
Mycological Research News¹

This number of Mycological Research News features: In this issue; Ballistospore release captured; and Erratum: Protolichenes vs Proteolichenes.

Eleven papers are included in this part. These include molecular studies on *Glomus*, *Geosmithia*, *Pythium* on *Phragmites*, *Botryosphaeria* synanamorphs on *Eucalyptus*, *Beauveria bassiana*, *Phytophthora megakarya*, and aquatic hyphomycetes. Other contributions address heavy metal damage to *Boletus edulis*, the antimicrobial effects of different *Trichoderma* species, macrofungi associated with *Salix repens*, and the occurrence of zygomycetes on dung.

The following new scientific names are introduced: *Geosmithia fassatae*, *G. langdonii*, *G. obscura*, and *Pythium phragmites* spp. nov.

IN THIS ISSUE

A series of molecular phylogenetic studies starts this issue. Mitochondrial LSU rDNA sequences are reported from the *Glomeromycota* for the first time; these were homogeneous within isolates of different *Glomus* species but showed regions of divergence in the exon sequences between species, *G. intraradices* having two introns in the sequence whilst *G. proliferum* had none (pp. 1315-1322). Unique RAPD patterns and ITS rDNA sequences confirm the recognition of three new *Geosmithia* species, also distinguishable morphologically, and which exhibit habitat specificity (pp. 1323-1336). ITS and *cox II* sequences demonstrate that a *Pythium* isolated from diseased *Phragmites australis* in Germany represents a previously unknown species which shares a common ancestor with the cereal pathogen *Pythium arrhenomanes* (pp. 1337-1346). Four species of *Botryosphaeria* from *Eucalyptus* prove to have synanamorphs in *Dichomera*, although clustering in the *Fusicoccum* anamorph clade based on ITS sequence data (pp. 1347-1363). Inter-simple sequence repeat (ISSR) markers reveal considerable inter- and intraspecific variation amongst *Beauveria bassiana* isolates from different insect hosts and geographical regions, but correlations were with geographic origin rather than the host insect (pp. 1364-1372). In the causal agent of black pod disease of cocoa, *Phytophthora megakarya*, multiple copies of *NEP1* orthologs have been discovered, nine in a single strain, and compared with those of other species; the genome of *P. megakarya* is evidenced as unstable as a result of duplications, inversions, and fused genes (pp. 1373-1385). Studies on the SSU rDNA sequences of 30 aquatic hyphomycetes confirms that their characteristic sigmoid and tetrastrate conidia are a consequence of convergent evolution, the species being dispersed amongst different groups of ascomycetes (pp. 1407-1417)².

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² These three papers are dedicated to John Webster on the occasion of his 80th birthday, and supplement those in the May issue, *Mycological Research* **109** (5).

A second series of papers has an ecological focus. The damaging effects of heavy metals from a zinc smelter in Norway on DNA and lipids in *Boletus edulis* are documented, and correlate with the cadmium, zinc or copper levels in the fruit bodies (pp. 1386-1396). An extensive series of tests on the antimicrobial properties of 24 *Trichoderma* isolates, selected to represent different sections in the genus, is reported; those from sect. *Pachybasium* had the highest activity and ones from sect. *Longibrachiatum* the lowest (pp. 1397-1406). The fungi, especially agarics, associated with the creeping willow, *Salix repens*, in Orkney and Shetland have been surveyed, and found to include both an arctic-alpine and a lowland frondose woodland element, amongst which were many species of conservation importance (pp. 1418-1424)². Finally, studies of the occurrence of zygomycetes belonging to *Chaetocladium*, *Piptocephalis*, and *Syncephalis* on over 800 worldwide dung samples are reported, and suggest these fungi are predominantly temperate (pp. 1424-1428)².

BALLISTOSPORE RELEASE CAPTURED

Ultra high-speed video recordings at speeds of up to 100 000 frames s⁻¹ by Pringle *et al.* (2005) have captured the release of ballistospores of the basidiomycete yeast *Iterospora perplexans*, and prove that discharge does involve the coalescence of Buller's drop and the spore. The release of surface tension at coalescence provides the energy and directional movement to propel the drop and spore away from the sterigma and the fungus, with an initial acceleration of in excess of 10 000 g. This video footage provides visual confirmation of the surface tension catapult hypothesis of basidiospore discharge proposed by Turner & Webster (1991). Mannitols and hexoses in the drop and fluid on the spore are implicated in the condensation of water (Webster *et al.* 1995), while hydrophobicity and micromorphology of parts of the spore wall are considered to maintain a gap between the drop and liquid on the spore until a critical size is reached (Money 1998).

Money, N. P. (1998) More g's than the Space Shuttle: ballistospore discharge. *Mycologia* **90**: 547.

Pringle, A., Patek, S. N., Fischer, M., Stolze, J. & Money, N. P. (2005) The captured launch of a ballistospore. *Mycologia* **97**: 866-871.

Turner, J. C. R. & Webster, J. (1991) Mass and momentum transfer on the small scale: how do mushrooms shed their spores? *Chemical Engineering Science* **46**: 1145-1149.

Webster, J., Davey, R. A., Smirnoff, N., Fricke, W., Hinde, P., Tomos, D. & Turner, J. C. R. (1995) Mannitol and hexoses are components of Buller's drop. *Mycological Research* **99**: 833-838.

Erratum

PROTOLICHENES VS PROTEOLICHENES

In the News item 'The origin of ascomycetes: the Protolichenes Hypothesis' (*Mycological Research* **109** (9): 963, September 2005) issue, the newly coined term 'Protolichenes' was inadvertently misspelled as 'Proteolichenes'. The correct spelling is 'Protolichenes'. *Mycological Research* apologizes for any confusion this error might have caused.