***Calomyxa metallica* (Berk.) Nieuwl.- like – SM100 (= PDD 126094)** **My observations suggest that SM100 is a new species (related to *Calomyxa metallica*?). See *Calomyxa metallica* SM98 (= PDD 124535) for a comparison.**

Substrate: red deer (*Cervus elaphus*) dung

Collected: 9 June 2025; **Incubated in a moist chamber:** 17 June 2025

Collection site: Pureora Forest, Mangatutu, E1817980 N5756515; forest vegetation: tawa

Collectors: Ian Flux & Merryl Park; **Identifier:** Dan Mahoney

Voucher materials: Three dried red deer dung pellets accompanied by one Shear's mounting fluid (SMF) slide mount; in-situ photos of fruiting structures on the moist chamber incubated red deer dung taken 26 June, 2 & 6 July using a Zeiss SV 11 Stereo-zoom dissecting microscope and a MC80 camera; morphological detail photos taken 15 July from a SMF slide mount prepared that day from the dried, fumigated herbarium specimen (using an Olympus BX51 compound scope and a DP28 camera).

References consulted and comments:

1. Stephenson, S.L. 2003. Myxomycetes of New Zealand. Fungi of New Zealand. Ngā Harore o Aotearoa 3: xiv + 238 p. Hong Kong: Fungal Diversity Press. *Calomyxa metallica* is presented on pp. 69–70. See his description and comments on the next page.
2. For a variety of *C. metallica* photos online see those by Clive Shirley in his Hidden Forest website.
3. Two books by Sarah Lloyd: *Where the slime mould creeps* 4th ed. 2022 (pp. 81 & 100) and *Myxomycetes at Black Sugarloaf, Tasmania, Australia* 2020. See a reproduction of her page containing a description & illustrations of *C. metallica* among the photo pages that follow in this pdf.
4. Cox J.J. 1981. Notes on Coprophilous Myxomycetes from the Western United States. Mycologia 73:(4), 741–747. His 1981 comment on *C. metallica* (no description or illustrations) is the following: "Two collections, both on cow dung from California...Although common on the bark of dead and living trees (Martin and Alexopoulos, 1969), this is the first report of *C. metallica* on dung." I am unable to find other collections from dung in my online searches in October, 2025 – except for my PDD records for PDD 124535 & PDD 126094.
5. Landcare PDD records (7) & Mycoportal records (298) indicate that *C. metallica* is common and widely reported worldwide.
6. Terminology used online for some morphological features of *C. metallica*:

1. AI Overview "Iridescent Peridium: The capillitium of *C. metallica* is embedded in a membranous, iridescent peridium (outer layer), which may also exhibit a **tessellated** (tiled) pattern." Such a pattern is shown and discussed in some of the photos that follow but is rarely mentioned in any formal description of the species.

2. Lado C. et. al. 2014. Myxomycete diversity of the Patagonian Steppe and bordering areas in Argentina. Anales del Jardín Botánico de Madrid. 71(1): e006 (pp. 1–35) "Calomyxa metallica…The Patagonian material of this species had sporocarps that were solitary or in small groups, sessile and subglobose to slightly pulvinate. They had the typical iridescence in the peridium. The spores were spinulose by LM, and clearly **baculate** by SEM. Sporocarps of collection Lado 21177 had slightly larger spores (12–14 µm diam) than normal for this species (9–12 µm diam)."

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Stephenson, S.L. 2003: Myxomycetes of New Zealand. Fungi of New Zealand. 3. Fungal Diversity Press.

Collections (of *Calomyxa metallica*) Examined:
DWM 3081, 3162, 3177 I assume these are from the article "Mitchell D.W. 1992. The Myxomycota of New Zealand and its island territorities. Nova Hedwigia 55:231–256." which I was unable to access online.

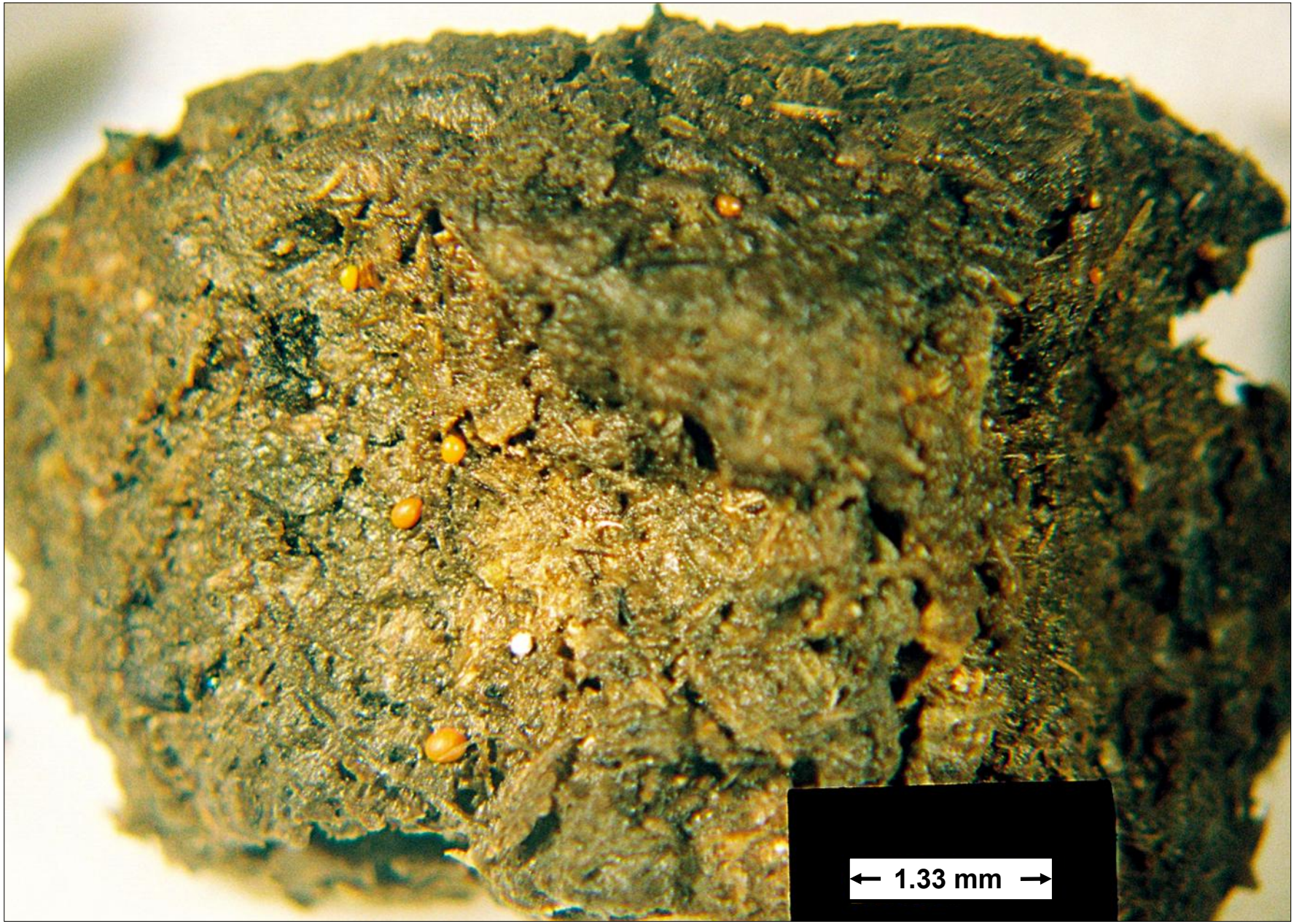
Description:
Fruiting body a sessile (or sometimes subsessile) sporangium (occasionally somewhat plasmodiocarpous), widely scattered to densely gregarious or firmly clustered, globose to pulvinate, 0.2–1.0 mm in diameter. Peridium membranous, rugulose, dull to shiny or iridescent yellow, coppery, or grey, translucent or encrusted with glandular material. Capillitium abundant, elastic, consisting of long, flexuous or coiled, simple or sparsely branched, solid, dull yellow or grey filaments 0.5–1.0 µm (occasionally as much as 2.0 µm) in diameter, with few attachments to the peridium, marked by a row of minute tubercules arranged in a long spiral. Spores dull yellow or pinkish grey in mass, nearly colourless by transmitted light, delicately warted to spiny, 8–13 µm in diameter. Plasmodium watery white.

Distribution:
Widely distributed in temperate regions of the Northern Hemisphere (Lado 1994) and also known from Africa (Ukkola 1998), Australia (Mitchell 1995), and South America (Farr 1976). First reported from New Zealand by Mitchell (1992), based on specimens appearing on bark samples placed in moist chamber culture. The samples were collected in Auckland, Bay of Plenty, and North Canterbury.

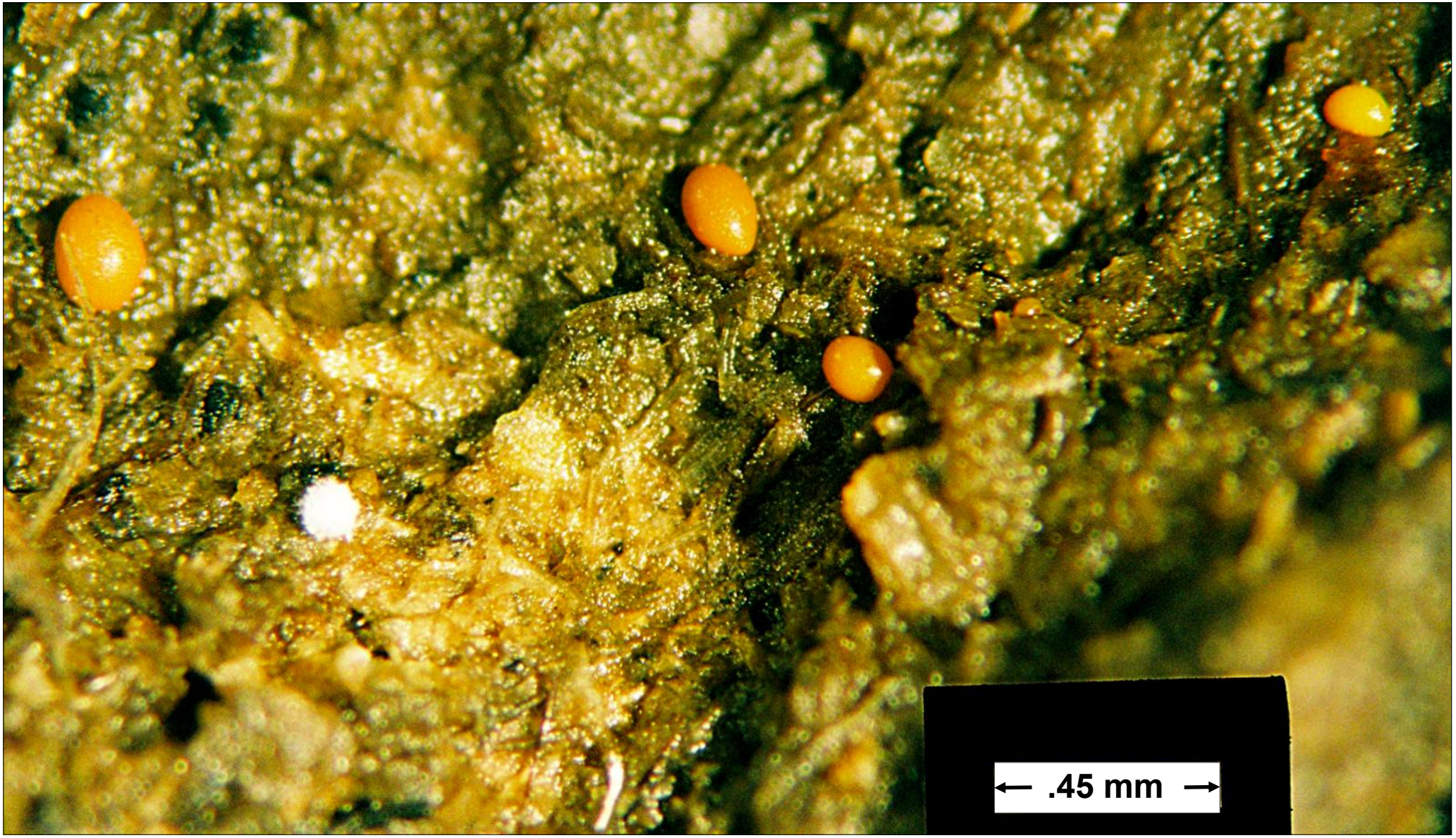
Habitat:
Decaying wood or the bark of living trees

Illustrations:
Martin & Alexopoulos (1969), Nannenga-Bremekamp (1991), Neubert et al. (1993), Lado & Pando (1997), Ing (1999).

Notes:
This species commonly appears on bark samples placed in moist chamber cultures but is rarely collected in the field.



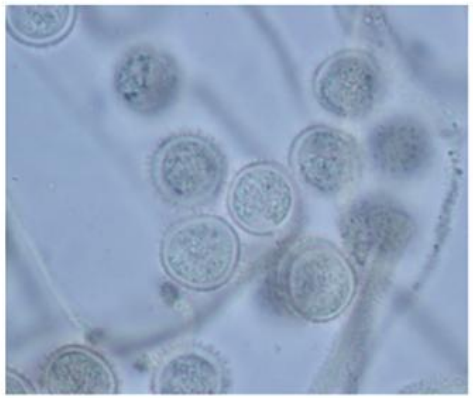
SM100. In-situ view on 26 June 2025 of a fresh red deer dung pellet in its moist incubation chamber. Note the approx. 6 orange, iridescent, widely scattered, sessile sporangia of *Calomyxa metallica.*



SM100. Reoriented closeup of 4 orange, iridescent, sessile sporangia from the photo on the previous page.

Calomyxa metallica (Berk.) Nieuwl. 0212

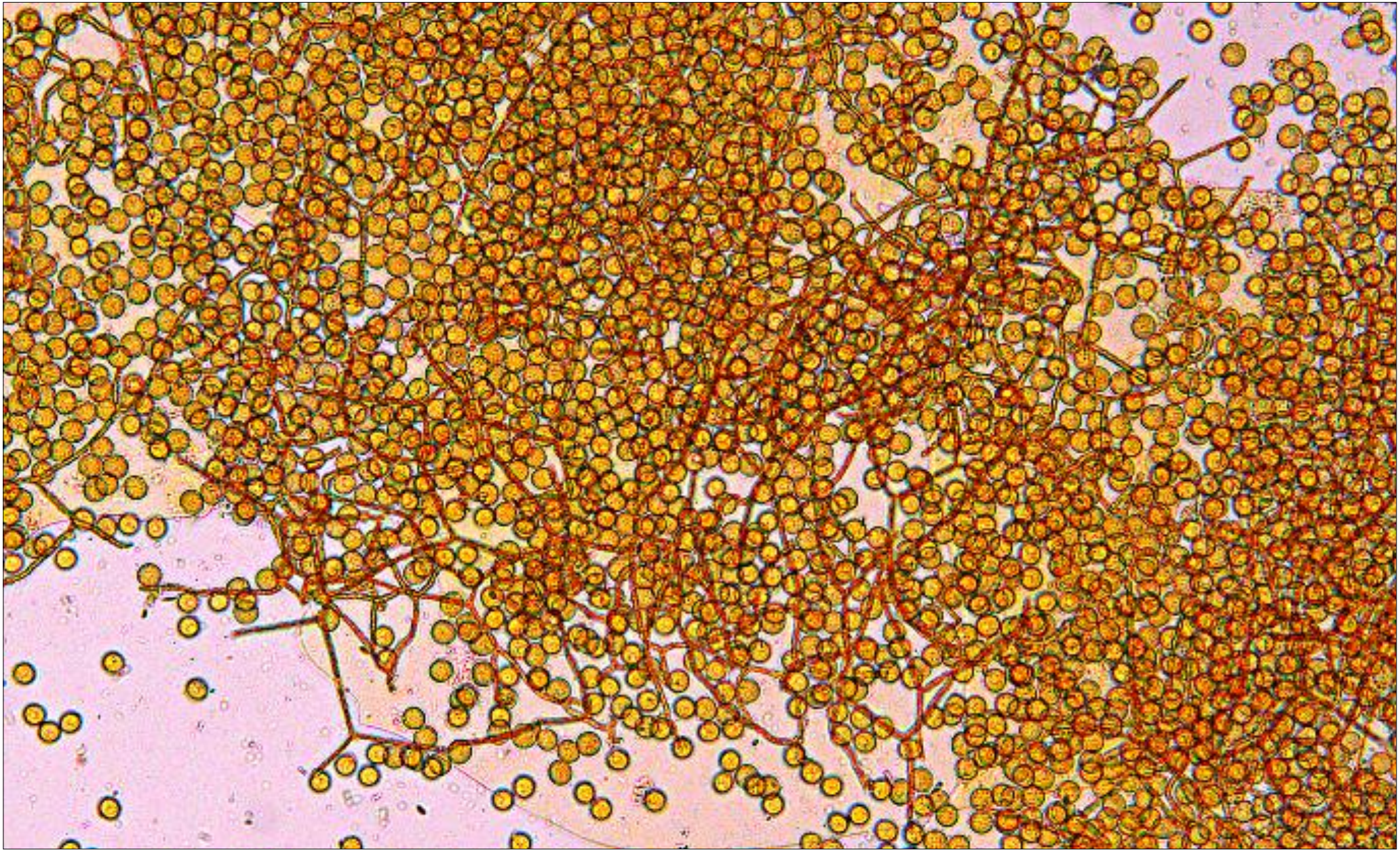
Date 3 Oct. 2014. Black Sugarloaf, Birralee (Swamp).
Habitat: *Melaleuca ericifolia* swamp forest.
Substrate upturned roots of *Acacia melanoxylon*.
Description: 3 clusters and several scattered individual sessile globose sporangia, 1 mm diameter; sessile plasmodiocarps, 2 mm long x 1 mm wide. **Peridium** membranous, iridescent, with tessellated pattern, pale yellow, dehiscence irregular. **Capillitium** abundant, elastic, sparsely branched fine threads, with minute tubercules. **Spores** creamy white when first collected changing to ochraceous yellow in mass, almost colourless by transmitted light, spinulose, 10 µm.
Notes: *C. metallica* and *Prototrichia metallica* are superficially similar; I have 20 collections that need checking microscopically.



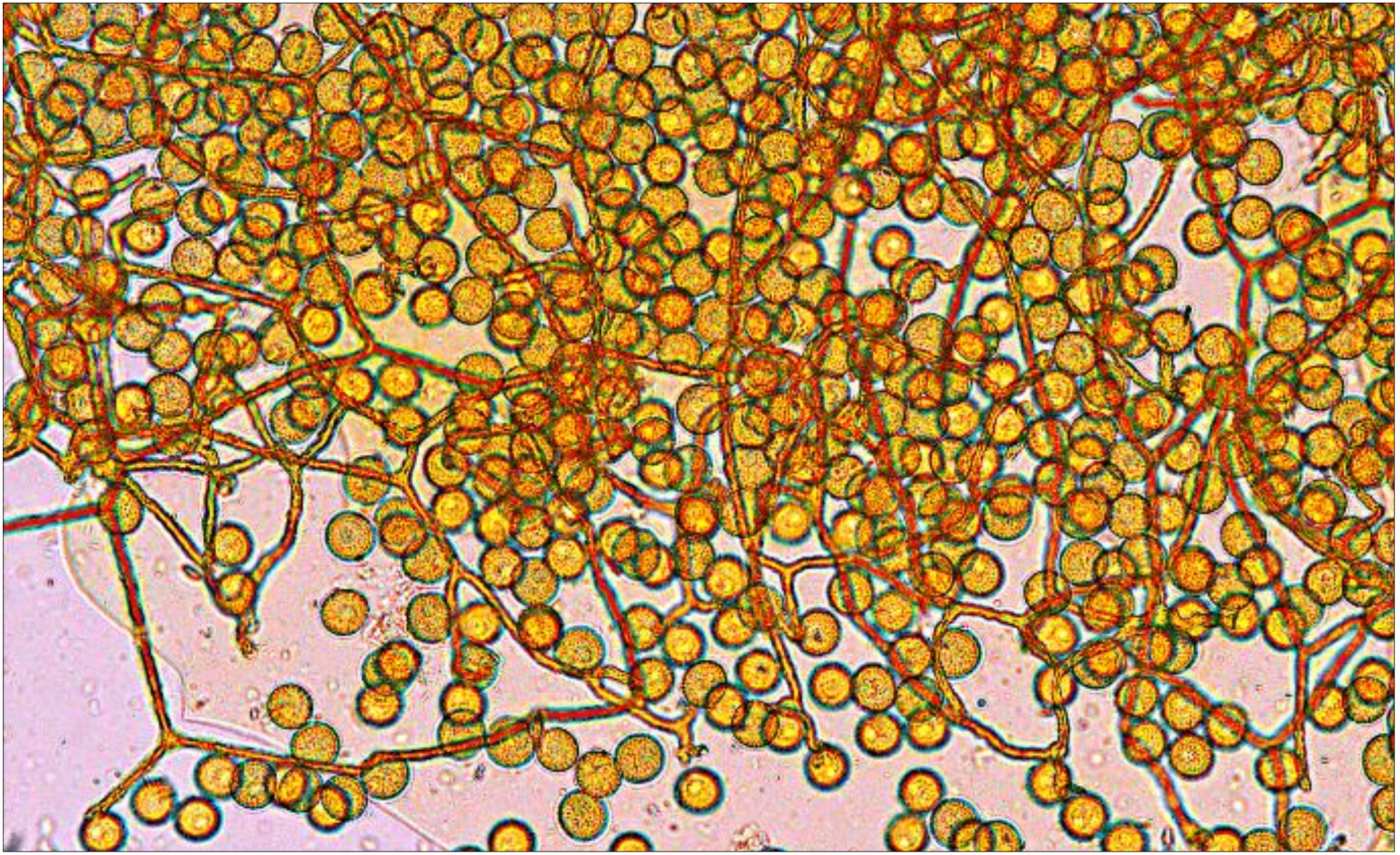
Left insert: Description and photo by Sarah Lloyd from her book "*Myxomycetes at Black Sugarloaf, Tasmania, Australia*". Note especially the bottom photo showing sporangia with membranous, iridescent peridia which exhibit a tessellated pattern (my comment, 'reticulate network'). Such a pattern was also seen on the peridia of sporangia in SM100 although fainter due to their smaller size, lighting and yellowish iridescence. See their comparison to those of Lloyd on the next page.

Above insert: Hidden Forest website photo by Clive Shirley showing sporangia with the same membranous, iridescent peridia & tessellated reticulate pattern as Lloyd's. Note, however, that when most of the peridium dehisces, the reticulate pattern is still present at the spore mass edge.

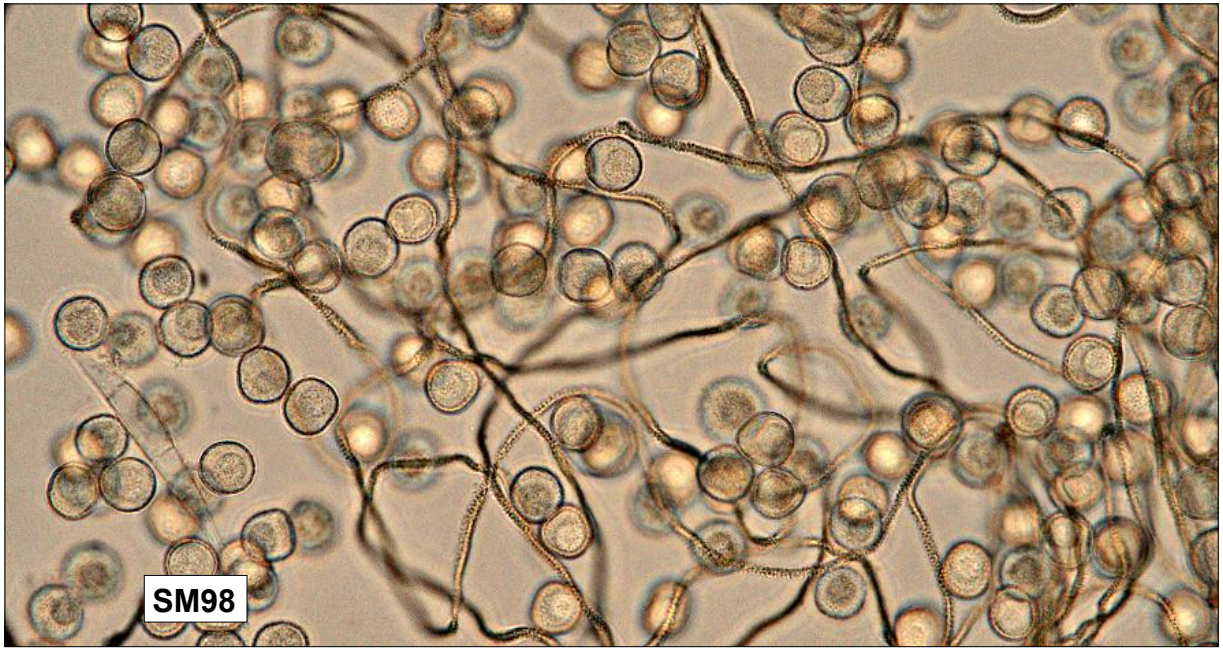
Comparing the tessellated reticulate pattern on the thin membranous peridia of my sporangia SM98 & SM100 (top row) with those for Sarah Lloyd and Clive Shirley (bottom row). Reticulations are visible in SM98 and present, but very faint, in SM100.

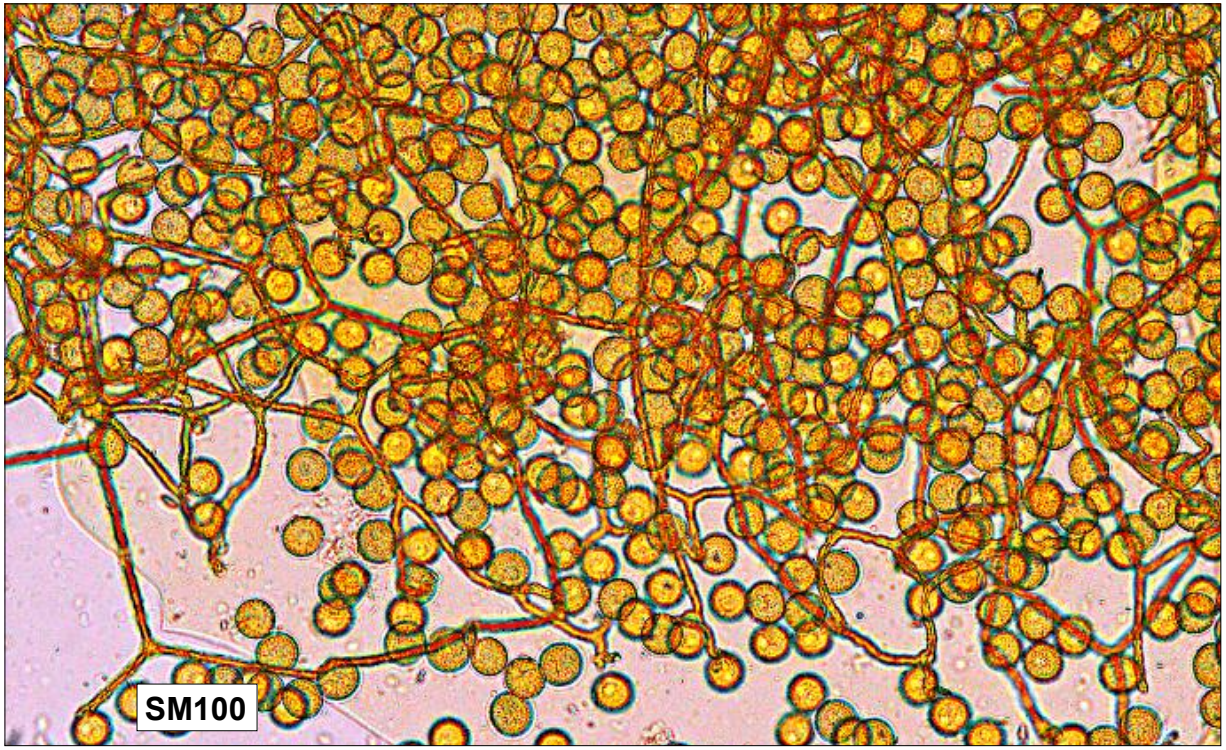


SM100. Orange capillitial threads (often seen branching to form a reticulate network) & yellow globose spores with the thin membranous light yellow peridium in the background. Seen 9 July in a water mount using the X20 objective & brightfield microscopy.



SM100. Closeup photo (9 July) of a portion of the previous page with dark orange capillitial threads often seen branching to form a reticulate network, yellow spores & a membranous peridium. Water mount using the X40 objective & brightfield microscopy.

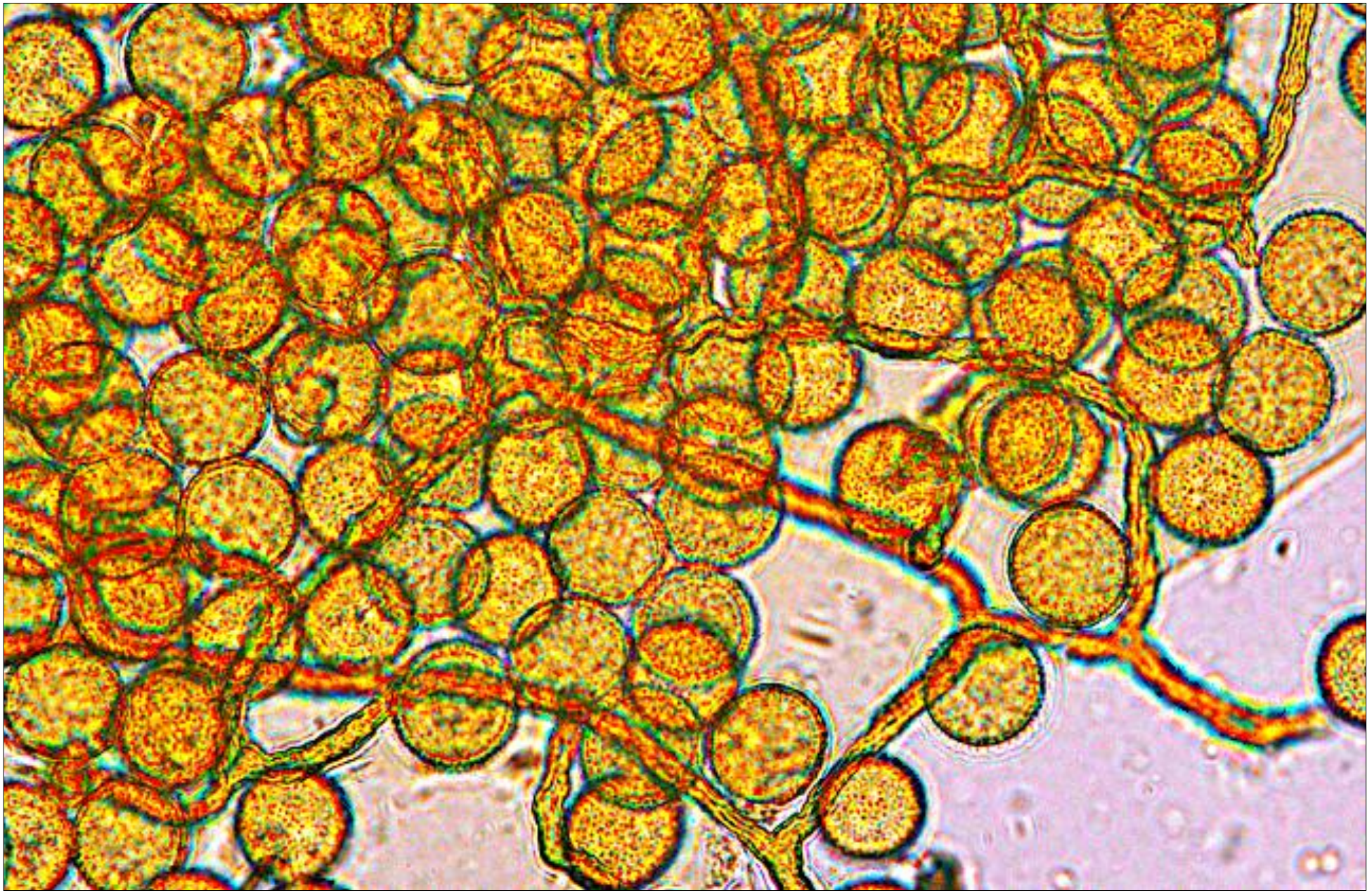




The photos at the left show a comparison between capillitial threads in my *Calomyxa metallica* SM98 (= PDD 124535) – X100 objective and my *Calomyxa metallica* SM100 (= PDD 126094) – X40 objective. Capillitial threads in SM98 fit their description in Stephenson 2003: "abundant, elastic, consisting of long, flexuous or coiled, simple or sparsely branched, solid, dull yellow or grey filaments 0.5–1.0 µm (occasionally as much as 2.0 µm) in diameter, with few attachments to the peridium, marked by a row of minute tubercules arranged in a long spiral." Capillitial threads in SM100, however, are frequently branched to form a reticulate network. Although the capillitial thread ornamentation seems similar to SM98, it was not as clearly seen and requires more observation.

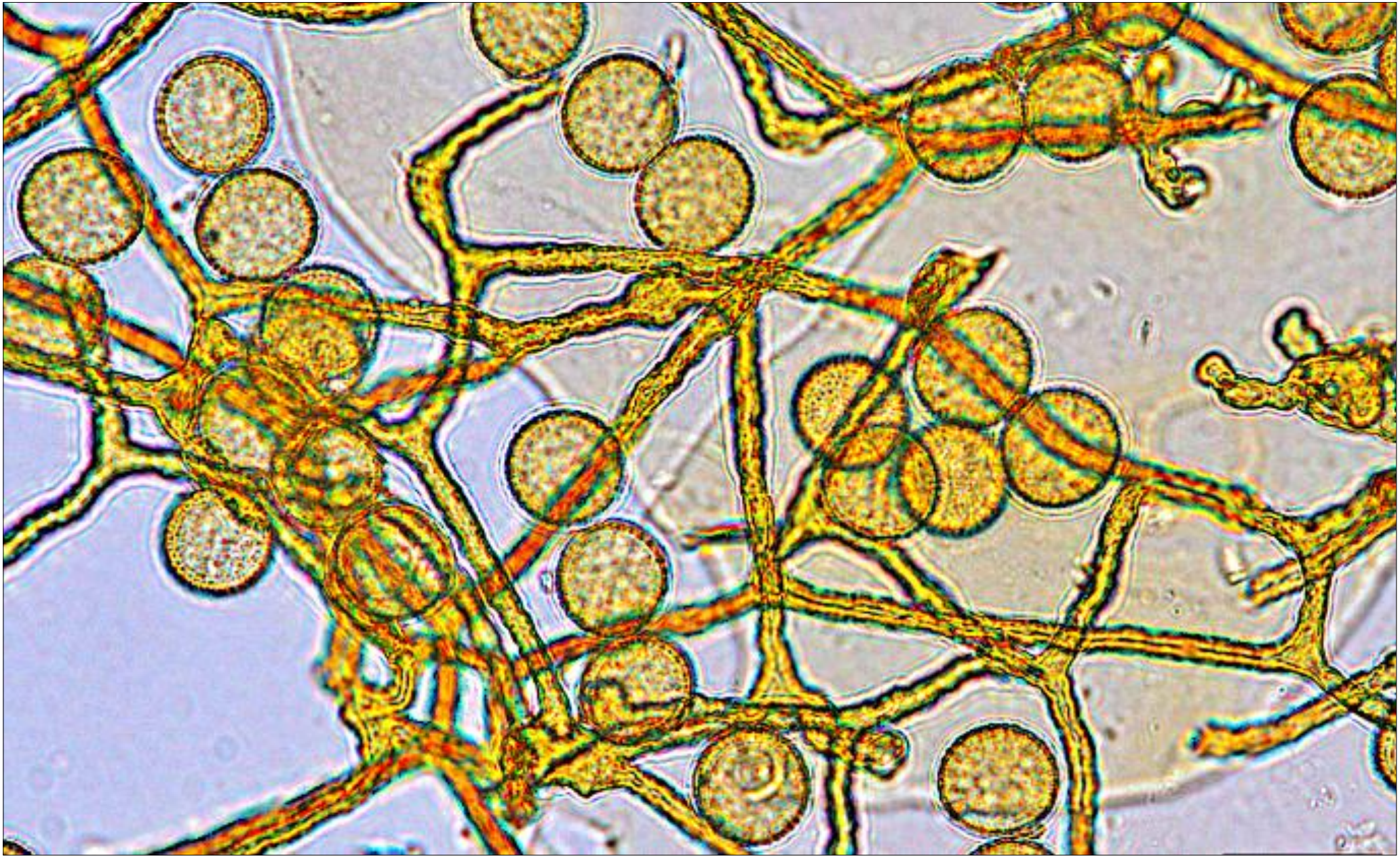
Worth noting is Stephenson's key to families of the Trichiales where *Calomyxa* is treated in the Dianemataceae: "Capillitium consisting of thread-like elements...never united into a net." The other two families (Arcyriaceae & Trichiaceae) read "often united into a net"

SM100 spores mostly larger than in SM98 (13–15 µm in diam vs 8–13 µm). Although more work needs to be done, I consider SM100 a new species (related to *C. metallica*?)



SM100. Water mount photo using the X100 objective & brightfield microscopy. Showing a reticulated network of dark orange capillitial threads, yellow spores & a membranous peridium. Varying views are presented in the following pages.

SM100. Water mount photo using the X100 objective & brightfield microscopy. Showing a reticulated network of dark orange capillitial threads, yellow spores & a membranous peridium. Varying views are presented in the following pages.



SM100. Water mount photo using the X100 objective & brightfield microscopy. Showing a reticulated network of dark orange capillitial threads, yellow spores & a membranous peridium. Varying views are presented in the following pages.

SM100. Water mount photo using the X100 objective & brightfield microscopy. Showing a reticulated network of dark orange capillitial threads, yellow spores & a membranous peridium. The best spore closeups are seen on the next page.

SM100. Water mount photo of the spores using the X100 objective & brightfield microscopy. This mid-spore focus was selected to emphasize spore shape, size & ornamentation. Spores were mostly 13–15 µm & minutely spinulose. In Lado's 2014 Patagonian comments (see the bottom of p. 1 in this pdf) he describes his spores as "spinulose by LM, and clearly baculate by SEM...with those of collection Lado 21177 having slightly larger spores (12–14 µm diam) than normal for this species (9–12 µm diam)." That description is a reasonable match to spores for SM100. Other descriptions describe the ornamentation as delicately warted or spiny.