DNA Sequencing Results

Update February 2026

Two batches to report on – the first was a Fairy club session using the LSU primers instead of ITS for the first time and the second was looking at the insipida / garajonayensis complex (hence an update on the key ring saga below).

Fairy Clubs

- ***Clavaria atroumbrina:*** I have gone round in circles on this one. The LSU sequence comes back as closest to *C. pullei* which is very close to *C. atroumbrina*, in fact so close that some doubt if it is a good species and only *atroumbrina* is on the Kew Checklist. There is only a minor difference in spore shape. Neither type has actually been sequenced. I had ruled this out as I found spores that were way too large and wide for either species and found a loop clamp at the base of a basidia. But the sequences kept coming back to this area. I went back to the specimens and I think what had happened was when I looked under the microscope, I picked unknowingly a specimen with something else on it and the spores I was looking at were not from the Clavaria. The specimen I looked at this time had nothing like secondary growth on it and the spores fitted *atroumbrina* - *atroumbrina* rather than *pullei* with a slightly higher Q value so I will stick with that for now. There is only one other Irish record of this from Castle Archdale in Fermanagh in 2012 on a BMS foray.

Clavaria atroumbrina The Curragh

- ***Clavaria amethystina:*** This is the Violet Coral with ellipsoid spores and is the only NI record to date. It was found on the NIFG foray at Linford Barrows in November 2024. Its sequence is quite different to *Clavaria violaceopulchra* which has subglobose spores and has been found in Shankill Graveyard in Lurgan. It clusters with other *amethystina* sequences but it is a little bit different. Maybe one to watch as more sequences get added to this recent split from *C. zollingeri.*

Clavaria amethystina - Photo by Vittorio Silvestri (from NIFG forum)

- ***Clavaria falcata (acuta):*** This one from the Curragh is now cleared up. In the December Part 2 report, I wrote that it came out, rather surprisingly, as a *Clavulinopsis* but it actually appears that somewhere down the line – probably me rather than the sequencing end – two samples had got mixed up and this is *Clavaria falcata (acuta)* and the yellow club from Rue Point on Rathlin was much more sensibly the *Clavulinopsis*. This find is still a bit odd however as I have never seen *falcata* in this form with a thickened fruiting body with a compressed centre. It is usually a thin cylindrical club. The spores fit and the sequence fits so it appears just to be an aberrant form. The pure ivory white colour and spore size would distinguish from an odd *tenuipes*.

Clavaria falcata from the Curragh

- ***Clavulinopsis undescribed?*** This saga continues. The LSU sequences of this yellow Fairy club with large globose to slightly triangular spores suggest that this could be one or more undescribed species. I now have 7 different collections that don't fit anything: from Rashee Cemetery in Ballyclare, Ballynure Church of Ireland, Kebble and Rue Point on Rathlin and now additionally Gortnagory, Ballycoos Hill near to Linford Barrows and the Curragh. I wondered about these being *trigonospora* but the sequences are some distance away as are those of *Clavulinopsis corniculata f. simplex,* another possibility. The only other thing I can think of are single clubs of *C. fusiformis* as the spores would fit that. The Rue Point ITS sequence is nearer to *fusiformis* but none of the others are and all the LSU sequences are different to *fusiformis.*

  Another confusing aspect is some of the sequences come close to *C. laeticolor* but there are sequences labelled as this appearing in the tree all over the place so that is a species that is often misidentified. I do have one recent specimen identified as *C. laeticolor* from 2024 from Binevenagh with spores that have a very large apiculus but unfortunately this sequence failed. The spores of *laeticolor* are however quite different to these unknown ones so I would be very surprised if the *C. laeticolor* sequence in the tree near to the Gortnagory find was really *C. laeticolor.* I am sending all the specimens off to the University of Aberystwyth where Louise Tranter is doing a PhD on the group so we'll see what happens but it might take a while.

Clavulinopsis unknown, Kebble NNR

Mystery *Clavulinopsis* spores. Like *helvola* spores without the warts

- ***Clavulinopsis luteoalba.*** This was collected from Kinramer South on Rathlin the day we left Rathlin. As we were travelling, I could not dry the specimen so I tried mashing a small bit of the fruiting body onto filter paper and keeping it in a sealed bag. This proved really successful as I got a really nice clean sequence with no drying of the specimen involved! Ideal for when on the move. This is not the usual form for *luteoalba* which is much more cylindrical but this was the second time I collected this wide flattened form with a slightly bubbly surface – the other time being on the Giant's Causeway.

Clavulinopsis luteoalba, Kinramer South

Waxcaps

A recap on the keyring story. NIEA gifted a keyring with a fungus model for the person at the Magilligan microscope course who found the most interesting find. Matthew Flood was given it as he had a good candidate for the first Northern Irish record of *Hygrocybe garajonayensis* but Mo Rainey produced another good candidate shortly afterwards. As both needed confirmed, Matthew was only initially given the keyring. Actually, the sequences show that neither of the finds were *garajonayensis* so more on this below.

- ***Hygrocybe insipida:*** I had 13 collections of the *insipida* complex and the aim was to work out the difference between *insipida* and *garajonayensis* as this is unclear as is the relative abundance of the two species. So, I thought this was going to be easy – each sequence would be one of two species. Such naivety. There were 3 failures but as each had good gel results, I will resubmit those with the failures most likely down to the sequencing process. Of the rest, I had just one *insipida* sequence – from the Layde Parish Church in Cushendall. This particular one I thought was a good *garajonayensis* candidate….

Hygrocybe insipida

So slightly decurrent gills, very yellow in colour and no red on the stipe but it is unlikely that *insipida* would be that restricted in character.

- ***Hygrocybe garajonayensis:*** 3 new Northern Irish records but not from Binevenagh. The first finds were by Simeon Cathcart at the Giant's Causeway and Roy Anderson at Cloughey Dunes both on the same day. There was an additional find by Matthew Flood at Gortnagory the following week. The first Irish find was by Tomas Milan at the Curragh in 2023. We made a new collection at the exact spot Tomas found it before but that was one of the failures.

H. garajonayensis Photo by Tomas Milan from the Curragh 2023

H. garajonayensis at the Giant's Causeway. Found by Simeon Cathcart

H. garajonayensis from Cloughey Dunes. Find and photo by Roy Anderson. This one was a bit of a surprise. Roy had tentatively identified it as *Cuphophyllus aurantia* but the sequence comes out as *garajonayensis.* The cap looks drier (due to wind?) than the other finds and there is no clear red on the stipe

H. garajonayensis from Gortnagory found by Matthew Flood

So, the consistent look for these is an orange to yellowish cap with slightly decurrent gills and usually with red at the top of the stipe. It is supposed to have a crenulate cap edge which I am not convinced about from our specimens and the spores are supposed to be slightly smaller than *insipida* but the spore sizes quoted in the paper describing it overlapped with the *insipida* spores quoted in Boertmann's book so I am unclear about that one.

- ***Hygrocybe cf aurantiocitrina:*** The first surprise. This is not confirmed yet as I need sequences in the other direction to confirm. If correct, it is a new Irish record and maybe a new British record. This is a species recently described from Madeira by the same team that discovered *garajonayensis* (see https://pmc.ncbi.nlm.nih.gov/articles/PMC12308287/). The sequence is quite different to *insipida* and *garajonayensis* clustering nearer to *constrictospora*. The paper suggests a key feature is an orange reddish cap with a yellow orange margin which this has. I say maybe a new British record as work is ongoing in this area in GB and Martyn Ainsworth has just told me that there are maybe 8 species and counting in this *insipida / ceracea / constrictospora* complex!! As he says, many names will not be resolved until the original type specimens are sequenced. Found first by Matthew Flood at Binevenagh and then by myself at Altnahinch Dam and Jolanda at Cushleake from where this photo is taken. This, unfortunately, is the only photo and just shows how important it is to take photos of everything you collect!!!

Hygrocybe cf aurantiocitrina Cushleake Mountain

- ***Hygrocybe cf parvula*:** Surprise No 2. Two finds both at Glendun Hill Farm, the first by Chris Stretch and the second, 10 minutes later by myself. Both on the lower fields, not the richer higher areas. This is an American species, not yet confirmed in Europe although see comments above. Typically a yellow viscid cap with an orange stipe, the Americans do think there is more than one species in this complex (see this mind bobbling website - https://www.alpental.com/psms/ddd/Hygrophoraceae/index.htm). This one clusters with the "original" concept of *parvula* rather than the second undescribed clade. However, *parvula* was described in the early 1900's and the type has never been sequenced.

Hygrocybe cf parvula, Glendun Hill Farm

- ***Hygrocybe aff. constrictospora:*** Surprise No 3. One sequence was off on its own, near to *aurantiocitrina* but closer to *constrictospora*. I need a sequence in the other direction to see if it comes out as *constrictospora* but it does look to be different. And a microscope session is also needed. Found by Simoen Cathcart at the Giant's Causeway in the very rich hay meadow field between the upper car park and the visitor centre. I only have a photo of the underside of this which is very annoying and a slap on the wrists for myself.

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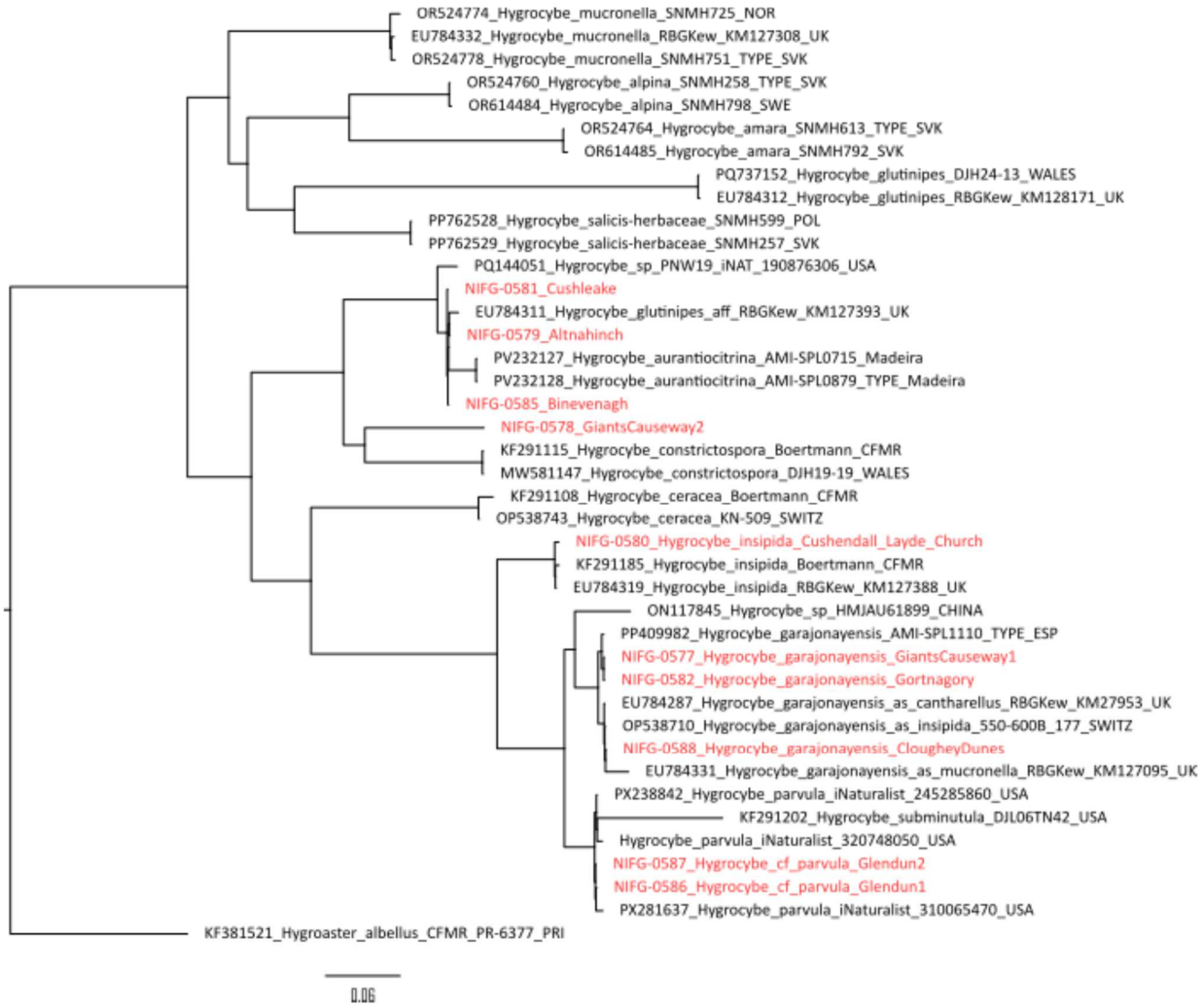
Hygrocybe aff. constrictospora Giant's Causeway

H. constrictospora has a dry cap, broadly adnate to decurrent gills and with over 70% of the spores with a constricted middle. These spores were 7-9.5 x 3.5-5µm so way too large for *insipida* but the amount of constricted spores was more like 40%. The cap is greasy so different from *constrictospora.*



The Keyring

So, where does that leave the keyring? It stays with Matthew for now as his find is probably new to Ireland. However, that is still to be confirmed so a permanent home is not yet established. And I am afraid that I have to own up to Mo that I have misplaced his *insipida* specimen……