SSSI designation. It was clear from the records already published in Ainsworth (2004) that Buttersteep and Rapley 2–4, with six species each, exceeded the threshold of SSSI quality, although only Rapley currently enjoys such legal protection. Collections of stipitate hydroids from Crown Estate land around Ascot and Virginia Water have a long history dating back to those initially preserved by M.J. Berkeley and M.C. Cooke in the 1860s. Notable among these collections are the type specimens of *Sarcodon regalis* (now a synonym of *Hydnellum lepidum*, see below), described following two visits by Maas Geesteranus (1975a,b) to its only known British site (until the species was rediscovered in Hampshire in 2017); and of *Hydnellum nemorosum*, described from its only known British site in Nitare *et al.* (2021). However, the novelties do not end there as the results of the current study illustrate.

## Sampling sites and visits

Several hydroid sites in Swinley Forest are potentially under threat from forestry, mountain biking and other management and leisure activities, elevated nitrogen deposition, soil erosion and encroachment of bracken and rhododendron following timber felling. Most sites have not been surveyed for over a decade. In view of this, a combined above- and below-ground study was organised by Natural England in partnership with the Crown Estate to review the status of tooth fungi in Swinley Forest and elsewhere on the Windsor Estate. Although DNA (and RNA) of pine-associated hydroid species has been detected in Scottish soils and used to map the extent of their below-ground mycelia (van der Linde *et al.*, 2008, 2009a,b, 2012), the current project is apparently the first to incorporate an environmental DNA (eDNA) component in a study of the *Fagaceae*-associated hydroids (Griffith *et al.*, 2024). Our survey included *Castanea* woodland at Buttersteep (1.1 ha) and 500 m of forestry track-sides and banks at Rapley 2–4. The hydroid species richness at these two sites, which was originally assessed by identification of sporophores in the field, is now supported by a set

of barcode sequenced voucher collections (Parfitt *et al.*, 2007, Ainsworth *et al.*, 2010).

Site visits (AMA & MW) were made to Buttersteep on 25 Oct. 2022 and to Rapley 2–4 on 1 Nov. 2022 for field identification and georeferencing of sporophores. Five voucher collections were taken for drying and for DNA barcode generation. One of these, a softer-than-usual sporophore partly buried under fallen *Castanea* leaves, could only be determined in the field as *Phellodon* sp. (at Rapley 3). Unfortunately, this was subsequently found to be infertile. Spore deposits and measurements were, however, successfully obtained following a return visit (MW) in the following year on 27 Nov 2023 to collect better material. Soil sampling (MW) was carried out in both areas on 6 Jan. 2023.

### Materials and methods

Vouchers were dried and their barcode sequences generated within the Darwin Tree of Life (DTOL) project (see Acknowledgements). DNA was extracted using CTAB modified with a 24 hour precipitation (Doyle & Doyle, 1987), then amplified by PCR using REDTaq® ReadyMix™ PCR Reaction Mix and ITS1F and ITS4 primers. The PCR was run at 95°C for five minutes, then 35 cycles of 95°C for 30 seconds, 53°C for 30 seconds, 72°C for one minute, and a final cycle at 72°C for seven minutes. Sanger sequencing was completed at the Natural History Museum, London.

Soil cores were collected using a 20 mm soil borer to a maximum depth of 150 mm. Each soil sample was composed of 25 soil cores collected from either a grid formation from within a 25 m<sup>2</sup> quadrat or along an approximately 150 m transect of banks parallel to forestry tracks. Samples were kept refrigerated during transit and frozen on arrival in Aberystwyth. Samples were freeze-dried, ground, homogenised and DNA was extracted using Qiagen PowerSoil kit. The ITS2 region was amplified using the primer mix suggested by Tedersoos *et al.* (2014) with Ultra Mix (PCR Biosystems) reaction mix and sequencing was undertaken using Illumina MiSeq (3 × 300 bp flow cells) at the Wales Gene Park, Cardiff, yielding 45,000–127,000 sequences per sample. Sequences were assigned to taxa using the RDP Naïve Bayesian Classifier (Wang *et al.*, 2007) against a database built from v9.0 (22/10/2022) of the UNITE database (Abarenkov *et al.*, 2010). More detailed methodology can be found in Detheridge *et al.* (2020), Detheridge & Griffith (2021) and Griffith *et al.* (2024). Geneious Prime (<https://www.geneious.com>) was used for sequence curation, alignment and phylogenetic reconstruction.

### Results

All six members of the *Fagaceae*-associated hydroid assemblage historically recorded above-ground at Buttersteep and at Rapley 2–4 were

detected in soil at these two sites during the current study. However, there were also a few surprises in store for us!

The first surprise was finding soil eDNA evidence of *Hydnellum lepidum* (= *Sarcodon lepidus*) at Rapley 2–4. This was the first time it had been recorded in Berkshire in over half a century. The last time was when Maas Geesteranus visited the Crown Estate hydroids with Ted Green in 1969 and it was collected in the form of type material of *S. regalis* (now regarded as a later synonym). The type locality, which was destroyed to make way for a housing estate, is around 1 km from the modern Rapley 2–4 site. A sequence identical to that derived from the *H. lepidum* holotype (GenBank MW144364, in Nitare *et al.*, 2021) was also detected in soil from a site on Bagshot Heath (near Vicarage Lane) representing the first record of this species in Surrey. All eDNA evidence of this species on the Windsor Crown Estate was obtained from sites dominated by *Castanea sativa*. An analysis of barcode DNA derived from a Spanish ectomycorrhizal root (Nitare *et al.*, 2021) of *C. sativa* (unpubl.) confirmed that *H. lepidum* is an ectomycorrhizal partner of at least this member of *Fagaceae*.

The second and even bigger surprise was provided by soil-derived sequences from six quadrats which closely matched (99.7% similarity) the DNA barcode sequence obtained from the holotype of *Phellodon secretus* (GenBank MH118170 in Zmitrovich *et al.*, 2018), a hydroid with no previous British records. *Phellodon secretus* sequences were detected in three of the Buttersteep quadrats and three of those at Rapley. Two of the latter were located within the Rapley 2–4 site while the third quadrat was 750 m from the others on the embankment of Mill Pond (Grid Ref. SU88966531). Although the presence of mycelium in soil does not qualify as a fungal record when carrying out IUCN-compliant red-listing (because only mature individuals are counted), we had to consider whether our eDNA results constituted sufficient evidence to admit *P. secretus* to the British & Irish checklist. Fortunately, this question did not trouble us for very long. Voucher material from the group of unidentified *Phellodon* sporophores found at Rapley 3 in 2022 also yielded a barcode which closely matched (99.4% similarity; 3 mismatches) that of the *P. secretus* holotype when compared using BLAST (Altschul *et al.*, 1990). We therefore have above- and below-ground barcode evidence that *P. secretus* is indeed extant in Britain. Figure 1 is a phylogenetic reconstruction showing the relationship between these *P. secretus* sequences and those of other *Phellodon* species collected in Britain. Figure 2 shows the Rapley 3 site in winter and Figs 3–5 show the *P. secretus* sporophores and spores that were collected there.

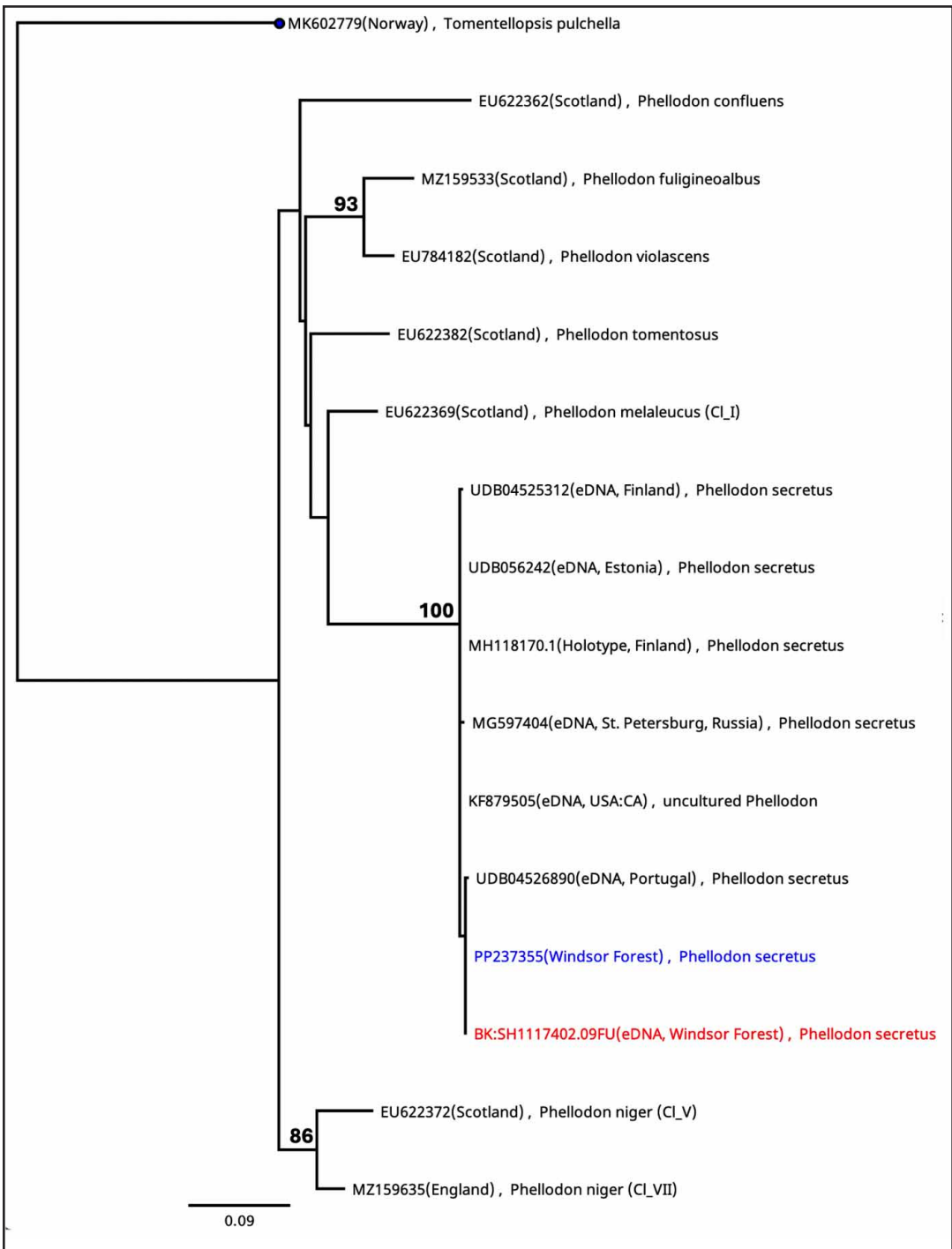


Fig. 1. Phylogenetic reconstruction (Maximum Likelihood) of *Phellodon* sequences with *Tomentellopsis pulchella* as outgroup (690 bp alignment of ITS1, 5.8S and ITS2 sequences) and % bootstrap support (1000 replicates) shown at salient nodes. Scale bar indicates substitutions per site. Our newly-generated Windsor Estate sequences are shown in blue (sporophore) and red (soil). For *P. melaleucus* and the two *P. niger* s.l. subclades shown, numbers corresponding to the groups designated by Ainsworth *et al.* (2010) are shown in brackets after the species name. Published sequences are prefixed by UDB (UNITE) or two letter codes (GenBank). The prefix of the unpublished eDNA (red) sequence contains its UNITE species hypothesis (SH) code.

**A description of these collections follows:**

**Basidiomata** terrestrial, stipitate, annual, forming small groups which can be obscured by fallen leaves; individual basidiomata may form small clusters with fused stipe bases and/or have conrescent pilei which fuse into irregular compound structures supported by several stipes; structural complexity may be increased further by development of secondary pilei from upper pileal surfaces and/or margins; whitish, pale brown or greyish at first, pulvinate, becoming irregular turbinate, then centrally flattened, depressed or undulating; usually incorporating individual litter components and sometimes engulfing living plant parts; releasing a fenu-greek smell, especially during or after drying. **Pileus** to ca. 30 mm broad, very soft and woolly with irregularly rounded and undulating to distinctly lobate margins which, when in active growth, remain white or greyish, sometimes with lavender tinges for an extended period before pigmentation becomes greyish then dark brown around the centre (resulting in a broad pale marginal zone that is softer than that of any other European *Phellodon*); around the centre the woolly texture often collapses when water-soaked and may develop radial ridges and irregular mounds, but there is no concentric colour zonation; moving away from the centre there may be irregular patches of brown pigmentation but generally the marginal regions remain soft, pale and relatively undifferentiated; initial pale pigmentation becoming progressively dark yellowish brown or lilac-brown around the centre and darkening to a more uniform chestnut brown with age or more rapidly so in wet conditions.

**Stipe** 5–10 × 1–5 mm, dark brown with a smooth texture, lacking a distinct woolly tomentum but can be grooved, flattened or branching and fusing, sometimes extending horizontally from elements of existing basidiomata, with decurrent rudimentary or entire spines towards the apex. **Spines** white, up to 2 mm long, becoming more brownish or greyish with age.

**Flesh** dark brown, not conspicuously duplex. **KOH reaction:** colour reaction, if any, weakly brownish.

**Hyphal system** monomitic, all hyphae simple septate, tramal hyphae of pileus and stipe 3–6 µm wide.

**Basidia** cylindrical, clavate or sinuous, 16–20 × 3.5–4.5 µm, bearing four sterigmata.

**Basidiospores** hyaline, subglobose to short ellipsoid, echinulate, 2.6–3.4 × (2.3–)2.4–2.7(–3.0) µm, av. = 3.0 × 2.6 µm, Q = (1.0–)1.1–1.3, (n = 75 spores from 3 basidiomata), excluding ornament (to 0.4 µm high).

**Specimens examined:** England, Berkshire (VC22), Swinley Forest, Rapley 3 (SU88286524), on soil of moss-covered low mound beneath

*Castanea sativa* with planted *Pinus sylvestris* ca. 10 m away, 1 Nov. 2022, A.M. Ainsworth & M. Wainhouse K-M001442183 (GenBank PP237355); *ibid.* 27 Nov. 2023, M. Wainhouse K-M001442134.

**Characterising *Phellodon secretus* and some concluding comments**

This species is the most recent *Phellodon* to be added to the European funga (disregarding the two species transferred from *Bankera* in 2013). It was described from Finland in Niemelä *et al.* (2003) and, in a genus where microscopy is generally of little help in identifying the European species, it was morphologically distinguished by its softer pileal texture and slightly smaller spores. That said, in practice, both of these characters are best evaluated by those with some familiarity with the genus. Young pilei of other species can be similarly soft and woolly and spore measurements should only be attempted using mature spores lying in side-view with their ornamentation and apiculi excluded to reduce observer-dependent inconsistencies. Niemelä *et al.* (2003) also characterised their new species by its association with a very specialised habitat resulting from the action of natural ecological processes over a long time (ecological continuity). They noted that its sporophores could be found in Finland by lifting fallen wood of *Pinus sylvestris* in very dry, boreal, old-growth woodland with very old standing dead pines known as kelo trees. From field observations, it was inferred that *P. secretus* is an ectomycorrhizal symbiont of *Pinus* (Niemelä *et al.* 2003). As shown in Fig. 1, this partnership has now been confirmed by the placement of GenBank sequence KF879505 which was obtained from a mycorrhizal root tip of *Pinus muricata* sampled in California (Moeller *et al.* 2014).

Generally, new species are described when there is sufficient discriminatory information to do so. However, the accompanying ecological and distribution data are likely to be quite sparse at this stage and may soon be superseded by new confirmed sightings from different habitats and continents. *Phellodon secretus* might prove to be a good example of this phenomenon. The Californian root-derived sequence (see above) removes any suspicion that *P. secretus* is endemic to boreal regions. Furthermore, a set of soil eDNA sequences from Portugal (represented in Fig. 1 by UDB04526890) and GenBank sequence MG597404, derived from a pine root in Russia, indicate that this is a rather widespread species within Europe. Viewed in this geographical context, its detection in southern England seems less of a surprise. However, the sporophores (Figs 3–5) sampled at the Rapley 3 site (Fig. 2) were not found under fallen pine logs but beneath *Castanea* litter and on mossy soil out in the open air. We acknowledge that there is a planted pine



Fig. 2. Rapley 3, a stipitate hydroid site in Swinley Forest (Crown Estate), Berkshire, showing an 'island' of *Castanea sativa* with a background of pine plantation photographed in late winter. *Phellodon secretus* sporophores and other hydroids were found to the right of the centrally located *Castanea* trunk in the area delimited by the two converging trackways. Photograph © Matt Wainwright.



Fig. 3. Group of *P. secretus* sporophores (K-M001442183) around the base of a low mossy mound beneath *Castanea sativa* at Rapley 3, Berkshire, on 1 Nov. 2022 with overlying chestnut leaves removed. Photograph © Martyn Ainsworth.

ca. 10 m away from these sporophores, but our finds do raise the possibility that *P. secretus* might be able to form mycorrhizal partnerships with both *Fagaceae* and *Pinaceae*. Confirmation of a mycorrhizal association with *Castanea* would, however, only be possible following positive results from DNA analyses of root tips.

Finally, we would recommend a cautious approach when identifying any *Phellodon* sporophores found beneath fallen *Pinus* wood since this ecological character may not be reliable. The abstract to Niemelä *et al.*'s (2003) *P. secretus* protologue states that its pileus “unfolds only after the stipe tip has contacted the overhanging wood.” Our observations on the Windsor Estate indicate that *P. secretus* is not so dependent on fallen pine and its pilei can be

found on soil in the open air. Furthermore, we have sequenced *Phellodon* sporophores collected from beneath fallen pine from Scotland (expecting the first British record of *P. secretus*...) and elsewhere in northern Europe only to find that their barcodes clustered with those of *P. melaleucus*, a species which is known to sporulate in either entirely coniferous or broadleaved habitats. Similar findings were reported from Russia in Zmitrovich *et al.* (2018) and led to the introduction of *P. melaleucus* f. *suspensis*, an arguably unnecessary name applied to *P. melaleucus* sporophores whose pilei were found adhering to the undersides of pine logs. Beware, a *Phellodon* that emerges under fallen pine is not necessarily *P. secretus*!



Fig. 4. Group of *P. secretus* sporophores at the Rapley 3 site on 27 Nov. 2023. Photograph © Matt Wainwright.

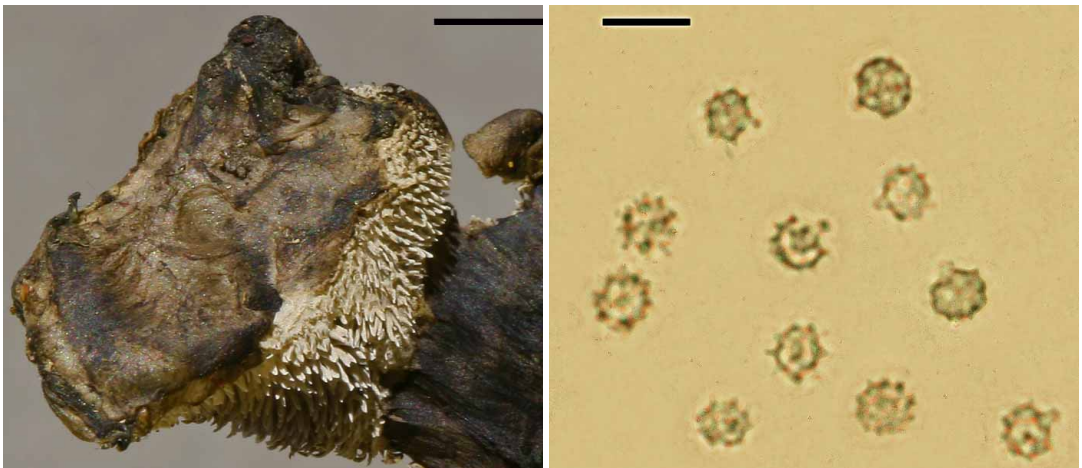


Fig. 5. *Phellodon secretus* collection K-M001442134 made on 27 Nov. 2023 showing (left) a secondary pileus formed at the margin of a mature sporophore and (right) mature echinulate spores mounted in Melzer's reagent. Scale bars (left) represent 5 mm and (right) 5 µm. Photograph and micrograph compilation © Martyn Ainsworth.

### Acknowledgements

Thanks to Natural England (Species Recovery Programme) for financially supporting the project. AMA would like to thank NE for funding his site visits as an NE volunteer and AD and RW gratefully acknowledge the financial support of the DToL project (<https://www.darwintreeoflife.org>). Thanks are also due to Windsor Crown Estate staff (Des Sussex) for site access and assistance and to Ted Green for introducing the Windsor hydroids to AMA around 30 years ago and for his help and encouragement on site visits ever since. GWG and APD acknowledge colleagues at Wales Gene Park for their insight and expertise that assisted this research and for their technical and bioinformatic support in generating and analysing the NGS data. Wales Gene Park is an infrastructure support group funded by Welsh Government by Health and Care Research Wales.

- \* Natural England, Horizon House, Bristol. BS1 5AH
- \*\* DLS, Aberystwyth University, Adeilad Cledwyn, Penglais, Aberystwyth, Ceredigion. SY23 3DD
- \*\*\* Royal Botanic Gardens, Kew, Richmond, Surrey. TW9 3AE

### References

- Abarenkov, K., Nilsson, R.H., Larsson, K.-H., Alexander, I.J., Eberhardt, U., Erland, S., Høiland, K., Kjølner, R., Larsson, E., Pennanen, T. *et al.* (2010). The UNITE database for molecular identification of fungi - recent updates and future perspectives. *New Phytologist*, 186(2): 281–285.
- Ainsworth, A.M. (2004). *BAP fungi handbook (ENRR 600)*. English Nature, Peterborough. Accessed 9 Jan. 2024. <https://publications.naturalengland.org.uk/publication/113017>
- Ainsworth, A.M., Parfitt, D., Rogers, H.J. & Boddy, L. (2010). Cryptic taxa within European species of *Hydnellum* and *Phellodon* revealed by combined molecular and morphological analysis. *Fungal Ecology* 3(2): 65–80.
- Altschul, S.F., Gish, W., Miller, W., Myers, E.W. & Lipman, D.J. (1990). Basic local alignment search tool. *Journal of Molecular Biology* 215(3): 403–410.
- Bosanquet, S.D.S., Ainsworth, A.M., Cooch, S.P., Genney, D.R. & Wilkins, T.C. (2018). *Guidelines for the selection of Biological SSSIs. Part 2: Detailed guidelines for habitats and species groups. Chapter 14 Nonlichenised Fungi*. Joint Nature Conservation Committee, Peterborough. Accessed 9 Jan. 2024. <https://hub.jncc.gov.uk/assets/d1fcb171-8086-4f5b-ade5-a34c5edc78c5>
- Detheridge, A.P., Cherrett, S., Clasen, L.A., Medcalf, K., Pike, S., Griffith, G.W. & Scullion, J. (2020). Depauperate soil fungal populations from the St. Helena endemic *Commidendum robustum* are dominated by Capnodiales. *Fungal Ecology* 45: 100911.
- Detheridge, A.P. & Griffith, G.W. (2021). *Standards, methodology and protocols for sampling and identification of grassland fungus species*. Natural England Commissioned Report NECR374. <http://publications.naturalengland.org.uk/file/6311017633284096>
- Doyle, J.J. & Doyle, J.L. (1987). A rapid DNA isolation procedure for small quantities of fresh leaf tissue. *Phytochemical Bulletin* 19(1): 11–15.
- Griffith, G.W., Bye, R. & Detheridge, A.P. (2024). *eDNA survey of woodland soils in Berkshire and Tudeley Woods, Kent to detect the presence of rare Bankeraceae (Hydnellum and Phellodon spp.)*. Report to Natural England.
- Maas Geesteranus, R.A. (1975a). Die terrestrischen Stachelpilze Europas [The terrestrial hydnum of Europe]. *Verhandelingen der Koninklijke Nederlandse Akademie van Wetenschappen, Afdeling Natuurkunde Tweede Reeks* 65: 1–127.
- Maas Geesteranus, R.A. (1975b). Corrections. *Persoonia* 8(2): 166.
- Moeller, H.V., Peay, K.G. & Fukami, T. (2014). Ectomycorrhizal fungal traits reflect environmental conditions along a coastal California edaphic gradient. *FEMS Microbiology Ecology* 87: 797–806.
- Niemelä, T., Kinnunen, J., Renvall, P. & Schigel, D. (2003). *Phellodon secretus* (Basidiomycota), a new hydneous fungus from northern pine woodlands. *Karstenia* 43: 37–44.
- Nitare, J., Ainsworth, A.M., Larsson, E., Parfitt, D., Suz, L.M., Svantesson, S. & Larsson, K.-H. (2021). Four new species of *Hydnellum* (*Thelephorales, Basidiomycota*) with a note on *Sarcodon illudens*. *FUSE* 7(1): 233–254. doi.org/10.3114/fuse.2021.07.12
- Parfitt, D., Ainsworth, A.M., Simpson, D., Rogers, H.J. & Boddy, L. (2007). Molecular and morphological discrimination of stipitate hydroids in the genera *Hydnellum* and *Phellodon*. *Mycological Research* 111(7): 761–777.
- Tedersoo, L., Bahram, M., Pölme, S., Kõljalg, U., Yorou, N.S., Wijesundera, R., Ruiz, L.V., Vasco-Palacios, A.M., Thu, P.Q., Suija, A. *et al.* (2014). Global diversity and geography of soil fungi. *Science* 346, 1256688.
- van der Linde, S., Alexander, I. & Anderson, I.C. (2008). A PCR-based method for detecting the mycelia of stipitate hydroid fungi in soil. *Journal of Microbiological Methods* 75: 40–46

van der Linde, S., Alexander, I.J. & Anderson, I.C. (2009a). Spatial distribution of sporocarps of stipitate hydroid fungi and their belowground mycelium. *FEMS Microbiology Ecology* 69: 344–352.

van der Linde, S., Alexander, I.J. & Anderson, I.C. (2009b) [2010]. Do stipitate hydroid fungi have the ability to colonise new native pine forest? *Fungal Ecology* 3: 89–93.

van der Linde, S., Holden, E., Parkin, P.I., Alexander, I.J. & Anderson, I.C. (2012). Now you see it, now you don't: The challenge of detecting, monitoring and conserving ectomycorrhizal fungi. *Fungal Ecology* 5: 633–640.

Wang, Q., Garrity, G.M., Tiedje, J.M. & Cole, J.R. (2007). Naïve Bayesian Classifier for Rapid Assignment of rRNA Sequences into the New Bacterial Taxonomy. *Applied and Environmental Microbiology* 73(16): 5261–5267.

Zmitrovich, I.V., Shchepin, O.N., Malysheva, V.F., Kalinovskaya, N.I., Volobuev, S.V., Myasnikov, A.G., Ezhov, O.N., Novozhilov, Yu.K. (2018). Basidiome reduction in litter-inhabiting *Thelephorales* in boreal forest environments: morphological and molecular evidence. *Current Research in Environmental & Applied Mycology (Journal of Fungal Biology)* 8(3): 360–371.

## Another site faithful fungus

Jo Weightman\*

Among the paintings by Dr Henry Graves Bull held in the Royal Botanic Gardens at Kew is one labelled *Peziza sumneri* B & Br found at Hampton Court, Herefordshire, on the 4th March 1882. The date is followed by the words 'gravel valley'. This cup fungus, now renamed as *Geopora sumneriana* occurs in early spring and is restricted to cedars.

On the 24th March 2009 I obtained permission to visit Hampton Court before the date the gardens were open to the public and, accompanied by the head gardener, headed for the magnificent mature cedars on the lawn above the

river. We searched under them all and were eventually rewarded by a cluster of this fungus under one of the trees.

I have searched beneath many a cedar in many places and for many years. Only rarely has the search been successful. The chances that the 21st century fruitbodies arose from the same mycelium as those nineteenth century ones must be high. I like to think they did.

\*1 Eagle Cottage, Church Lane, Orleton, Nr Ludlow, Shropshire SY8 4HU



FIG. 1. *Geopora sumneriana* found in Hampton Court, Herefordshire, 24 March 2009. Photo © Jo Weightman.