***Collaria arcyrionema* (Rostaf.) Nann.-Bremek. ex Lado – SM96 (= PDD 124533)**

Collected: 20 March 2024

Substrate: hare (*Lepus europaeus*) dung; Incubated in moist chamber 25 March 2024

Collection site: NZTM grid ref. E1689530 N5650853, between the pyramids NW side of Mt. Taranaki, altitude 1237m among tussock (alpine scrub zone on old lava flows)

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

Voucher materials: dried hare pellet herbarium specimen accompanied by 1 Shear's mounting fluid (SMF) semi-permanent microscope slide; Zeiss SV 11 Stereo-zoom dissecting microscope in-situ photos of the fruiting bodies using a MC80 camera and Olympus BX51 microscopic slide photos of the fruiting bodies using a DP28 camera; references consulted and Dan's brief comments.

References consulted:

1. Kowalski D.T. 1970. The Species of *Lamproderma*. Mycologia 62(4): 621–672. His description (as *Lamproderma arcyrionema*, presently a synonym of *Collaria arcyrionema*) is reproduced on the next page.
2. Stephenson, S.L. 2003. Myxomycetes of New Zealand. Fungi of New Zealand. Volume 3. Fungal Diversity Research Series 11: 1–238. His description (as *Collaria arcyrionema*) is reproduced on the next page.

Dan's brief comments: Unfortunately, this specimen consisted of only 5 fruiting bodies on a single hare dung pellet, 2 of which were removed after in-situ photos for further microscopic slide photos. It is worth noting, however, that this 20 March 2024 hare dung moist-chamber-incubated collection yielded a remarkable 4 slime molds: 3 with few fruiting bodies – *Collaria arcyrionema* PDD 124533 (= SM96), *Physarum pusillum* PDD 124534 = SM97 & *Calomyxa metallica* PDD 124535 (= SM98) and one with numerous fruiting bodies – *Didymium squamulosum* PDD 121669 (= SM95).

An earlier identification of *C. arcyrionema* at PDD, among the 4 species presently listed there, is a species I identified from dead wood in Remutaka Forest Park in 1999 – *C. arcyrionema* PDD 110387 (= AEB SM7). Its pdf in the Systematics Collections Datastore is worth a comparison with the Datastore record of the present collection. For example, its columella branching is solely apical while that of the present PDD 124533 is both apical and several-times subapical. Also, I can find no other world records of this species on dung. Are its differences those of a variant based on substrate or something else?

Kowalski D.T. 1970. The Species of *Lamproderma*. Mycologia 62(4): 621–672. Portions of pp. 424, 425 & 427 reproduced below. My comments in red.

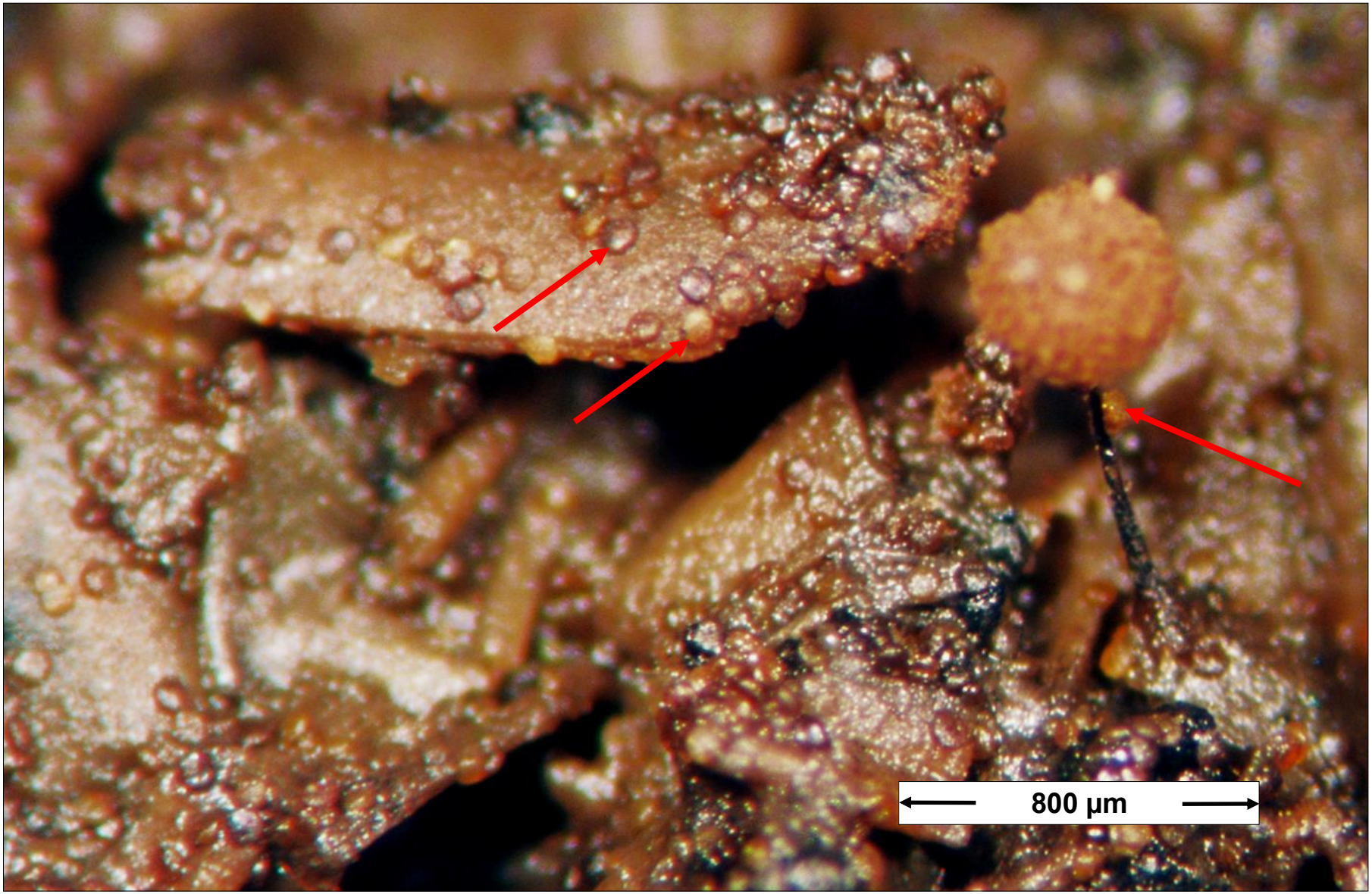
LAMPRODERMA ARCYRIONEMA Rost., Mon. 208. 1874.

Sporangia predominantly clustered (separated but limited to a small space on the dung pellet), stalked, globose, 0.5-0.75 mm in diam; stipe shiny black, slender, rigid, tapering slightly towards the apex, 1-2 mm in length (usually <1 mm); peridium membranous, thin, persistent or evanescent (all evanescent, no peridium seen), splitting irregularly in large fragments, weakly attached to the capillitium, often (always) remaining as a cup at the base of the sporangium, steel-gray to golden brown, strongly iridescent; hypothallus poorly-developed, thin, transparent, small, discoid, rarely merging with adjacent hypothalli, marked with distinct tubules radiating from the base of the stipe, reddish brown ; columella short, black, tapering towards the apex, usually attaining less than one-third (½ or more) the height of the sporangium, branching at the apex to form the primary branches of the capillitium; capillitium abundant, branching and anastomosing to form a dense, intricate, rigid net with few free ends (difficult to discern in my too limited observations), primary branches straight, becoming circinate-flexuous, directed upwards, dark brown to black, becoming reddish brown towards the periphery, arising entirely from the apex of the columella, not expanded in the axils; spores globose, reddish brown to purple-brown in mass, pale violet-brown (pale violet) by transmitted light, minutely spinulose or verrucose, clusters of larger, darker warts (yes) usually present, 1-3 clusters per hemisphere, 6–8 µm (mostly, but occasionally up to 12 µm) in diam; plasmodium (not seen) colorless or watery white.

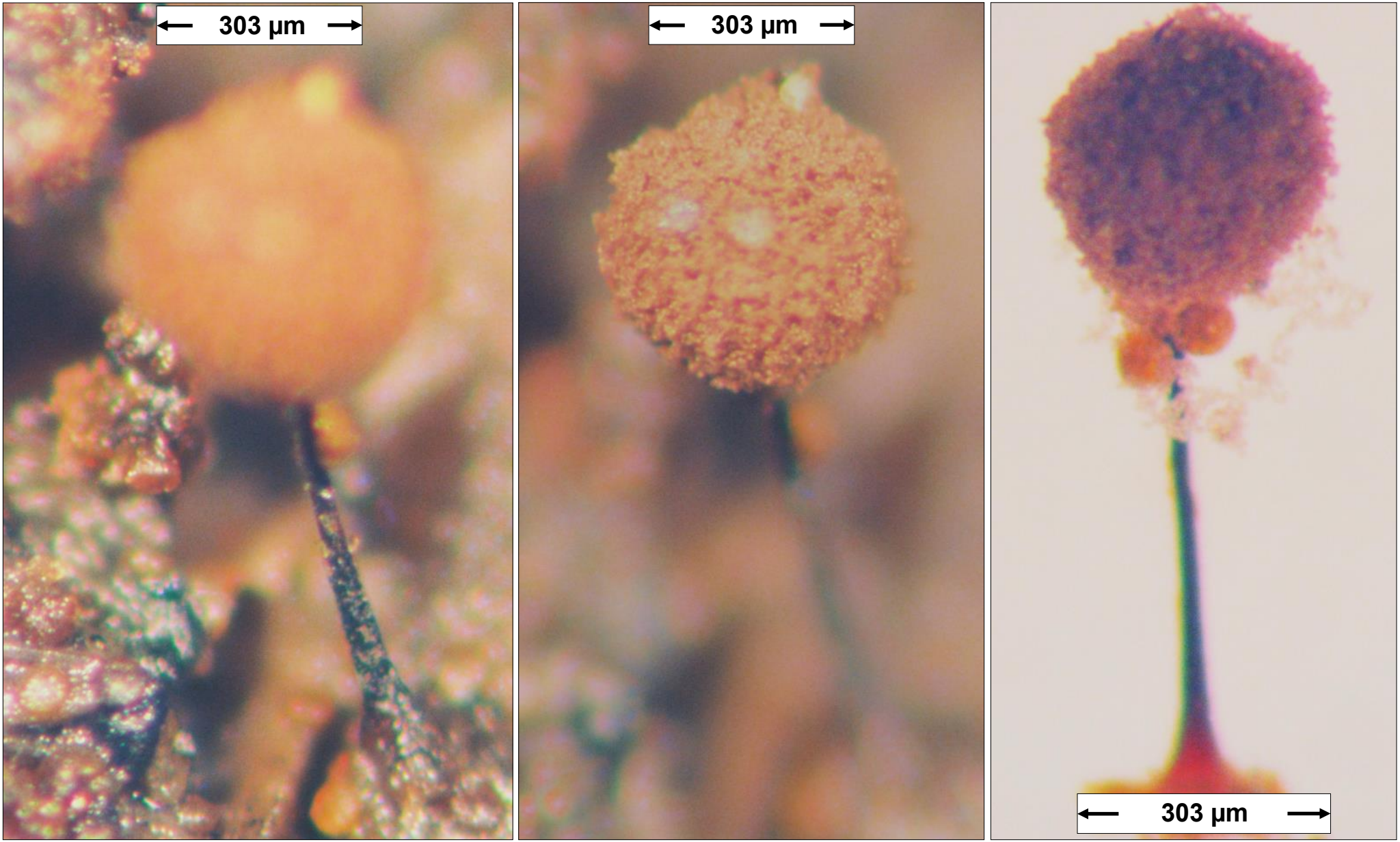
World-wide, *L. arcyrionema* is probably the most common species in the genus. Thus, it is interesting that I have never found it in California. The distinctive columella, branching at the apex to form the primary branches of the capillitium and the spores with clusters of larger, darker warts are two important characteristics of this species.

Stephenson, S.L. 2003. Myxomycetes of New Zealand. Fungi of New Zealand. Volume 3. Fungal Diversity Research Series 11: 1–238. Portions of p. 103 reproduced below.

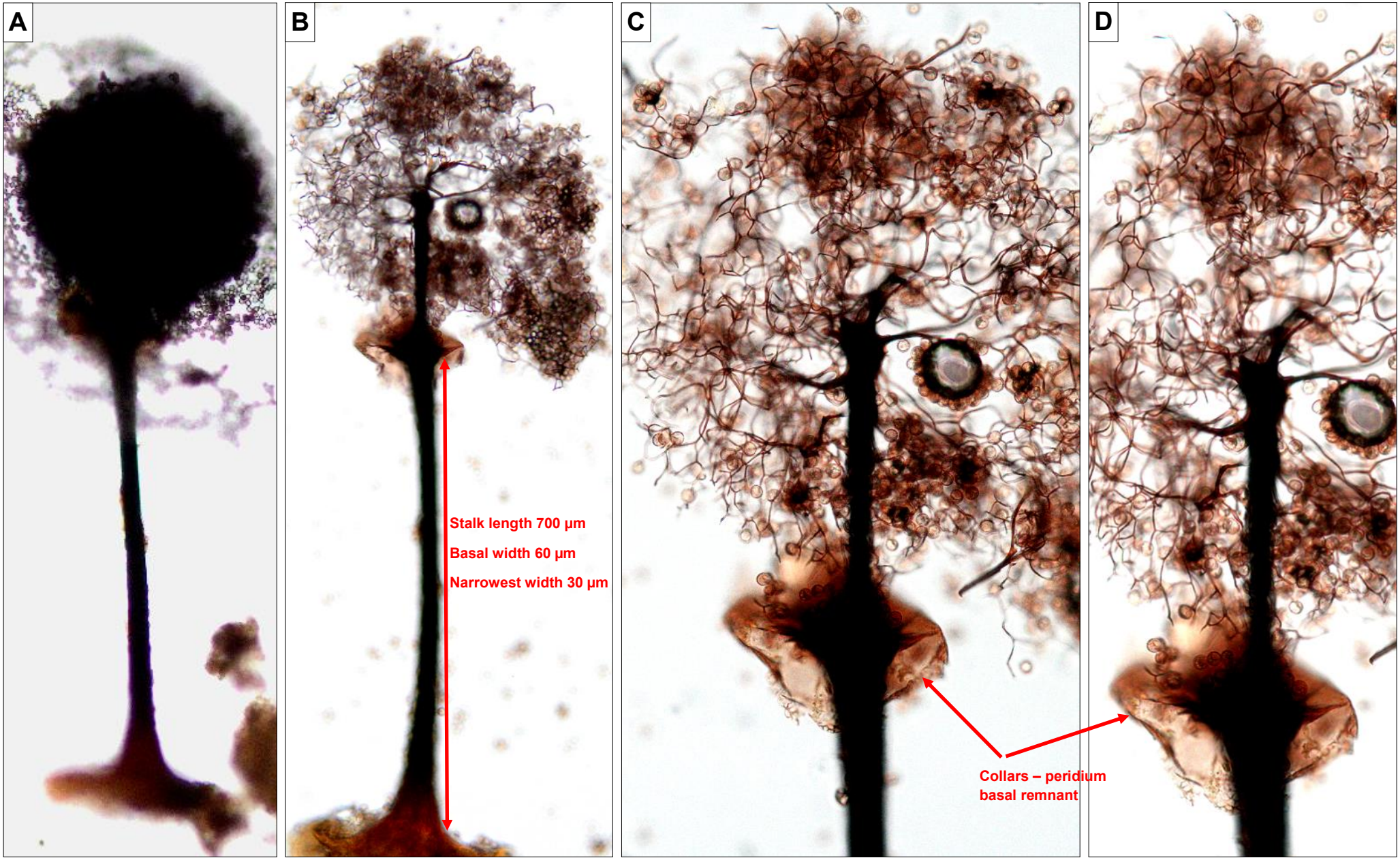
Description: Fruiting body a stalked sporangium, scattered or gregarious, 1.0–1.5 mm tall. Sporotheca globose, erect, 0.4–0.6 mm in diameter. Stalk slender, rigid, black, two-thirds to three-quarters the total height. Hypothallus ranging from inconspicuous to contiguous for a group of sporangia, membranous, colourless to brown. Peridium persistent, membranous, silvery grey or iridescent bronze, persisting at the base of the sporotheca as a collar after the upper portion has broken away, dehiscence irregular. Columella cylindrical, slender, attaining one-third to one-half the height of the sporotheca and there dividing into two or more thick branches that by further division give rise to capillitium. Capillitium dense, with curled branches, these anastomosing and often leaving few free ends. Spores black in mass, violaceous grey by transmitted light, minutely punctate, sometimes with darker clusters, 7–9 µm in diameter. Plasmodium watery white.
Habitat: Decaying wood; less commonly occurring on leaf litter and other types of plant debris.
Distribution: Reported as cosmopolitan by Martin & Alexopoulos (1969) but apparently absent at high latitudes (Stephenson et al. 2000). Not reported in print as occurring in New Zealand but recorded from Wellington.
Notes: *Collaria arcyrionema* can be recognised by the combination of a silvery peridium and an intricate, coiled capillitium. This species is listed as *Lamproderma arcyrionema* in all but the most recent treatments of the myxomycetes.



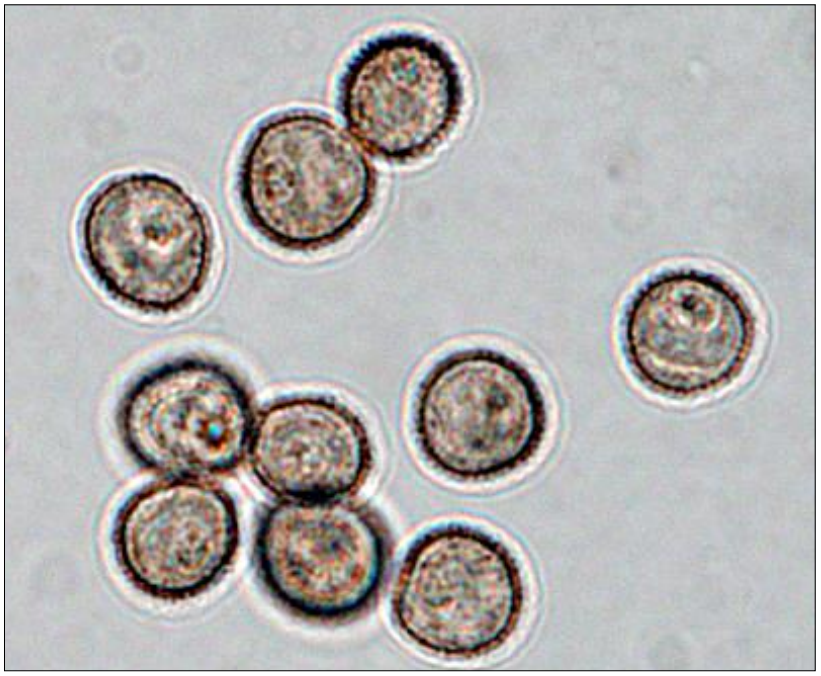
SM96. In-situ photo of a *Collaria arcyrionema* fruiting body on the hare dung taken after 129 days in a moist incubation chamber. The yellowish sporotheca seen here was brownish when observed at lower magnifications on the dung. I believe that the thousands of small arrowed bodies seen here and elsewhere on the dung were undeveloped ascomata of *Sporormiella australis* [see *S. australis* PDD 124530 (= AEB 1379)].



SM96. Left 2 photos: In-situ different-focus views of the same fruiting body emphasizing the black stalk & the sporotheca resp. Right photo: Another fruiting body, water slide mount, no coverslip (note undeveloped *Sporormiella australis* ascomata attached to the uppermost stalk (arrowed on previous page).



SM96. A–B. Whole fruiting body, water no coverslip, X10 & X20 objectives resp. C–D. Sporotheca (peridium dehiscent leaving basal collar, columella, capillitium & spores), SMF mount and X40 objective.



SM96. Left photo: uppermost columella and apical capillitium, SMF, X40 obj. Other photos: spores in SMF X100 obj. globose, verruculose (7–)8–9(–12) µm.

SM96. Left photo: Stalk fragment, SMF slide mount emphasizing the stalk's longitudinal fibrillose makeup. The collapsed collar at the sporotheca base is arrowed. Right photo: Asci and ascospores of *Sporormiella australis* from the same slide mount as the stalk fragment. This ascomycete was numerous on all the hare pellets in the moist incubation chamber.