A Study of the Fungi of The Isles of Scilly

Tony Hardware* and Pauline Penna**

The Isles of Scilly (IOS) are known as England's only subtropical islands and archipelago. Fed by the tropical Gulf Stream, the islands are blessed with a yearlong mild climate and rarely experience frost or snow. Strangely the islands receive very little rainfall compared to the South West of England but receive additional sunshine. With twenty-six SSSI's and many Nature Reserves open to the public, access to good habitat is easier than perhaps on the mainland and opens up the possibilities for finding fungi further. It is widely acknowledged that the islands offer opportunities to observe all manner of flora not seen on the mainland, probably due to the nature of the mild climate and suggests that the potential for finding unusual or uncommon fungi would also seem logical. This was one of the reasons why I decided to organise a thorough study of the islands whilst living in Cornwall at the time, also knowing that very little recording had been achieved in the past. What had been carried out appeared to be tied in with holiday breaks or weekend short visits and didn't allow the time perhaps to be able to analyse or identify species whenever they were found. Another reason that might lead to expectations of finding uncommon fungi is the fact that the islands have an extraordinary amount of *Ulmus minor var. cornubiensis* (Cornish Elm) as trees here remain unaffected by the disease that has ravaged mainland woodlands, having been planted sometimes for wind breaks in areas close to the sea many years ago, where it seems they are also unaffected by salty air. They are also part of the natural flora of the island. Other trees that can be found are *Sambucus nigra* (Elder), *Pinus radiata* (Monterey Pine) and *P. sylvestris* (Scot's Pine), *Larix* (Larch) and in amongst the many willow carr habitats *Salix cinerea* (Grey Sallow). *Quercus* (Oak) and *Crataegus* (Hawthorn) are rare. There is a profusion of alien tree and shrub species that had been planted some time ago and mostly from New Zealand, for good reasons no doubt at the time. One of which was *Coprosma repens* (Tree Bedstraw or Mirror bush) which seemed to be everywhere.

The decision to go to IOS was made over a year before, in fact following the chance to visit in Sept 2020 for a brief time, I was able to recce. some areas of St Mary's and Tresco. The appetite was set following this visit and the finding of some uncommon fungi in a very short time. This also allowed for a self-catering flat to be booked 12 mths in advance and for convenience located near to the ferry hub and Quay at Hugh Town on St Mary's and the only supermarket on the islands! This was key as it became apparent later that during the study weeks virtually all accommodation on the islands had been booked. This also allowed for time to obtain permissions to enter sensitive areas and this was duly achieved with the very positive support of the IOS Wildlife Trust, who manage almost all open land, nature reserves and SSSI's etc. Tresco is privately owned and permission to record was obtained from Tresco Estates management. Again, both organisations were very helpful and so with all permissions granted the decision was made to arrive on the islands on 1st Oct 2021 staying for twelve days. An element of luck has to be associated with any trip of this kind as the weather can dictate if you can ferry across to different islands, as

well as the possibility of delays in travel from the mainland for the same reasons. Although it was touch-and-go on occasions, all travel intentions were carried out. Islands included in the study included Tresco, (2 days), St Martin's (1 day) and St Agnes (2 days), with the remaining days on St Mary's. The only other island with access via public ferries and potential good habitat was Bryher, but time decided this was not to be.

To find fungi and identify species correctly you need one important item – a microscope! How to get one to IOS ended up on my back in the largest rucksack I could find with lots of bubble wrap. Somehow the microscope and I survived the crossings.

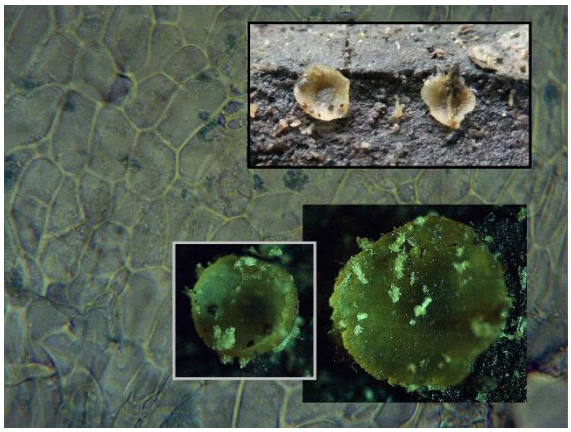
I thought that the species I had found during my recce. in Sept. 2020 should be added to the study and as with all species discussed in this article, will be focussed on the uncommon or surprise fungi found. My first foray during this visit was at Lower Moors Nature Trail, a small area of willow carr crossed by a boardwalk as it was probably waterlogged on most occasions. Fortunately, this time it wasn't and held multiple species of *Hebeloma* and *Naucoria*. One of which was ***Hebeloma theobrominium***, an unusual looking species of this genus as it doesn't look like a *Hebeloma* at all. These showed the dark tan deeply hemispherical cap, a very robust stem and heavily inrolled margin. ***Naucoris salicis*** was also found here, as it would be again later, on Tresco. On Tresco within the Abbey Woods complex of sandy/gravelly pathways, ***Suillus collinitus*** was found in the middle of one path, fortunately, one not used often by visitors. This was near *Larix* which it associates with. Strangely, ***Laetiporus sulphureus*** was found growing out of oak sleepers which formed part of the sea defences at Old Town on St Mary's.

Hebeloma theobrominium within willow carr habitat.

Suillus collinitus located near Larix at Abbey Woods.

Back to 2021 and as I had the first five days to myself, I decided to spend time exploring far flung difficult to access areas of St Mary's and St Agnes and a day long walk around St Martin's. The use of Taxi's was useful to get to locations quickly to start as it was to return when tired and loaded with fungus, which I was eager to get under the microscope. These trips were relatively inexpensive and well worth it to save a great deal of fungi finding time. During this time one observation stood out and concerned an Ascomycete. On the mainland ***Hyalorbila inflatula*** isn't easily found, in fact only a few records exist in the South West of England. It is a semi-translucent discomycete with pale yellow apothecia. Here in IOS I found this species very often under damp dead branches of *Ulmus*. Perhaps providing the answer as to why this isn't seen often in the rest of the UK as perhaps this is its main host which

is so rarely seen elsewhere. Early one morning in the north of St Mary's at Helvear Down with its predominantly *Pinus* woodland, I coincidently bumped into the new Deputy CEO of the IOS Wildlife Trust (IOSWT) walking his dog! "Looking for fungi?" came first. My first thought was where were my permission papers – goes to show the guilty will always be caught out. He was more than accommodating and it was good to find out that he knew of the study that had been organised. He proceeded to show me around more productive areas. During this time he mentioned he had found an odd looking orange *Lactarius*, which he had taken home. This sounded intriguing and one we would hope to find again later. Interesting species found during these few days included ***Psathyrella potteri***, a single example in the Lighthouse Gardens and the minute Cyphelloid ***Flagelloscypha minutissima***, both on St Agnes. The latter are so small that you would need a hand lens just to ensure they are fungi at all.



Hyalorbila inflatula found often under Ulmus (Cornish Elm).

Churchyards at Old Town, St Mary's and on St Martin's (later on Tresco also) were always looked at as being a rare opportunity to find natural grassland and this expectation didn't disappoint. ***Entoloma lucidium*** was found on St Martin's, not uncommon, but proved what can be found along with many common species. Whilst on this island I also found a rare *Ramaria* species growing in sandy/soil mix just inside a beach area under a hedgerow, this working out to be ***Ramaria curta*** – helped in identification by having extremely small spores for this genus. Walking across the heathland of this island and inspecting *Sambucus* growth used as windbreaks across farmland, were one or two species worth looking at. One of these was ***Lophiostoma curreyi***, a rarely found ascomycete growing on a Rubus stem. Whilst checking this species, out of the corner of my eye I spotted the tell-tale colour of bright orange peeking out under a single twig in the ground litter beneath my feet! Here was to be the first record of ***Favolaschia calocera*** for IOS (probably on *Sambucus* also). The species is now moving slowly up through the South West, from where the first collections were found in Cornwall as recently as 2012. Originating from Madagascar, this has to be seen to be believed that it is a species of fungi. Part of the *Myceneae* family.

Favolaschia calocera on Sambucus (Elder)

Finally, during these first few days, I walked through a very local residential area on St Mary's to a small Nature Reserve called Doily Woods. Here the area is mostly willow carr and it was within the edge of a drying stream I found an *Inocybe* species growing on wet debris, the stem of which was within the water itself. Most unusual. The gills had been eaten

by various creatures but not enough for a few gills to produce enough spores and with other ID elements came to recognise ***Inocybe brunneoatra*** (renamed from *I. fuscidula var. fuscidula*) and recently identified by Cullington/Outon with their Inocybe Keys (04/2015).

I was delighted that Pauline and Keith Penna were able to join me and arrived via the Scillonian, again being fortunate with the weather as either side of their trip would have meant a rough one, if any trip at all, as the weather had taken a turn for the worse. This allowed enough time during the day to pay a visit to the nearby Garrison area and habitats of grassland (cricket pitch) and various *Pinus* woodland areas, plus a small area of *Ulmus* trees overlooking Hugh Town. Day 7 saw all three of us head towards Tresco for the first time, with anticipation, as this has the widest mix of heathland, dunes, woodland and willow carr on the IOS. We had decided to circumvent the well-known Abbey Gardens heading west into *Larix/Pinus* woodland. I had visited the gardens during my recce. the previous year and hardly found any fungi at all throughout the gardens. This was a big disappointment as the gardens themselves offer a magnificent display of plant life from around the world. I did notice as I was checking everywhere I could, that almost all beds, gardens and grass had been 'gardened' and was wonderfully clean of anything that resembled a weed or debris, so I can only imagine that fungi was also taken away regularly. Hence not going to the site during this study. Having walked around this area we came upon the outer western wall of the Gardens not expecting what would be found next. For those reading this article and who record fungi in the field, having 'Eureka' moments, I hope you agree, don't come very often. Sometimes they end up as damp squids, wrong IDs or just unidentified. We had taken a short walk into quite hostile undergrowth and bushy area containing Pinus and perhaps because they were there, a few large mature *Eucalyptus* trees. It was Pauline who spotted a deep red group of fungi, resembling *Marasmius* or *Mycena*. Approx. 20 or so young to mature fruiting bodies were growing on moss covered *Ulex*, later to be found seemingly also growing on bark from the *Eucalyptus*. We both felt this wasn't anything we could recognise at the time. Back at the make-do laboratory (flat-lab) Pauline later identified the possibility of this being ***Cruentomycena viscidocruenta*** helped by using the attributes of the world-wide web to search species worldwide. No European literature describes this species and certainly in which we had with us. Mostly only found in *Australia!!* Looking around for anything strong to drink was met with Diet Coke only, so we had to press on regardless. I started the microscopy while Pauline did all the detail descriptive work required for submission later. This species was confirmed later by Martin Ainsworth (BMS). Checking where else this had been found, it appears that one other collection had been found in Northern Ireland recently, but that seemed to be it. I checked collections throughout Europe and Asia and found no accepted records where they

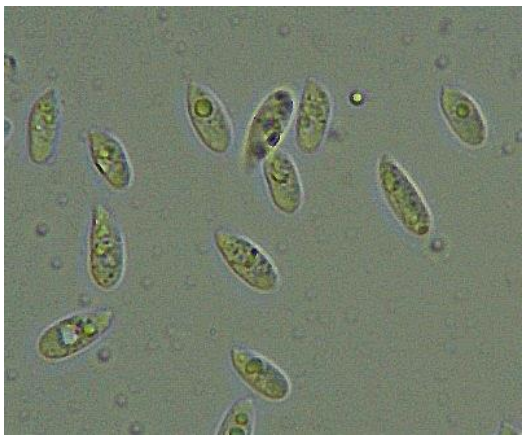
could be entered on International databases. By follow-up research this species can also be found occasionally in the Cape area of South Africa and more recently, in June 2021, in Argentina for the first time but its home is in Australia/NZ where it has the common and aptly named Ruby Bonnet. A potential variant was found in East Russia in 2007 (Petersen) but has not been verified to my knowledge. This had only a single type of cheilocystidia compared with this record of two types which matches the nominate Australian species. Being so close to Abbey Gardens it does suggest that it may well exist there also or was the reason for this find perhaps with mycelium being encased and surviving in soil from imported plants from the Southern Hemisphere – if plants are imported with encased earth and not just seeded? Something that can be checked later perhaps.

Descriptions:

Mycenoid. ***Cruentomycena viscidocruenta***
R Petersen, A. Kovalenko, et al (2008)

Synonyms: Mycena viscidocruenta, Mycena coccinea

Cap: 7 – 10.5 mm, broad to shallow convex, blood-red, deeply striate. Viscid when fresh.
Gills: Blood red, with paler edge, adnate with decurrent tooth, fairly distant.
Stipe: 20 mm x 1.5 mm, blood-red, glutinous to viscid, cylindrical, wider with tomentose at base attachment.
Odour: Nothing detected.
Basidia: Clavate 22 x 7.18 µm, 4-spored.
Flesh: Leaching of red pigments when mounted in NH_3
Cheilocystidia: Type 1: Lageniform to clavate with some constrictions 28 - 40 x 8 - 10 µm. Pinky/red variable contents. Hyaline outer walled. Type 2: More pyriform also observed.
Caulocystidia: Clavate, some constricted.
Taste: Not attempted
Spores: Elongated lacrymoid, 6.76 – 8.35 µm x 2.68 – 3.92 µm. Qav ~ 3.01. With a few small, dark guttules. SP: White.
Pileipellis: Utriform inflated cells 22 – 52±, with short septate sections hyphae 4 – 5 µm
Clamps: Hyphae septa in cap occasional clamped, base of cheilocystidia/basidia.
Habitat: Amongst leaf litter on moss covered, rotten Ulex. sp. and flakes of Eucalyptus bark. In a damp shady area.



Cruentomycena viscidocruenta on gorse/moss, cheilocystidia and spores

Somehow, we moved on but with our expectations now moving upwards and off the scale of sensibilities. Heading north through Abbey Woods our first unrecognisable deep red/purple *Russula* was located under *Salix*. Under examination this transpired to be ***Russula subrubens***. This small accessible area of willow carr close to the Abbey itself allowed us to find and eventually identify the unusual and rarely recorded ***Tremella steidleri***, (a Red Data NT species) a jelly fungus with a common name of Brown Brain also being highly appropriate as this is exactly how it appeared. This grows on the basidiomes of *Stereum hirsutum*. Also found here was a small cluster of ***Delicatula integrella***, not uncommon in the right habitat but good to see all the same. Just before returning via the northern quay at New Grimsby, we visited a churchyard again, this one at Dolphin Town which produced a small group of the rare ***Leucoagaricus carneifolius***.

Tremella steidleri growing on Salix branch.

Day 8 took us along Lower Moor and Rosehill Garden Nature reserve, where I had visited the previous year on St Mary's. ***Naucoria salicis*** was found again in the willow carr here but the abundance of fungi from last time was not to be repeated today. Pauline found a Powdery Mildew on *Ulmus*, and this turned out to be ***Erysiphe ulmi var. ulmi***., from records accessed is unrecorded before in the UK.

Leucoagaricus carneifolus.

Day 9 was going to include a part of the beautiful and one of the key subtropical environments of any of these islands, Holy Vale - also on St Mary's. At the invitation of Nikki Banfield (IOSWT) we would be able to traverse the private lands in and around this area. This was predominately filled with *Ulmus*, with access to meadows before entering the public Nature Trail from here over Higher Moor. It didn't take long before we found all manner of fungi, inc. several ***Geastrum triplex*** Earthstar fungi. The key find here was a very mysterious looking small agaric, pale grey with a white copious scaly veil on the cap and appendages at margin. This took some time to identify as once again didn't represent any known genus at first. In the end this turned into a rarely found fungus in ***Psathyrella gordonii***, with

2/3 records in UK (see above). Showing itself in an immature state helped but quite distinct once its genus was discovered. This was close to another group of what at first appeared to be common *Coprinopsis disseminates* growing out of the side of a large *Ulmus* trunk on the ground in a darkened, damp shaded area of the garden. Looking just a little different these were taken back to the Flat-lab and showed these to be the uncommon ***Psathyrella pygmaea***. It was also good to then find two *Pluteus* species at the end of the Higher Moor Nature Trail in ***P. griseoluriles*** and bright red ***P. aurantiorugosus***.

Day 10 was to be our second visit to Tresco and would focus on an area around Great Pool, taking in extensive areas of willow carr. This proved to be a fortuitous decision. Almost at the first foray into *Salix* and *Sambuscus* and by way of a footpath across one of the carrs we starting exploring the sides of a bank, with mixture of moss, leaf and wood debris. After an astonishing thirty minutes we had discovered no less than five different species of Inocybe all within a four-meter area along this bank. If I found one then Pauline would find another, and so it went on. All of the species found all needed checking back at the Flat-Lab of course, before making any decision as to what they could be. Two in fact ending up going for DNA analysis results of which have been received for one which at the time had an extraordinary harsh TCP smell and could not be placed within the genus. This was matched with ***Inocybe castorina*** a recently described new species located in Germany. The smell may have come from animals or unknown sources as this had been identified as having subspermatic odour. This will be a new species for the UK. Another was initially recognised as ***Inocybe lacera var. helobia*** but is another with a possible change to come. Another found at the time was ***Inocybe squarrosa*** – again only a few UK records, one of the few without any caulocystidia on the stem, which helped greatly to ID. Another became ***Inocybe dulcamara***. Further examples of ***Inocybe brunneoatra*** was found here as well. Another uncommon fungus that stood out here was ***Hemimycena cephalotricha*** found growing under a *Salix* branch. There were ***Lactararius lacunarum*** and ***Cortinarius uliginosus*** also present. Two more locations for ***Tremella steidleri*** were found and later back onto a pathway past cut down *Pinus* trees we found a *Sparasis* species that after checking later – much later in fact as originally thought to be *S. crispa* was in fact ***S. brevipes***, not common at all, or on a coniferous substrate.

Inocybe squarrosa found with four other Inocybe's species within a few metres.

Day 11 became catch up time with paperwork and identification or time just to take in the beauty of these islands. Finally, Day 12 was to focus on the NE region of St Mary's, with pathways through *Pinus* forest and heathland. We were joined once more by Nikki. Referring back to Day 2 when I had bumped into the CEO of the IOSWT,

Extremely rare Leucoagaricus medioflavoides – third record for UK

the thought of finding the mysterious Lactarius was on our minds. Sure enough we found a few groups of ***Lactarius semisanguifluus*** where the milk turns orange and then red after a few minutes. A small group of white agarics by the side of the path on Helvear Down was intuitively checked by Pauline. Looking like 5/6 other common small white mushrooms, this turned into the very rarely seen ***Leucoagaricus medioflavoides,*** the cap showing a yellowish centre. This being the 3rd record only in the UK. Pauline also selected some rabbit pellets for checking and culturing at home. Once again, Pauline had discovered a very rare species fungi in ***Delitschia patagonica***, if not the first record for the UK (confirmed by PCannon/JKew). To round off another invigorating day two 'blue' *Entolomas* were found, one in a private garden as ***E. chalybeum var. lazulinium*** and on a heath path ***E. corvinum***. Delightful.

Summary

With the weather staying calm enough for us to travel across water to the different islands using the ever-efficient ferry service, we had amassed over the 12 days, inc. a few from the recce. the previous year - 154 species, inc. two species of Inocybe sent for DNA analysis. Perhaps we had expected more, but on reflection of the available restricted habitat and flora, access and comparable low tree species, quality was achieved over quantity, which to us was more important. This is broken down as 114 Basiodiomycete, 18 Polypores/Corticioids and allies, 16 Ascomycetes and just 6 Hypomycete, Myxomycete and Uredinale species. Perhaps the latter doesn't justify what really can be found on these islands. I think we were so engrossed with agarics we were finding that these became our focus. Most species recorded, if not very common, were new to IOS – approx. 80%. Proving one theory there is a distinct lack of records from these islands. Of the uncommon/rarity records five were either new to the UK or with only a few records with thirty-two species either new or nearly new for Cornwall and/or the South West of England (checked against The Brit. Mycological Society FRDBI and the ERICA based in Cornwall databases). We felt this had all been worthwhile and maybe suggests that so much more could be found elsewhere in the UK with focussed specific territory or special habitat studies of more out of the way places, such as high elevation moors, sand slacks and dunes, peat bogs or just rarely explored ancient forest, as it is just inconvenient to approach or traverse.

† This article will be updated once DNA analysis has been completed on two species of Inocybe.

Grateful thanks to:

Nikki Banfield and Sarah Mason of the IOS Wildlife Trust www.ios.wildlifetrust.org
Rachael Young of Tresco Estates, Tresco, IOS
Paul Cannon of Kew Botanical Gardens

References:

Cooper, A. (2009). *Secret Nature of The Isles of Scilly* www.greenbooks.co.uk
Ellis, M.B. & Ellis, J.P. (1997). *Microfungi on land plants* The Richmond Publishing Co. Ltd.
Kibby, G. (2019-21) *Mushrooms & Toadstools of Britain & Europe Vol 1-3* fieldmycol@yahoo.co.uk
Knudsen, H. & Vesterholt, J. (2018). *Funga Nordica* Nordsvamp Publishers.
Petersen, R.H., et al (2008). *A new genus, Cruentomycena, with Mycena viscidocruenta as type species.* Mycotaxon, July - September 2008 Vol.105, pp.119-136.

PS: It wasn't all fungi – seen slowly walking through Abbey Woods, more stalking us than the other way around, was this beautiful Golden Pheasant, obviously an introduced bird from nearby Abbey Gardens, but lovely to see in its natural habitat (see below).

*tonychat47@btinternet.com **paulinepenna13@gmail.com