

BRIEF NOTES ON THE STATUS OF FAMILY HYGROPHORACEAE LOTSY

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Abstract

The current status of family Hygrophoraceae Lotsy is discussed and brief comparisons made with the family Tricholomataceae R. Heim ex Pouzar. Future possible developments with respect to the two families are indicated.

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Introduction

The author has been researching the Australian species of family Hygrophoraceae since 1988 and is currently involved in the preparation of a volume on that family for the *Fungi of Australia* series. As a consequence, any items which suggest that the continued use of the family name of Hygrophoraceae is incorrect are always given serious attention and investigated immediately because they may have repercussions on the research or editorial work presently in progress. Two such items have presented themselves recently and in retrospect they provided the author with an excellent opportunity to investigate more fully the present nomenclatural and taxonomic status of family Hygrophoraceae.

The first item of interest was that the New Zealand LandCare web site had listed family Hygrophoraceae as an invalid name citing ICBN Article 32.1(b) as the reason. This suggested that Lotsy (1907) had possibly not used the correct Latin version of the name as required by the botanical code. The second item occurred in a report on mycologists and bryophytes, where Lepp (2002) made the following statement: '... and the "Hygrophoraceae" (a useful term, even if no longer warranted as a separate family)'. Possible inferences from this statement are either that Hygrophoraceae is no longer accepted as a family because its species have been transferred into other families or that the family itself has been made synonymous with an already existing agaric family. As a result of both of these items, considerable effort was made to ascertain the correct status of the Hygrophoraceae in the accepted taxonomic hierarchy of both the ICBN and the world macrofungal community. The outcomes shed light on various aspects of the botanical code, especially as it applies to conserved names, and also on current trends in genetic analysis of the agaric taxa.

Discussion

The validation of the family name of Hygrophoraceae was rapidly resolved. A facsimile copy of the precise page within the original publication (Lotsy 1907) was obtained and the protologue for the Hygrophoraceae was examined. This confirmed that Lotsy had correctly published his name as 'Hygrophoraceae' together with supporting details in German which is allowed under the rules of the code of nomenclature for family names raised during this earlier period. It has also been discovered that the New Zealand web site was in error (Dr Lindy Cayzer, pers. comm.) and so there can be no doubt that the family name of Hygrophoraceae is validly published. The validity of the family name Hygrophoraceae has also been independently confirmed by several other mycologists either working on the family or macrofungal systematics (D. Boertmann, D.J. Lodge, S. Redhead, pers. comms.).

It is worth noting that confusion over the validity of the name 'Hygrophoraceae' has occurred in the past because Roze (1876) was first to publish the name as 'Hygrophorées'. For this reason, many important publications such as Singer (1986) still use 'Hygrophoraceae Roze' which is incorrect, because Roze used the French ending for

his name. Whilst there is no doubt of Roze's intention, his invalid name (Art. 18.4 & 18 Ex. 7) required validation with the correct Latin ending if it was to be correctly applied and this was eventually done by Lotsy (1907). Similar circumstances have arisen for other families first proposed by Roze, for example 'Mycénées' and 'Tricholomatées'. It remained for Overeem (1926) and Pouzar (1983) to validate each respectively using the criteria of their day.

The present taxonomic status of family Hygrophoraceae is somewhat more fluid and to resolve the second item, considerable discussion has taken place between myself, Dr Jean Lodge and Dr Scott Redhead. Much of the uncertainty is caused by the fact that both the Hygrophoraceae and the Tricholomataceae are known to be polyphyletic and difficult to separate on the basis of their macro-characters. In addition, large scale genetic analysis of the agarics is now taking place for the first time (Moncalvo *et al.* 2002) and considerable changes will occur to the Tricholomataceae (and probably the Hygrophoraceae) although much more work on genetic analysis remains to be done.

Several areas require comment. First, there is a movement to make the Hygrophoraceae synonymous with the Tricholomataceae. This was done by Bas (1990) and also appears to have been done by the latest edition (9th) of the *Dictionary of Fungi*. Unfortunately, the re-validation of the name Tricholomataceae by Pouzar in 1983 is predated by the Hygrophoraceae and so, currently, the synonymy proposed by either Bas or the *Dictionary of Fungi* automatically means that all the taxa in the Tricholomataceae should go into the Hygrophoraceae. This result is not a surprise, it is merely the correct conclusion to be made from strict application of the botanical code: conservation of the Tricholomataceae against the Hygrophoraceae has never been proposed and accepted.

One extremely useful outcome of the discussions noted above is that there is now a proposal being placed which will conserve the Tricholomataceae against the Hygrophoraceae (S. Redhead, pers. comm.). When accepted, this conservation will not alter the validity or use of the Hygrophoraceae; its effect is simply to ensure that if a mycologist considers that the families of the Hygrophoraceae and Tricholomataceae are synonymous, then the name of Tricholomataceae must be used.

Assuming that the family name of Tricholomataceae is conserved against that of Hygrophoraceae, the next step is to consider if the two families should be combined. There is very good reason for stating that this would be a retrograde step. There is no doubt that like family Hygrophoraceae, family Tricholomataceae is polyphyletic if not even more so. Recent gene analysis (Moncalvo *et al.* 2002) indicates that the Tricholomataceae should be split into a number of families and transferal of a polyphyletic family such as the Hygrophoraceae into an even bigger polyphyletic 'muddle' solves nothing. Such a transferal suggests a most undesirable continuation of the very outdated Friesian concept: if a species has white spores then it goes into Tricholomataceae. The genetic analysis of Moncalvo *et al.* (2002) also allows a further very simple conclusion to be made: the two families of Hygrophoraceae and Tricholomataceae are not directly equivalent. Although the recent publication of the 9th edition of the *Dictionary of Fungi* shows the Tricholomataceae and Hygrophoraceae as synonymous, this cannot be the case given the results of the genetic analyses indicated above.

Interestingly, although the results of Moncalvo *et al.* (2002) indicate family Hygrophoraceae is polyphyletic, they also indicate that there is some evidence of a cluster of taxa within the traditional genera of *Hygrophorus* Fr., *Hygrocybe* (Fr.) P. Kumm., *Humidicutis* Singer and *Cuphophyllus* (Donk) Bon which in turn supports the use of family Hygrophoraceae in a restricted sense. If these restricted conditions prove consistent and acceptable systematically, then family Hygrophoraceae will continue to have full application for the foreseeable future. One can only infer that considerable analysis remains before this particular family is understood from a phylogenetic perspective.

Summary

There is little doubt that family Hygrophoraceae as it is currently known will eventually change but direct synonymy with the Tricholomataceae is both unlikely and undesirable. This is because family Tricholomataceae itself is now under complete review and will eventually be split into a series of families that more correctly display the genetic relationships of the taxa. Any changes to family Hygrophoraceae are most unlikely to occur soon and will probably take place in the medium to long-term future. However, two possible outcomes are readily suggested. The first outcome is that family Hygrophoraceae will remain partially intact with some unrelated taxa moved into other families as well as other taxa possibly transferred into it. The second (and

probably less likely) outcome is that family Hygrophoraceae will completely disappear because all of its taxa have been dispersed amongst other families. Exactly what will happen cannot be precisely defined because considerable uncertainty as to the relationships between the present taxa of the Hygrophoraceae and other families of macrofungi still remains. For the moment, family Hygrophoraceae continues to be the best and most convenient way of handling the taxa traditionally placed within it. The family name of Hygrophoraceae is fully valid and can be used without any detriment either to the mycologist or the currently accepted world taxonomic hierarchy. Even when the Tricholomataceae is conserved against the Hygrophoraceae, the validity and use of the Hygrophoraceae continue to be unimpeded unless the particular mycologist wishes to combine the two families. To quote Scott Redhead: 'It is premature to announce the death of Hygrophoraceae and the Tricholomataceae is itself not wholly resolved'.

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