Physarum pusillum (Berk. & M.A. Curtis) G. Lister – PDD 126093 (= AEB SM99) a good match

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: One dried red deer dung pellet accompanied by one lactic acid 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 lactic acid slide mount prepared that day from the dried, fumigated herbarium specimen (using an Olympus BX51 compound scope and a DP28 camera).

PDD collection records for _Physarum_ and _P. pusillum:_ With 725 PDD collection records, the genus *Physarum* has the most Myxomycete PDD records in NZ. At 117 records (as of 12 Oct. 2025), *P. pusillum* is the most numerate *Physarum* species in NZ (with *P. viride* – 114 & *P. cinereum* – 94, close behind). Workers most responsible for *P. pusillum* records in PDD are Steve Stephenson (77) and Clive Shirley (22).

Six PDD records of _Physarum pusillum_ which I have contributed to PDD. See their pdfs in the datastore:

PDD 110389 (= AEB SM9, Australian ABRS collection #A193) – on black-footed rock wallaby dung, collector C.A. Pearce, 12 Oct. 1997

PDD 110401 (= AEB SM21, Australian ABRS collection #A134) – most likely on kangaroo dung, collector S. Palmer, Aug. 97

PDD 110449 (= AEB SM76, Rimutaka Forest Park NZ) – on dead frond of Nikau palm, collector D.P. Mahoney, 21 Jan. 2016

PDD 111872 (= AEB SM80, private residence Lower Hutt NZ) on moist hessian sacking, collector A.E. Bell, 6 Oct. 2016

PDD 124534 (= DPM AEB SM87, between the pyramids NW side of Mt. Taranaki, altitude 1237m NZ), on hare dung, collectors I. Flux & M. Park, 20 March 2024

PDD 126093 (= AEB SM99, Pureora Forest, Mangatutu NZ), on red deer dung, collectors I. Flux & M. Park, 9 June 2025

Stephenson, S.L. 2003. Myxomycetes of New Zealand. Fungi of New Zealand. Volume 3. Fungal Diversity Research Series 11: 1–238. Below see portions of pp. xiv, 212 & 213 for Stephenson's description, illustrations & comments.

Physarum pusillum (Berk. & M.A. Curtis) G. Lister, in Lister, *A Monograph of the Mycetozoa, ed. 2*: 64, 1911. (Fig. 42, Plate 4F)
Didymium pusillum Berk. & M.A. Curtis, in Berkeley, *Grevillea 2*: 53, 1873.
Physarum calidris Lister, *Journal of Botany, British and Foreign 29*: 258, 1891.

Fruiting body a stalked sporangium, gregarious, 1–2 mm tall. Sporotheca globose or slightly flattened and then somewhat umbilicate below, erect or slightly inclined, 0.4–0.6 mm in diameter. *Stalk* usually slender but occasionally relatively stout, cylindrical or slightly narrowed towards the apex, calcareous, rugulose or smooth, reddish brown, merging into the base of the sporotheca, 0.5–1.5 mm long. *Hypothallus* discoid, reddish brown, sometimes inconspicuous. *Peridium* consisting of a single layer, membranous, rugose, encrusted with white or greyish white lime above, thickened and reddish brown towards the base. *Columella* absent. *Capillitium* variable, consisting of white, angular and scattered lime nodes connected by hyaline, branched threads; the later sometimes scanty and the capillitium then appearing badhamioid. *Spores* black in mass, liliaceous brown by transmitted light, minutely warted, 10–12 µm in diameter. *Plasmodium* watery white.

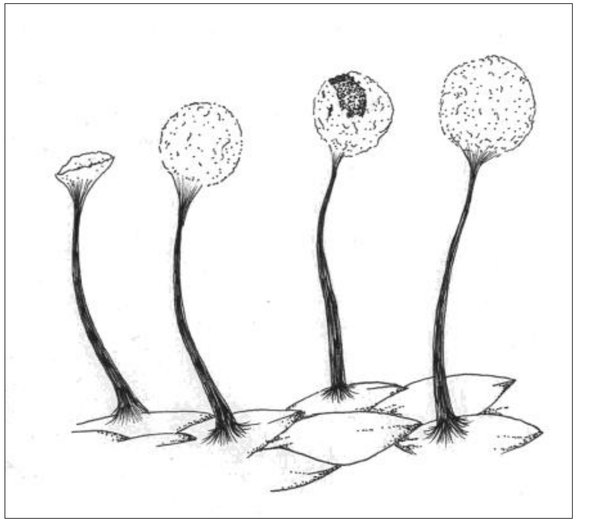


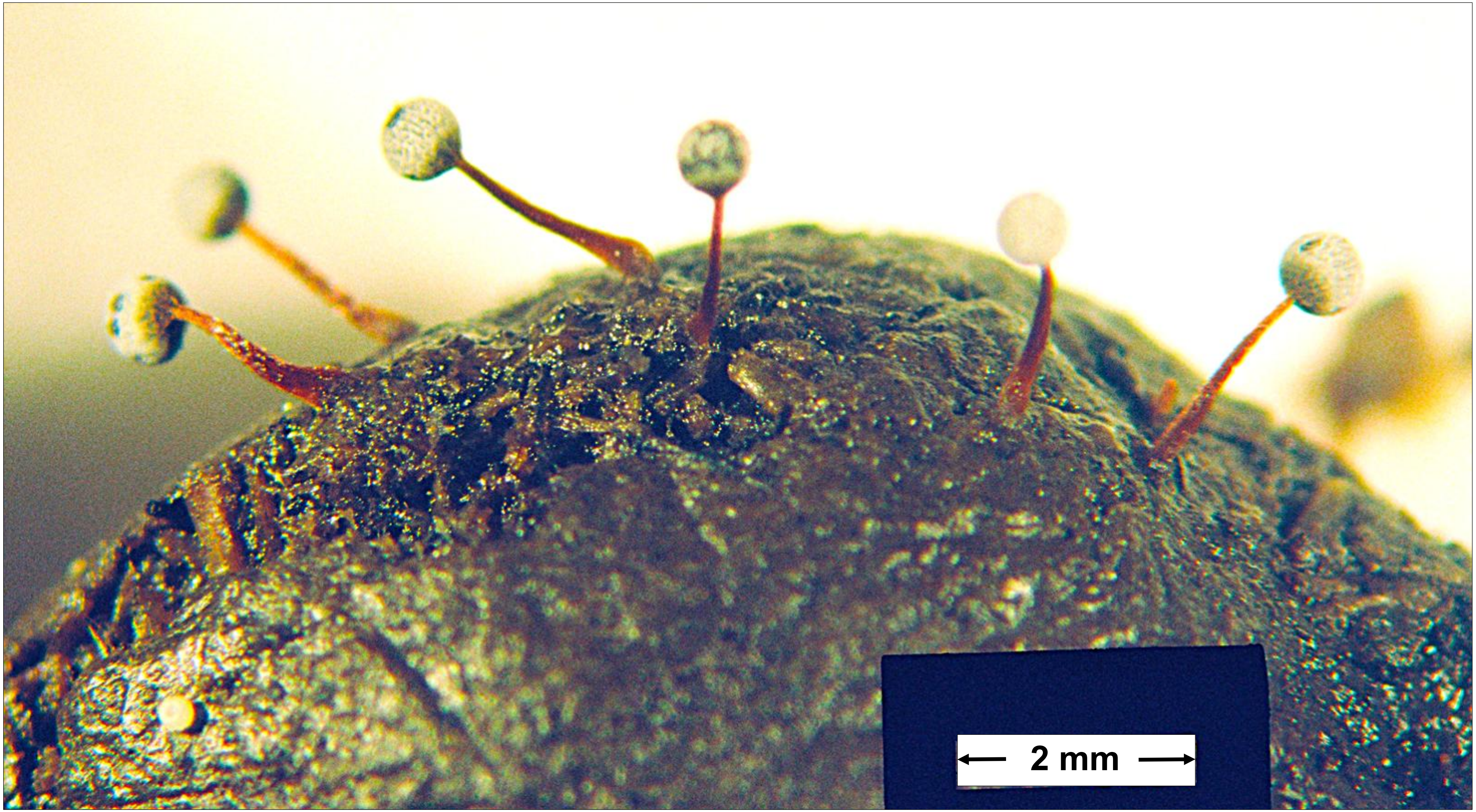
Fig. 42. Four sporangia of *Physarum pusillum*. The one on the right is about 1.5 mm tall.

Distribution: Reported as cosmopolitan (Martin & Alexopoulos 1969) but particularly common in warm temperate to tropical regions of the world. First reported (as Physarum calidris) from New Zealand by Lister & Lister (1905), based on a specimen collected on Stewart Island. Also known from Auckland, Coromandel, Waikato, Bay of Plenty, Wellington, Nelson, and Southland (Rawson 1937).

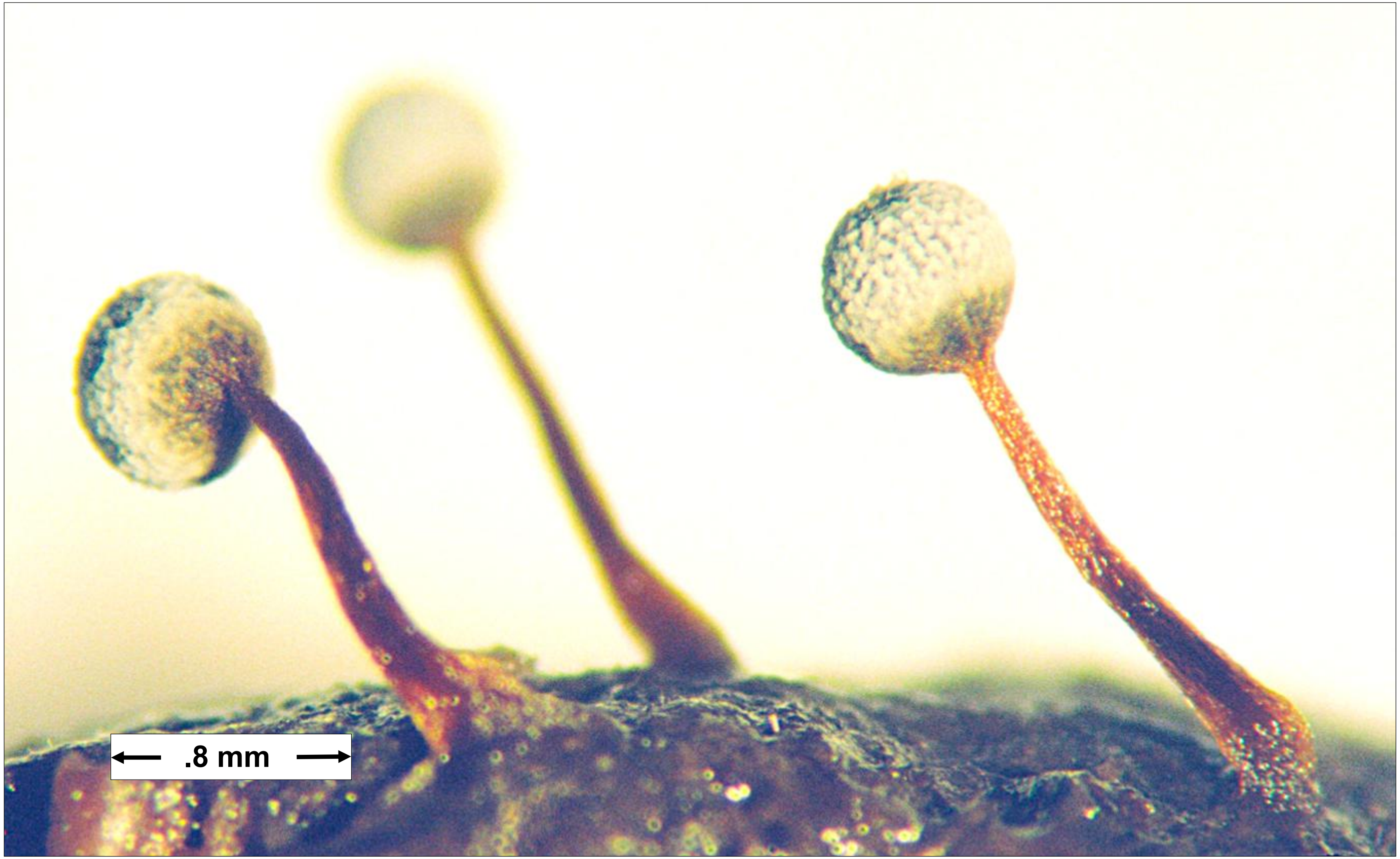
Habitat: Leaf litter and other types of plant debris.

Comments: The reddish brown colour of the stalk and the lower portion of the sporotheca, and the a relatively long stalk, are the distinguishing features of this species. The colour of the peridium is quite variable, and specimens with a yellow peridium are sometimes encountered. *Physarum pusillum* is one of the myxomycetes commonly found on old decaying fronds of nikau palm (Stephenson 2003).

Plate 4F: Photo provided by Clive Shirley

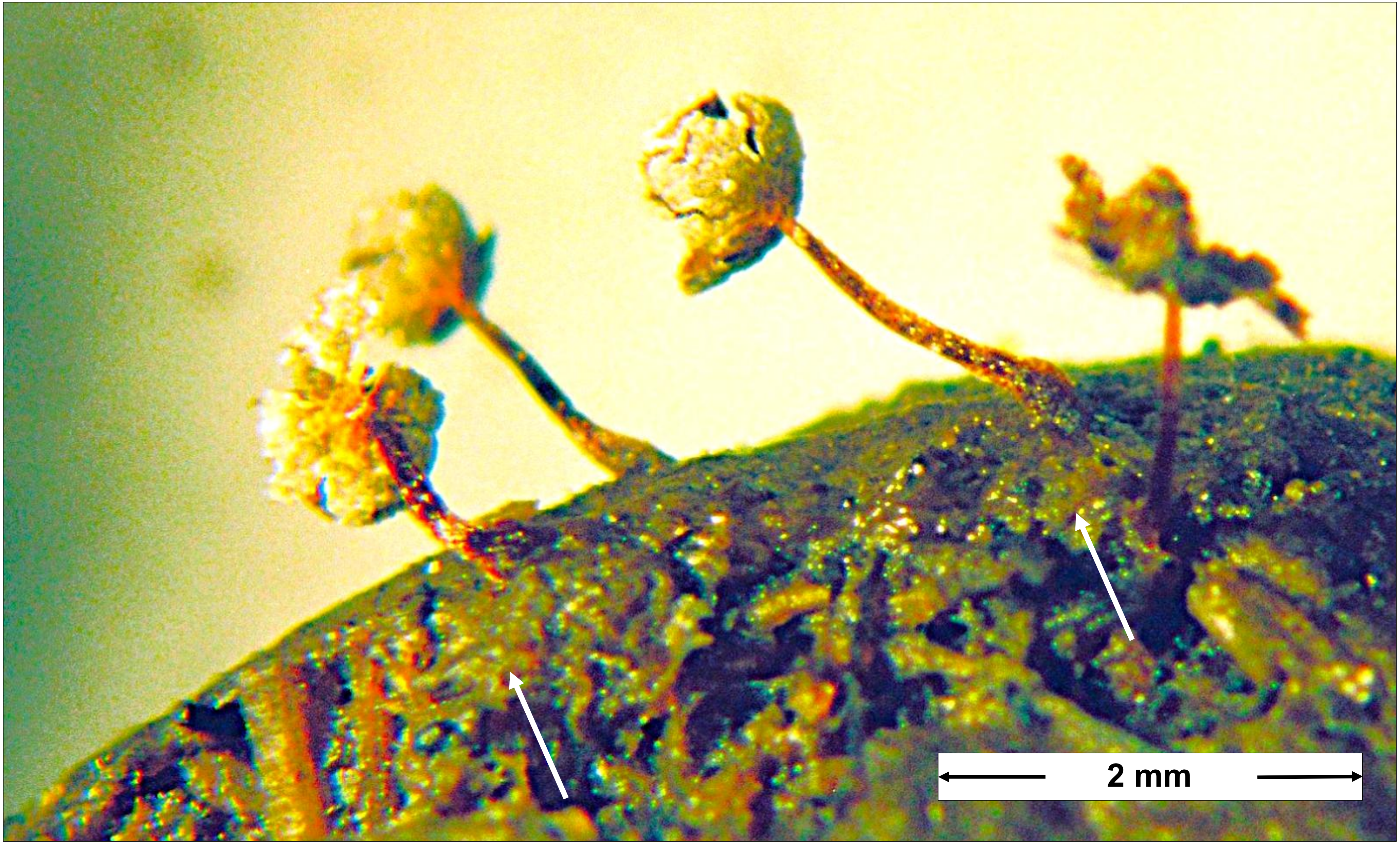


PDD 126093. In-situ view of fresh fruiting bodies shown on red deer dung in the moist incubation chamber. Unfortunately, this view on 26 June includes the only fruiting bodies seen in this collection. Later in-situ photos on 6 July reveal partially dehiscent sporangia with these representing the dried herbarium collection. A single lactic acid semi-permanent slide prepared on 15 July accompanies the dried material.



PDD 126093. In-situ closeup view of 3 fresh fruiting bodies shown on the previous page.

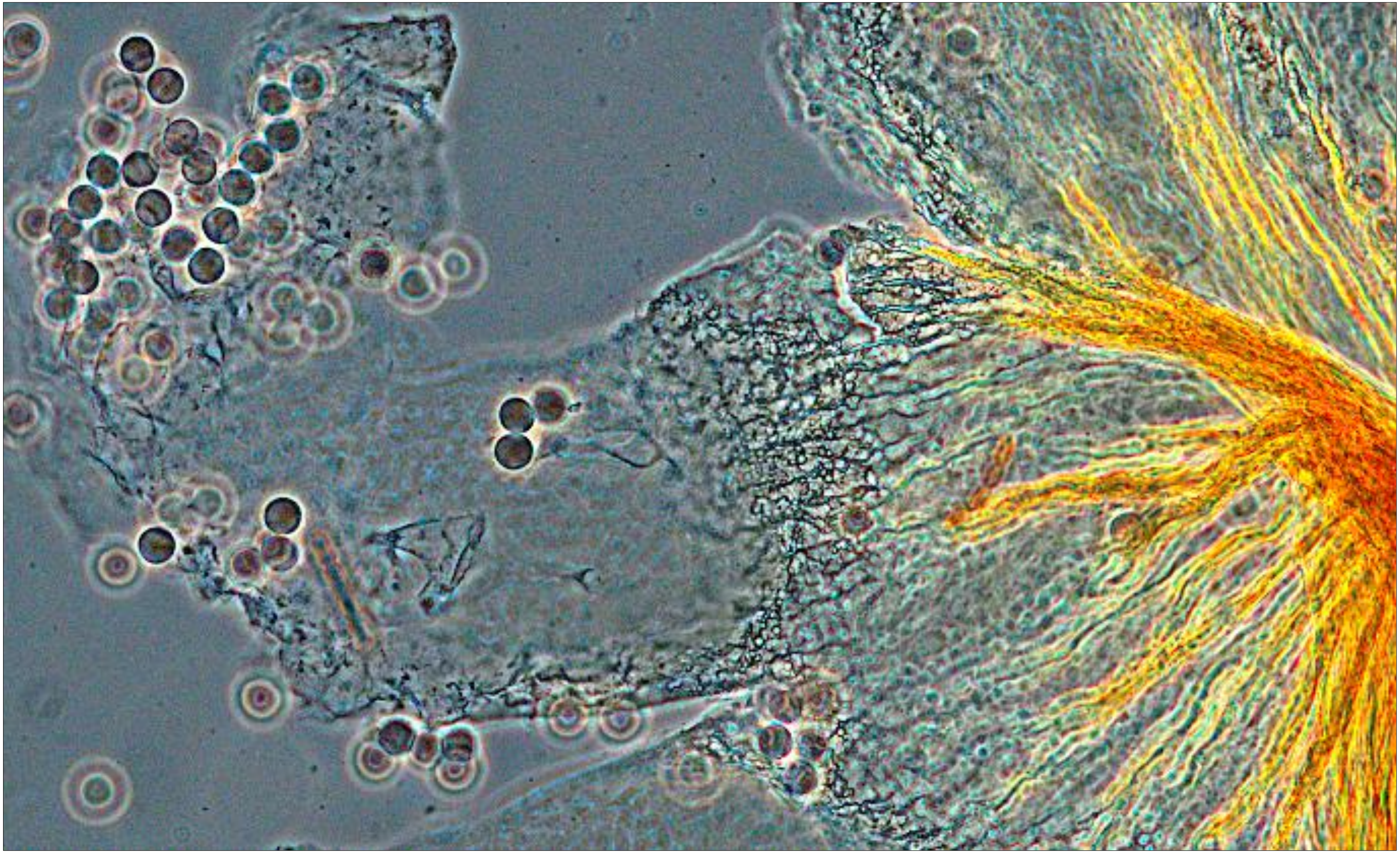
PDD 126093. In-situ closeup views of single fruiting bodies. Left photo taken 26 June, right photo 2 July.



PDD 126093. In-situ view of what the original 4 left-hand fruiting bodies seen in the earlier 26 June complete collection view look like on 6 July. These taken on 6 July reveal partially dehiscent sporangia and also what appear to be drying yellow plasmodium remnants – arrowed (perhaps early sclerotia).

PDD 126093. In-situ more highly magnified view of the far right fruiting body with a partially dehiscent sporangium on the previous page (arrowed) and another fruiting body with a dehiscent sporangium to its right. Photo 6 July.

PDD 126093. A lactic acid slide mount photo taken 15 July with phase views (X20 objective) of the orangish longitudinally fibrillar stalk apex, its fibrils extending into the ‘calyculus-like’ sporangium base, remnants of the dehiscent sporangium peridium and spores.



PDD 126093. A more highly magnified view (phase microscopy using the X40 objective) of the left-hand portion of the photo on the previous page.

PDD 126093. Two slightly different focused views (brightfield microscopy using the X100 objective) of verruculose spores from the same lactic acid slide mount shown on the previous 2 pages.