***Physarum compressum* Alb. & Schwein. SM94 (= PDD 120015) – a good match**

Collected: 3 January 2022

Substrate: dead fallen frond of nīkau palm (*Rhopalostylis sapida*)

Collection site: residential bush area, Kelson, Lower Hutt

Collector & identifier: Dan Mahoney

Voucher materials: Dried herbarium specimen [SM94 (= PDD 120015)] accompanied by 2 Shears mounting fluid (SMF) microscope slides; in-situ photos of fruiting bodies under a Zeiss MC 80 dissecting scope and digital photos of microscopic detail using an Olympus BX51 compound scope (with DP25 camera); during a problem with the DP25 camera software, some photos was taken directly by using my Samsung Galaxy A70 smartphone camera. One Olympus BX51 X10 eye-piece was replaced with a X10 Gosky microscope eyepiece whose adaptor held my smartphone; Dan's brief comments.

Brief comments: The sporothecae, as the species epithet emphasizes, were variously compressed. Sporothecae peridia were thin, single-layered and coated with numerous variously sized and shaped calcareous bodies. Its capillitium consisted of white lime nodes of various shapes and sizes interconnected by hyaline threads, portions of which were sometimes membranous. Stalks were short, stout and tapering with an outer white calcareous, strongly plicate-furrowed coating and a brownish-yellow 'refuse-filled' inner filling. Spores were globose and distinctly spinose/warty. No columella or pseudocolumella was observed. Measurements accompany the photos and photo legends.

References consulted:

Lister, G. 1925. A Monograph of the Mycetozoa. A Descriptive Catalogue of the Species in the Herbarium of the British Museum. Edn 3. 296 pp., 222 tab. London.

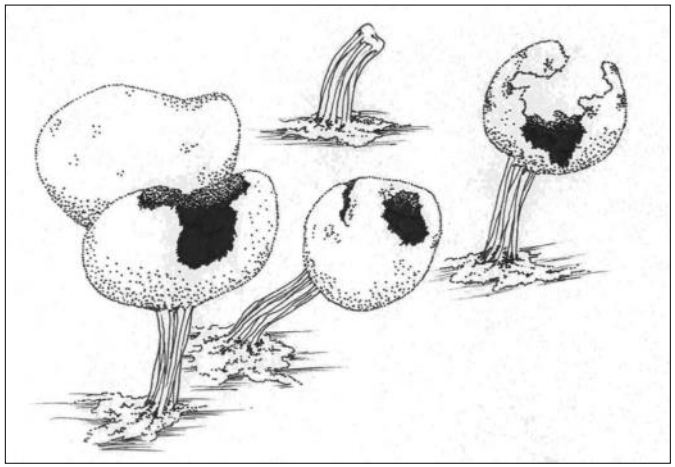
Martin, G.W. & Alexopoulos, C.J. 1969. The Myxomycetes. The University of Iowa Press, Iowa City. 1–561.

Stephenson, S.L. 2003. The Fungi of New Zealand Volume 3: Myxomycetes of New Zealand. Fungal Diversity Research Series 11: 1-238.

Stephenson's online 'https://virtualmycota.landcareresearch.co.nz › webforms' for *Physarum compressum* is reproduced on the next page.

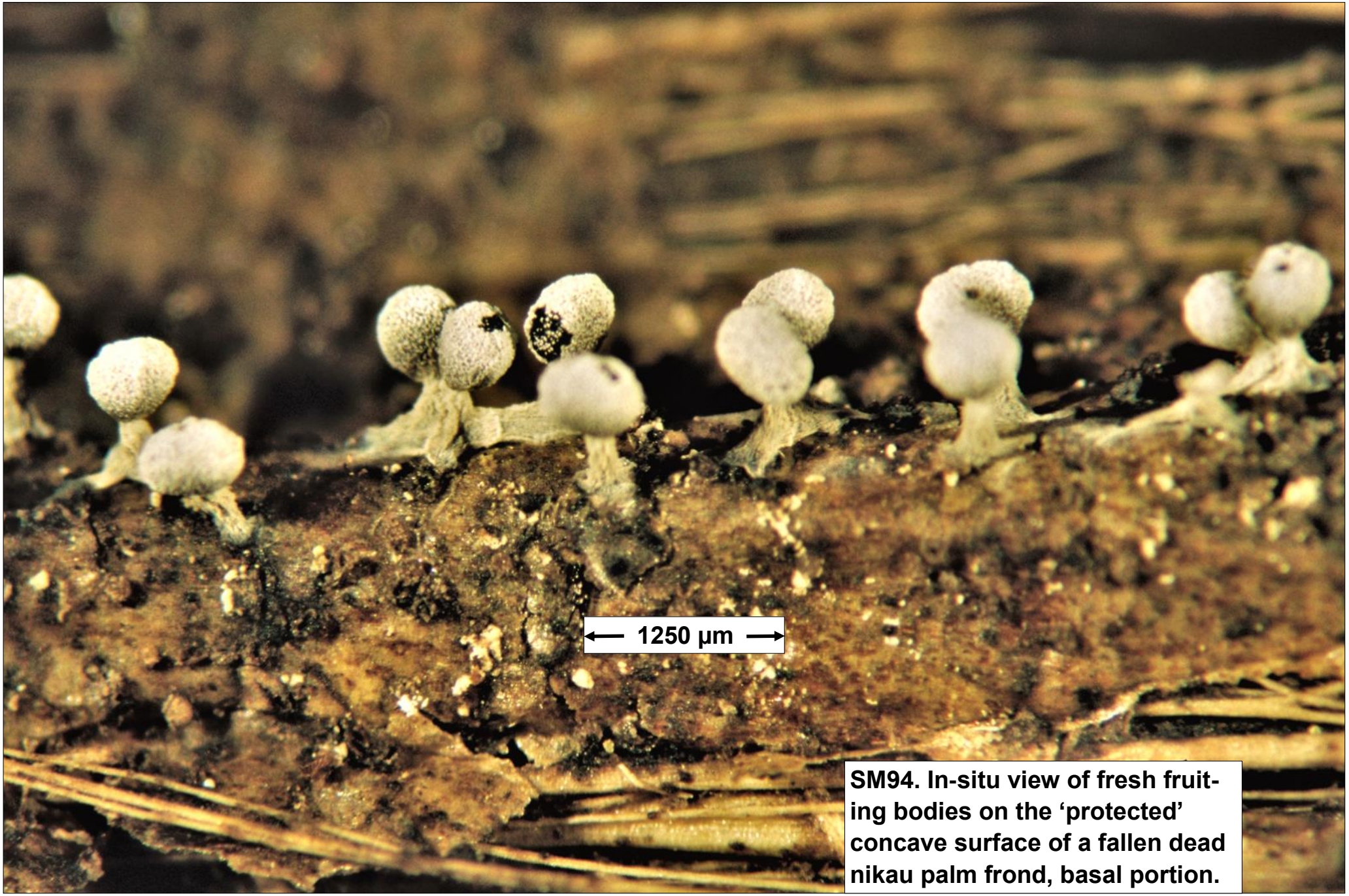
Physarum compressum

Synonym: *Didymium radiatum*
Biostatus: Present in region - Indigenous. Non endemic



Caption: Sporangia of *Physarum compressum*. The two on the left are about 1.2 mm tall.
Owner: S.L. Stephenson

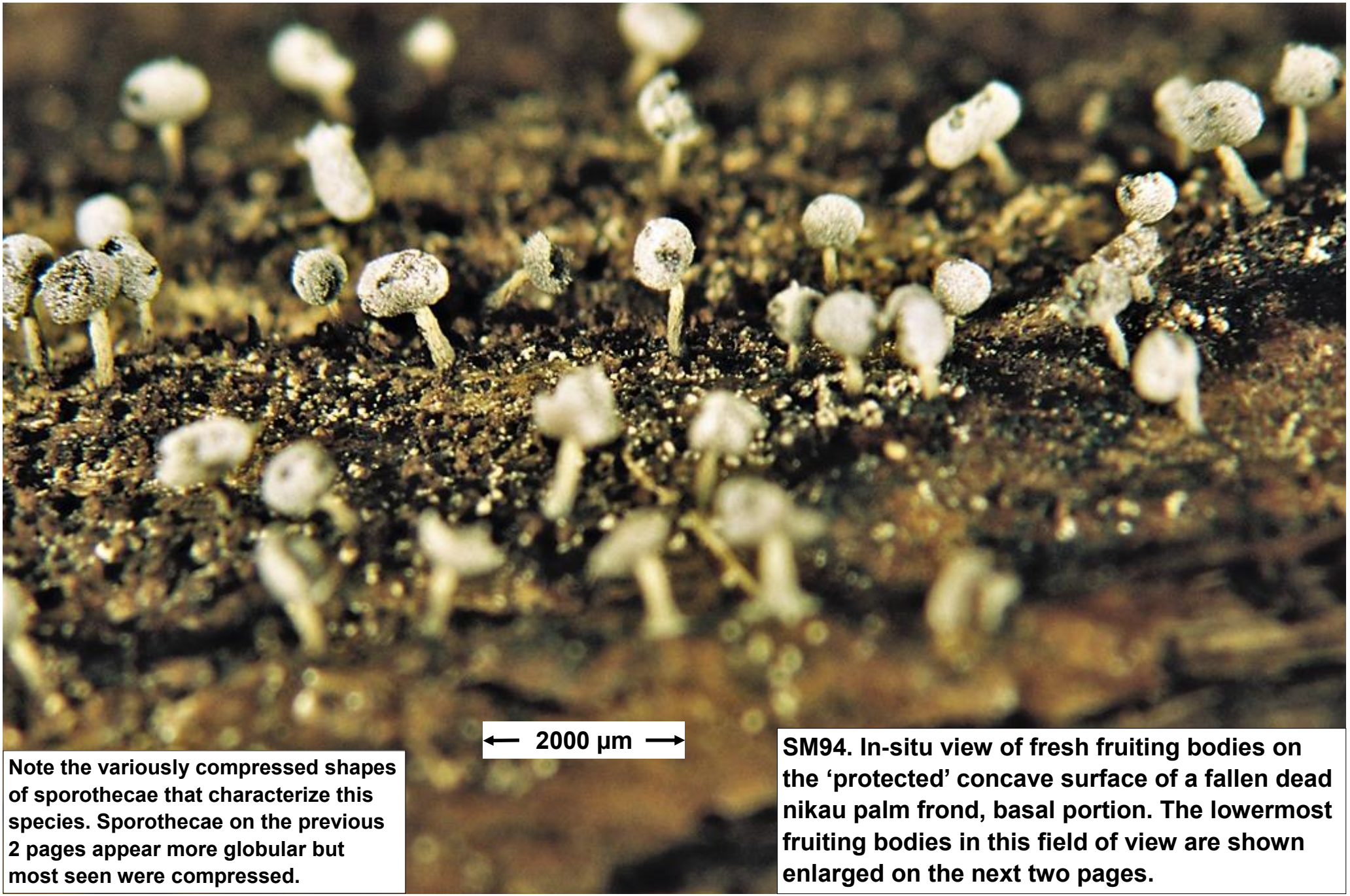
Description: Fruiting body a stalked (or less commonly sessile) sporangium, scattered or gregarious, up to 1.5 mm tall. Sporotheca fan shaped, compressed globose, compressed reniform, varying to lobate or plasmodiocarpous, 0.8–1.5 mm in greatest diameter. Stalk, when present, short, stout, sulcate, dark brown or frosted with lime. Hypothallus discoid to irregular, membranous, colourless to dark grey or brown. Peridium consisting of a single layer, thin, calcareous, white or cinereous, squamulose, opening by an apical cleft or irregularly. Capillitium rather loose, consisting of white lime nodes, these variable in size and shape. Spores black in mass, purplish brown by transmitted light, warted, the warts sometimes irregularly distributed, 10.0–12.5 µm in diameter. Plasmodium greyish white.
Habitat: Dead leaves and other types of plant debris.
Distribution: Considered as cosmopolitan by Martin & Alexopoulos (1969) but probably most abundant in the tropics, where it is particularly common in aerial microhabitats. First reported (as *Didymium radiatum*) from New Zealand by Massee (1892) but without naming a specific locality. Known from Auckland, Coromandel, Nelson, South Canterbury (Lister & Lister 1905), and the Chatham Islands.
Notes: Typical fruitings of this species are easily recognised by the laterally compressed, more or less fan-shaped to reniform sporotheca. However, sessile forms are encountered occasionally, and these are more difficult to identify.



SM94. In-situ view of fresh fruiting bodies on the 'protected' concave surface of a fallen dead nikau palm frond, basal portion.

SM94. Fresh fruiting bodies from the field of view on the previous page. However, this photo was taken directly by using my smartphone camera. The X10 eyepiece was replaced with the X10 Gosky microscope eyepiece adaptor which held my smartphone. Note the white lime on the sporotheca peridium and the relatively stout, calcareous plicate-furrowed stalks.

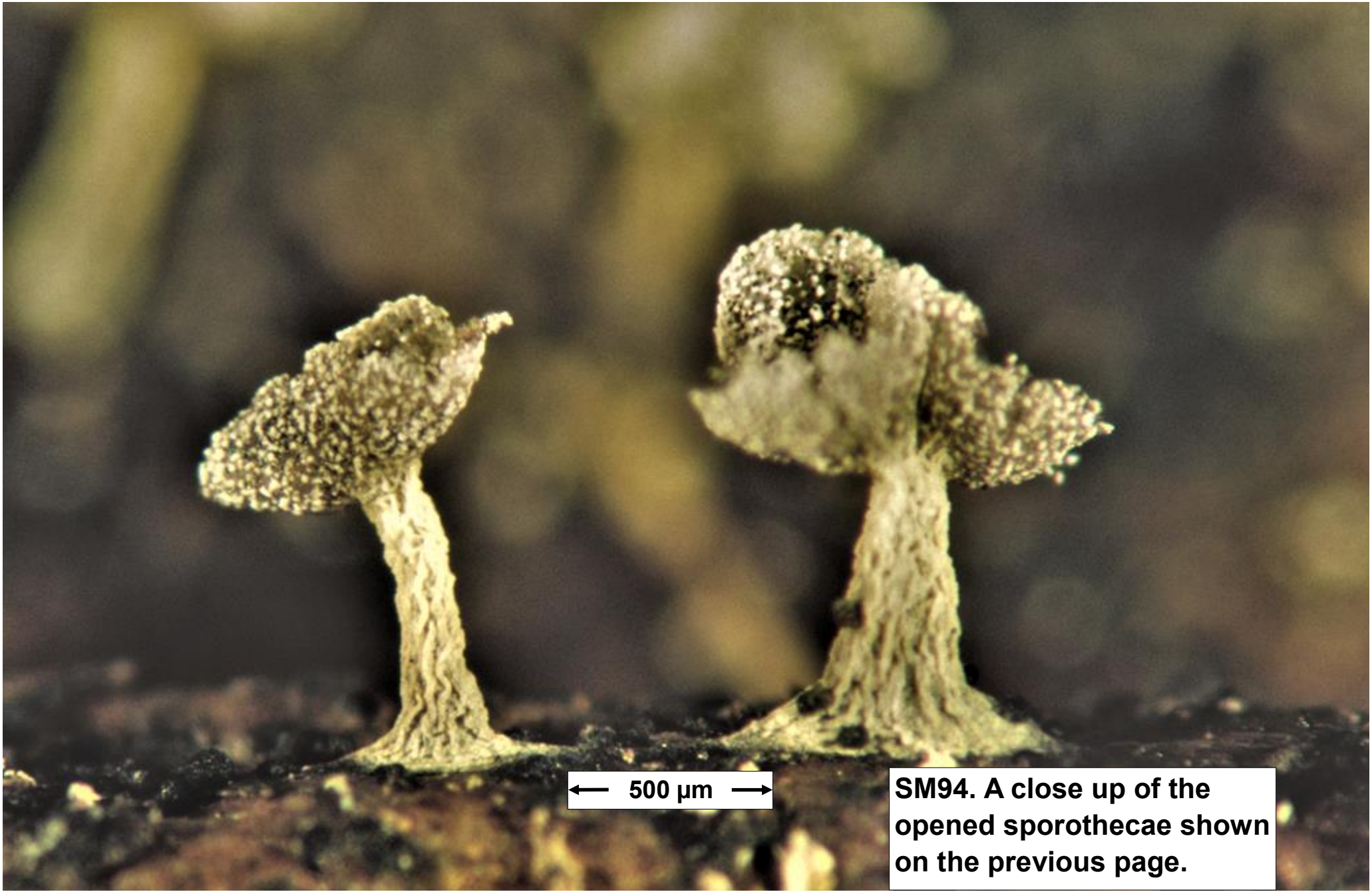
SM94. Fresh fruiting body. Like those fruiting bodies on the previous page, this photo was taken directly by using my smartphone camera. The X10 eyepiece was replaced with the X10 Gosky microscope eyepiece adaptor which held my smartphone. Note the white lime on the sporotheca peridium and the relatively stout, calcareous plicate-furrowed stalk.



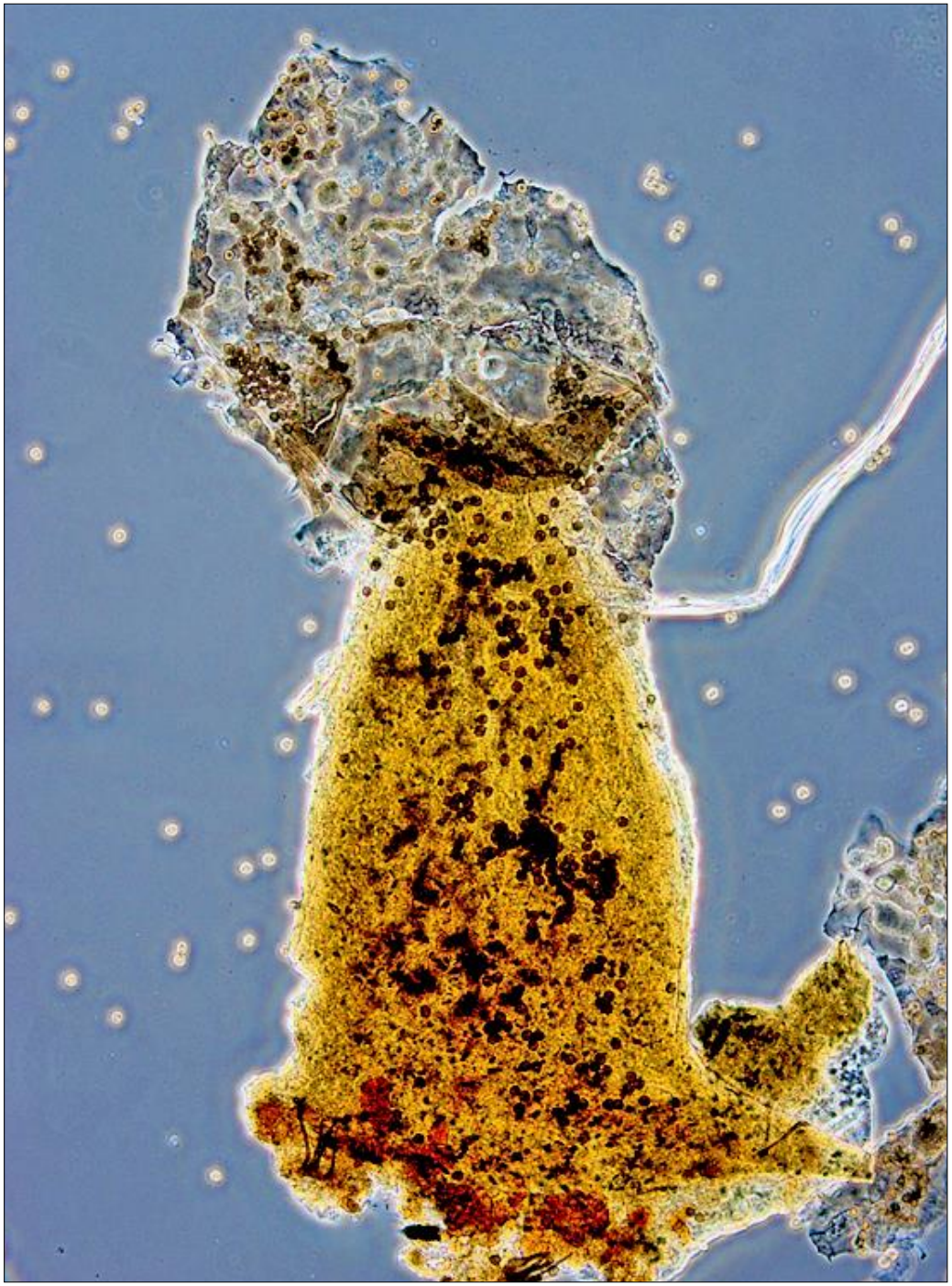
Note the variously compressed shapes of sporothecae that characterize this species. Sporothecae on the previous 2 pages appear more globular but most seen were compressed.

SM94. In-situ view of fresh fruiting bodies on the 'protected' concave surface of a fallen dead nikau palm frond, basal portion. The lowermost fruiting bodies in this field of view are shown enlarged on the next two pages.

SM94. A close up of the lowermost fruiting bodies shown on the previous page. These opened sporothecae have shed most of their spores.

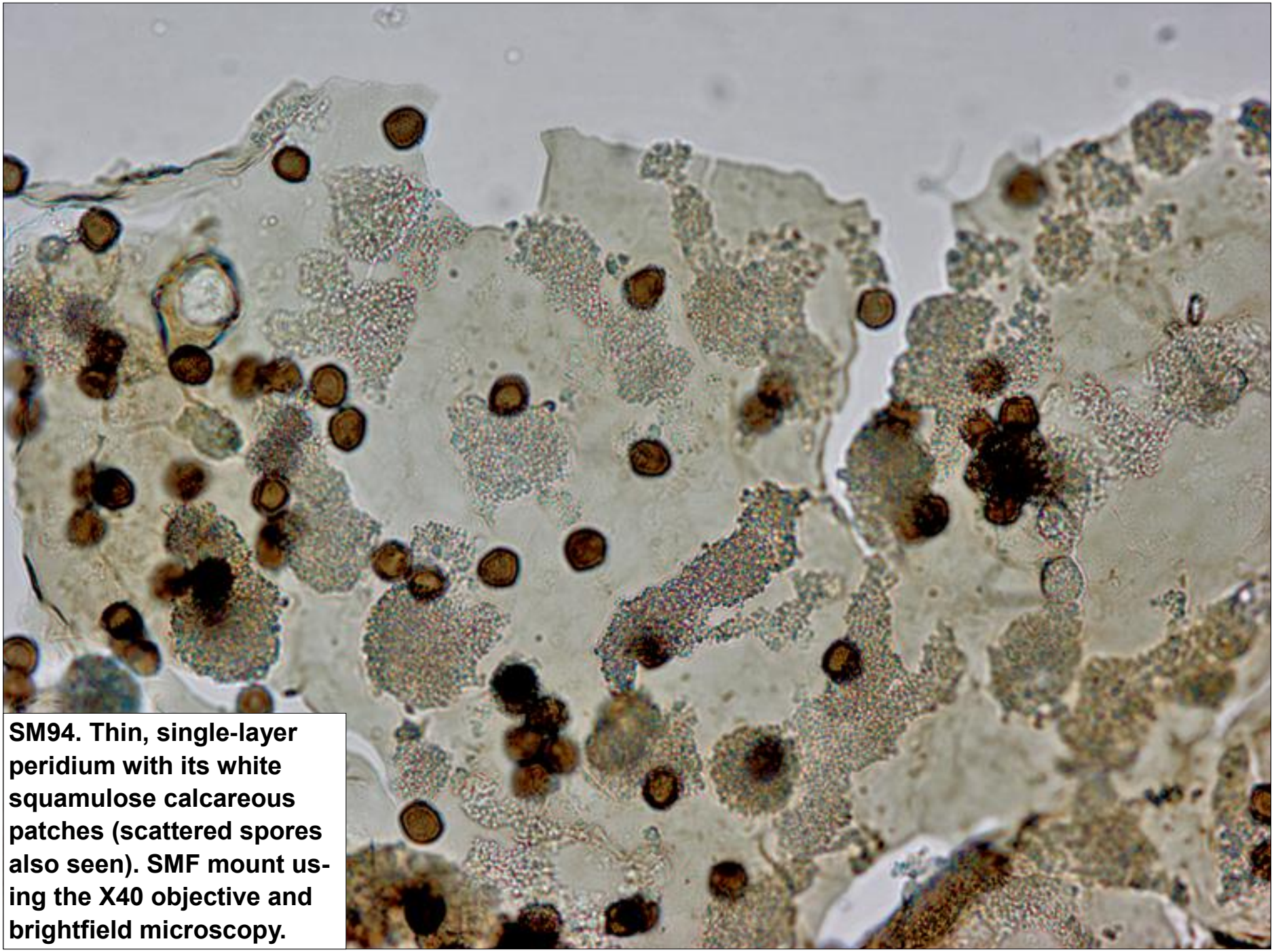


SM94. A close up of the opened sporothecae shown on the previous page.



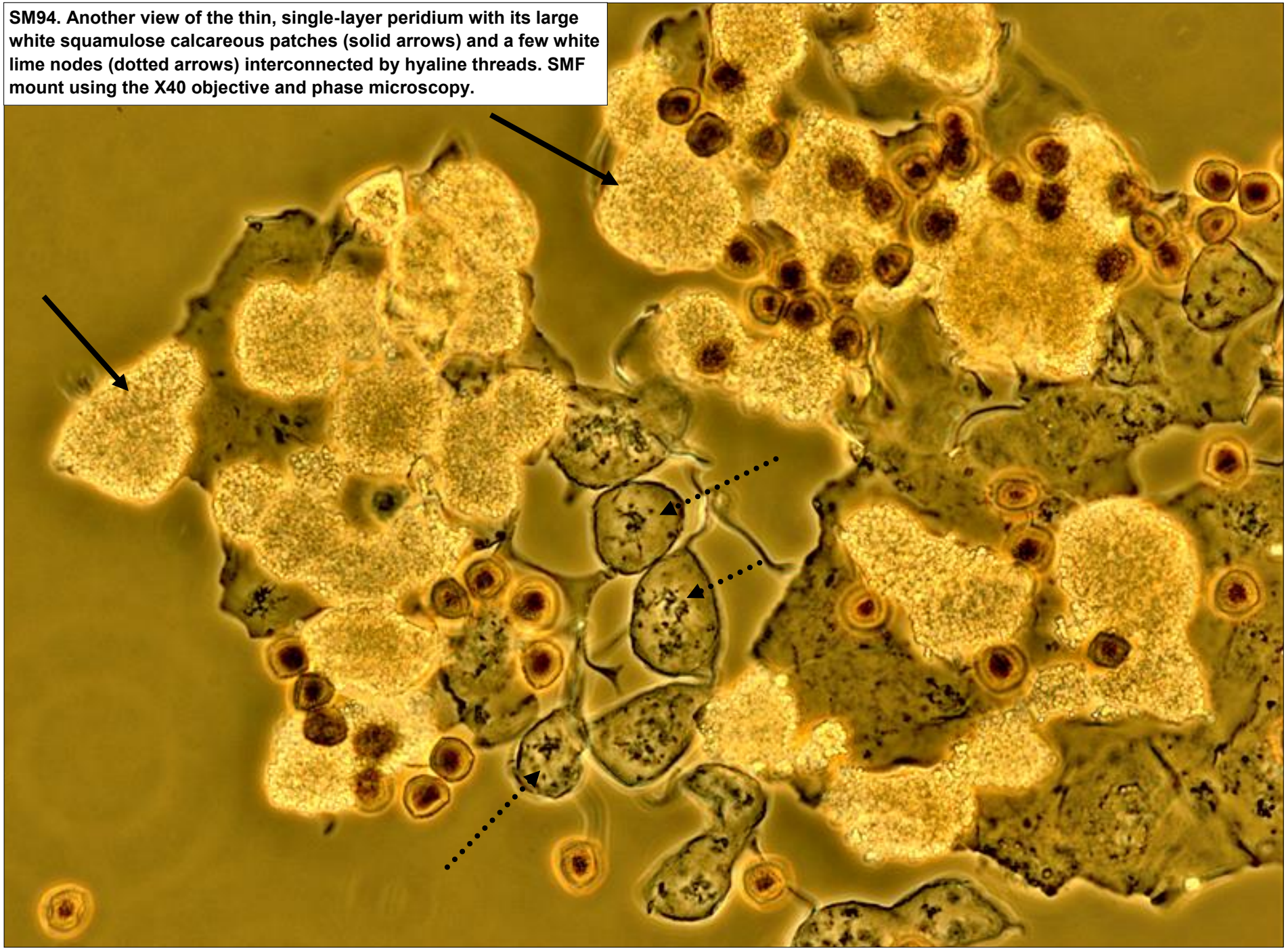
SM94. Stalk view from a SMF mount using the X10 objective and phase microscopy. The relatively stout, slightly tapering stalk has a white calcareous outer coat and a brownish-yellow interior.

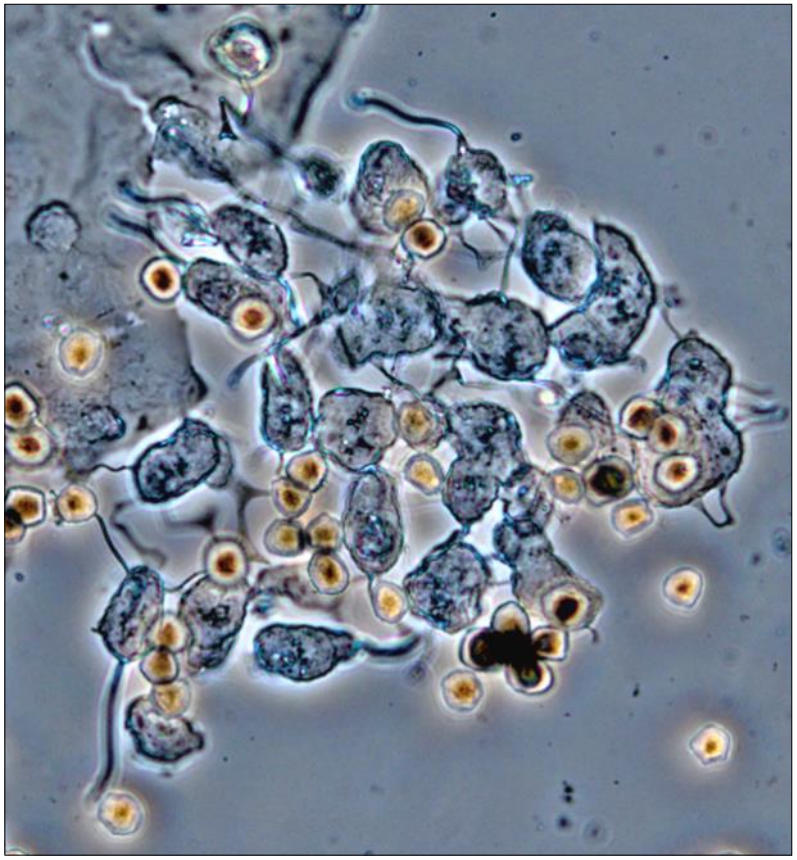
SM94. In-situ overhead view of the occasional opening of the sporotheca by a circumscissle break in the peridium. Stephenson (2003) & Martin & Alexopoulos (1969) refer to this as "opening by an apical cleft". I also observed more irregular openings.



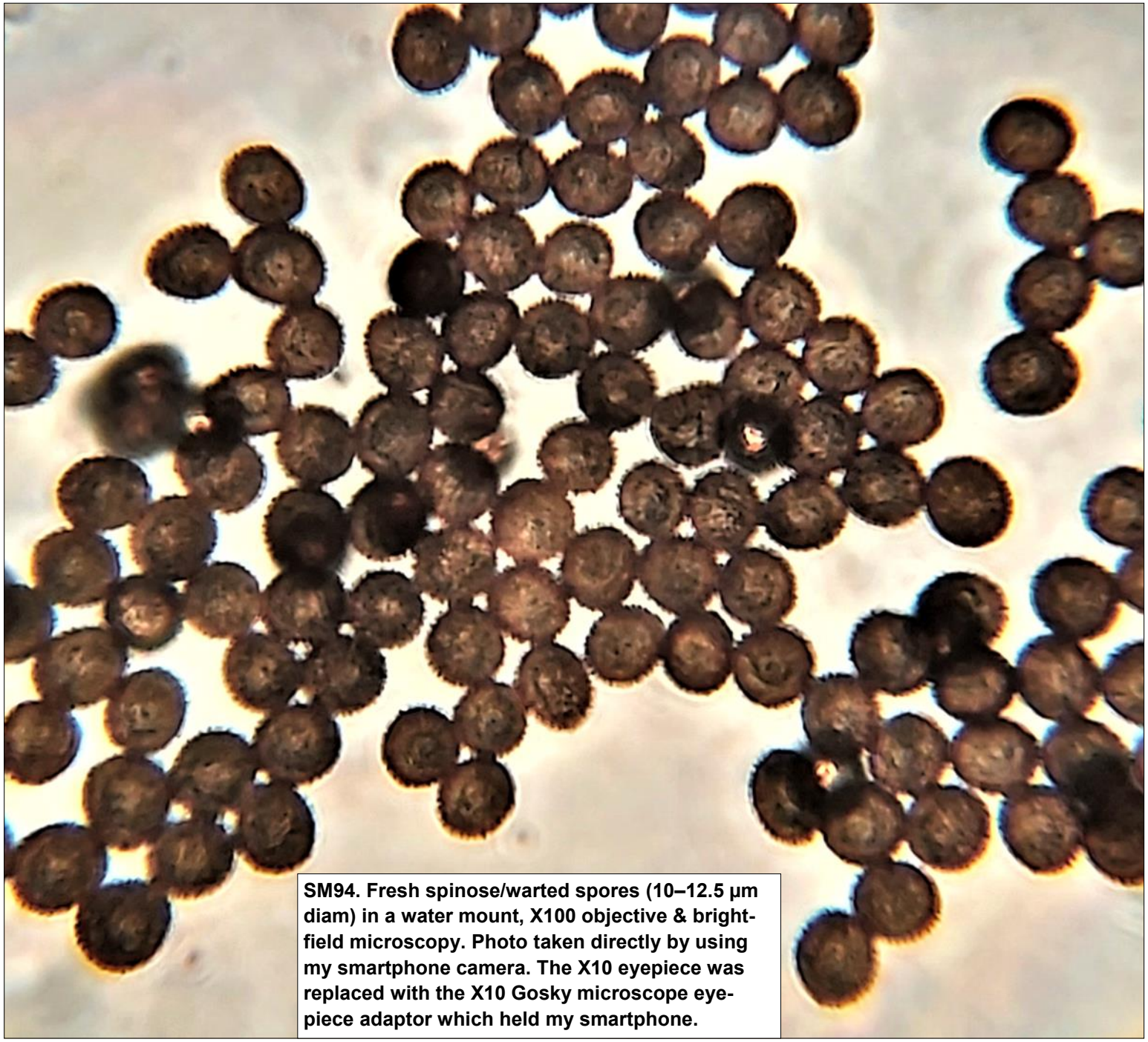
SM94. Thin, single-layer peridium with its white squamulose calcareous patches (scattered spores also seen). SMF mount using the X40 objective and brightfield microscopy.

SM94. Another view of the thin, single-layer peridium with its large white squamulose calcareous patches (solid arrows) and a few white lime nodes (dotted arrows) interconnected by hyaline threads. SMF mount using the X40 objective and phase microscopy.





SM94. Variously sized and shaped white lime nodes interconnected by hyaline threads. Photos resized to fit the plate. Upper left photo taken using the X20 objective (showing a portion of the thin peridium); other two using the X40 obj. All from a SMF mount using phase microscopy.



SM94. Fresh spinose/warted spores (10–12.5 µm diam) in a water mount, X100 objective & bright-field microscopy. Photo taken directly by using my smartphone camera. The X10 eyepiece was replaced with the X10 Gosky microscope eye-piece adaptor which held my smartphone.