

EMERGING LINEAGES, GENERA AND ECOLOGICAL PATTERNS IN THE *OPHIOSTOMATALES*

Z. Wilhelm de Beer and Michael J. Wingfield

Department of Microbiology and Plant Pathology, Forestry and Agricultural Research Institute (FABI), University of Pretoria, Pretoria 0002, South Africa.

wilhelm.debeer@fabi.up.ac.za

The separation of *Ophiostoma* (*Ophiostomatales*) and *Ceratocystis* (*Microascales*), and the subsequent exclusion of *Kathistes*, *Pyxidiophora* and *Subbaromyces* from the *Ophiostomatales*, left the order represented by the single genus *Ophiostoma*. Recent analyses of sequences for the ribosomal LSU and β -tubulin exon gene regions of 50 *Ophiostoma* species have enabled us to define three distinct phylogenetic lineages supported by morphological features in the *Ophiostomatales*. Generic status has been provided for them. *Ceratocystiopsis* is typified by *Cop. minuta* with falcate ascospores and *Hyalorhinocladiella* anamorphs. *Grosmannia*, with *G. penicillata* as type species, is defined primarily by its *Leptographium* anamorphs. The remaining genus *Ophiostoma* encompasses the largest number of species. *Ophiostoma* species are defined as phylogenetically related to the type species *O. piliferum*, they can have *Sporothrix* and/or *Pesotum* anamorphs, and various ascospore shapes. However, with the addition of species and sequence data for more variable genes, including the ITS regions and β -tubulin introns, monophyletic groups are emerging in *Ophiostoma*, which is clearly a generic aggregate. Species with pillow-shaped ascospores and *Pesotum*-like anamorphs group with *O. ips*. Those with allantoid ascospores, exceptionally long-necked perithecia and *Sporothrix* anamorphs form a distinct group with *O. pluriannulatum*. The type species, *O. piliferum*, also with a *Sporothrix* anamorph, apparently has no close relatives. Unexpectedly, the so-called *O. piceae*-complex, which includes species with both *Pesotum* and *Sporothrix* anamorphs, does not represent a monophyletic lineage and some species with only *Sporothrix* anamorphs group in this complex. The *O. stenoceras* – *S. schenckii* complex of species, most often with white cultures, allantoid to orange section-shaped ascospores, and always with *Sporothrix* anamorphs, also represents a discrete group. As additional species of *Ophiostoma* are being discovered and added to the growing phylogenetic analyses, these groups are becoming increasingly robust. They are also revealing intriguing relationships regarding the evolution and origin of the *Ophiostomatales*.