



A, B. Sporocarps, habit, closed and open, showing colour variation (bars = 1 mm). C. Spores (bar = 10 µm).
[Photographs: A. Michaud]

Physarum plicatum Nann.-Bremek. & Y. Yamam., *Proceedings of the Koninklijke Nederlandse Akademie van Wetenschappen Series C, Biological and Medical Sciences* **93**(3): 284 (1990). [*IndexFungorum* 134224; *Physaraceae, Physarales*]

Diagnostic features. Distinguished from *Physarum lakhanpalii* Nann.-Bremek. & Y. Yamam. which has spores aggregated in clusters; from *P. hongkongense* Chao H. Chung and *P. bogoriense* Racib. which both have three-layered peridia; from *P. superbum* Hagelst. and *P. serpula* Morgan which have rugose plasmodiocarps without longitudinal folds.

On natural substratum. *Plasmodium* appearance not known. *Hypothallus* membranous, transparent, shiny but inconspicuous. *Sporocarps* elongate plasmodiocarps, branched, solitary or scattered, slightly depressed, cylindric or somewhat flattened. Plasmodiocarps c. 0.5 mm wide and 0.1 mm high, up to 12 mm long, yellow, orange-yellow, greenish yellow, greyish yellow, smooth except for irregular, ± longitudinal wrinkles or folds above, ± reticulate. *Stalk* absent. *Peridium* inconspicuously double, pale yellow, membranous, thin,

the outer layer forming irregular ± longitudinal, ridge-like, brighter yellow, limeless pleats, holding white lime globules between these pleats, the inner layer pale or colourless, adherent. Dehiscence irregular from above, longitudinally. *Capillitium* a very dense, nearly colourless net with many limeless axils and numerous small, white, rounded or angular, rarely branched lime nodes. *Columella* absent. *Spores* not forming clusters, pale brown *en masse*, very pale brown in transmitted light with an even paler germ pore, 7–8.5(–9.5) µm diam., densely verruculose and with inconspicuous groups of denser wartlets.

ASSOCIATED ORGANISMS & SUBSTRATA: **Plantae.** *Cinnamomum verum* J. Presl (leaf); *Deckenia nobilis* H. Wendl. ex Seem. (leaf); *Dillenia ferruginea* (Baill.) Gilg (leaf); *Pandanus balfourii* Martelli (leaf); *Plantae* indet. (leaf). **Associated organism of type specimen.** *Plantae* indet. [as ‘dead leaf’].

INTERACTIONS & HABITATS: Most information about this species is based on sporocarps and spores (the dispersal phase), and observed associations with other organisms usually only indicate the physical substratum on which sporocarps form. Other observations are rare, particularly of trophic phases (myxamoebae and swarm cells [individual haploid amoeba-like cells], and plasmodia [multi-nucleate, diploid, and often extensive cytoplasm]), and dormant phases (microcysts and sclerotia). As a result, very little is known about nutrition and interactions beyond broad statements that myxomycetes feed on living bacteria and fungi, and on non-living organic material (MARTIN & ALEXOPOULOS, 1969). This species has been recorded from dead leaves. Nothing is known about the habitats in which it occurs. Beyond what is known generally about the nutrition of *Physarum*, there is no information about any specific associations with animals, fungi or micro-organisms, and almost nothing with plants.

GEOGRAPHICAL DISTRIBUTION: AFRICA: Equatorial Guinea. ASIA: Japan, Nepal, Taiwan. INDIAN OCEAN: Seychelles.
Warm-temperate to tropical. Apparently native throughout its known range. Records up to 600 m above sea level in Equatorial Guinea.

ECONOMIC IMPACTS: No evaluation has been made of any possible positive economic impact of this fungus (e.g. as a recycler, as a source of useful products, as a provider of checks and balances within its ecosystem, etc.). No reports of negative economic impacts have been found.

INFRASPECIFIC VARIATION: No subspecific taxa have been described [*SpeciesFungorum*, accessed 22 August 2017].

DISPERSAL & TRANSMISSION: Primarily by airborne spores, particularly for longer distances; some local dispersal may also occur by movement of myxamoebae and plasmodia.

CONSERVATION STATUS: **Previous evaluations.** None. **Information base.** About 50 records (specimens, databases and bibliographic sources combined, excluding duplicates) from at least June 1968 to June 2016, with observations in June, July, August and September. **Estimated extent of occurrence** [calculated using <http://geocat.kew.org>]. Well over 3.5 million km² (Africa: insufficient data; Asia: 3.5 million km²). **Estimated area of occupancy** [calculated using <http://geocat.kew.org>]. Over 20 km². The method for estimating area of occupancy has produced an artificially low figure. The species is likely to be under-recorded, despite the admirable and well-organized enthusiasm of often amateur myxomycete experts, because compared with recording of flowering plants and vertebrates, so few people have the skills to search for and identify it. **Threats.** Insufficient information to enable threats to be identified. **Population trend.** Not known. Of datable records, c. 0% are pre-1961, 75% post-1960 but pre-2001, and 25% post-2000. **Evaluation.** Using IUCN criteria (IUCN SPECIES SURVIVAL COMMISSION. 2006 *IUCN Red List of Threatened Species* [www.iucnredlist.org]. Downloaded on 15 May 2006), the species is assessed globally as Data Deficient. **In situ conservation actions.** None noted. **Ex situ conservation actions.** *Physarum* species grow readily in culture and, using simple techniques, can be induced to sporulate. There are, however, no living strains of this species listed by the StrainInfo website [www.straininfo.net, accessed 4 August 2017]. Two partial nucleotide sequences of small subunit ribosomal RNA were found in a search of the NCBI GenBank database [www.ncbi.nlm.nih.gov, accessed 13 August 2017].

NOTES: For further help with identification, the excellent keys provided by POULAIN *ET AL.* (2011) should be consulted.

LITERATURE & OTHER SOURCE MATERIAL: CHEN, S.-L., XU, F., YAN, S.-Z. & LI, Y. Chinese species in the genus *Physarum* and their distribution. *Mycosystema* **31**(6): 846-856 (2012). KAMONO, A. & FUKUI, M. Rapid PCR-based method for detection and differentiation of *Didymiaceae* and *Physaraceae* (myxomycetes) in environmental samples. *Journal of Microbiological Methods* **67**(3): 496-506 (2006). LADO, C. & TEYSSIÈRE, M. Myxomycetes from Equatorial Guinea. *Nova Hedwigia* **67**(3-4): 421-441 (1998). LIU, C.-H., CHANG, J.-H. & YEH, F.-Y. Myxomycetes of Taiwan XXIV. The genus *Physarum*. *Taiwania* **58**(3): 176-188 (2013). MARTIN, G.W. & ALEXOPOULOS, C.J. *The Myxomycetes* (Iowa City: University of Iowa Press): ix, 561 pp. (1969). NANNENGA-BREMEKAMP, N.E. & YAMAMOTO, Y. Two new species and a new variety of myxomycetes from Nepal. *Proceedings of the Koninklijke Nederlandse Akademie van Wetenschappen Series C, Biological and Medical Sciences* **93**(3): 281-286 (1990). POULAIN, M., MEYER, M. & BOZONNET, J. *Les Myxomycètes* (Sevrier, France: Fédération Mycologique et Botanique Dauphiné-Savoie): 2 vols, 568 pp., 544 plates (2011).

Sources additional to those already cited from literature and the internet.

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- *Cybertruffle* [www.cybertruffle.org.uk].
- *Discover Life (myxomycete pages)* [www.discoverlife.org/mp/20q?guide=Myxomycetes].
- *Fungus Conservation Trust CATE2 Database* [www.abfg.org].
- *GBIF* [www.gbif.org].
- *Google* [www.google.co.uk].
- *Landcare Research New Zealand* [<http://nzfungi2.landcareresearch.co.nz>].
- *Mycportal* [www.mycportal.org].
- *Mycotaxon Regional Checklists in Downloadable Format* [www.mycotaxon.com/resources/weblists.html].
- *National Center for Biotechnology Information* [www.ncbi.nlm.nih.gov].
- *Nomen.mycetozoa.com - an online nomenclatural information system of Eumycetozoa* [<http://nomen.mycetozoa.com>].
- *USDA Fungal Databases* [<https://nt.ars-grin.gov/fungalatabases/>].

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