

# The nomenclatural status of the genus *Tubifera* (*Myxomycetes*)

Carlos Lado

Real Jardín Botánico de Madrid, Consejo Superior de Investigaciones Científicas (CSIC), Plaza de Murillo 2, 28014 Madrid, Spain; lado@rjb.csic.es

**Abstract** *Tubifera* J.F. Gmel. 1792 is a genus of *Myxomycetes* that has been used in floras and monographs since the 18th century. The name became controversial when it appeared that “*Tubulifera* Jacq.” 1779 was a priorable name for the genus. This paper presents a history of the controversy, interprets Jacquin’s original text, and offers reasons why “*Tubulifera*” cannot be regarded as a validly published generic name. The name *Tubifera* J.F. Gmel. is thus shown to remain the correct name for the genus.

**Keywords** *Myxomycetes*; Nomenclature; *Tubifera*; *Tubulifera*; *Tubulina*

## ■ INTRODUCTION

*Tubifera* J.F. Gmel. 1792 is one of the better known myxomycete genera. Members of the genus are readily observed in nature and easy to recognize, and good, precise iconography of some species has existed since the 18th century (Martin & Alexopoulos, 1969). At present the genus contains eight species (Lado, 2001, 2005–2010), of which two are distributed worldwide and six are restricted to the tropics or the temperate regions. Persoon (1794: 91) described another related genus, *Tubulina* Pers., to accommodate a single species, *T. fragiformis* (Bull.) Pers. (in Neues Mag. Bot. 1: 91. 1794). This species is based on *Sphaerocarpus fragiformis* Bull. (Hist. Champ. France: 141. 1791), which Martin & Alexopoulos (1969: 56) treat as a synonym of *Tubifera ferruginosa* (Batsch) J.F. Gmel. (Syst. Nat. 2: 1472. 1792).

## ■ TUBIFERA

Ever since J.F. Gmelin (1792: 1472) proposed *Tubifera* in the second volume of his “1791” edition of Linnaeus’s *Systema Naturae*, the name has been in constant use for myxomycete species. The genus has been accepted in the *Liceales* and used by Lister (1925), Martin (1949), Martin & Alexopoulos (1969), Farr (1976), Martin & al. (1983), Nannenga-Bremekamp (1991), Neubert & al. (1993), Lado & Pando (1997), Yamamoto (1998), and Ing (1999).

Gmelin (1792) included three species in his newly proposed genus: *Tubifera ferruginosa* (Batsch) J.F. Gmel. (≡ *Stemonitis ferruginosa* Batsch 1786); *Tubifera cylindrica* (Bull.) J.F. Gmel. (≡ *Sphaerocarpus cylindricus* Bull. 1791); and *T. fragiformis* (Bull.) J.F. Gmel. (≡ *Sphaerocarpus fragiformis* Bull. 1791). Martin & Alexopoulos (1969: 56) consider the last two names as synonyms of the first. Gmelin (1792) cited the following references for *T. ferruginosa*: “Batsch *el. fung. cent.* I. p. 263. f. 175. *Jacq. misc austr.* 2. p. 144. t. 15? *Tubulifera arachnoidea. Flor. dan. t. 659. f. 2.*” That to “*Tubulifera arachnoidea*” is rather ambiguous as it does not appear in *Flora Danica* but only in Jacquin (1779: 144).

## ■ TUBULIFERA

“*Tubulifera*” was first proposed by Müller (1775) to accommodate two species, “*Tubulifera cremor* O.F. Müll.” and “*T. ceratum* O.F. Müll.” Neither name is validly published, however, because Müller did not provide a description of the genus. Jacquin (1779: 144), who used Müller’s “*Tubulifera*” for his new species, “*T. arachnoidea* Jacq.”, also did not formally describe the genus. Since only one species was actually described by Jacquin, Martin (1966: 32), Farr & al. (1979: 1813) and Lado (2001) considered *Tubulifera arachnoidea* to represent a combined generic and specific description (see descriptio generico-specifica in Art. 42.1 of the *ICBN*, McNeill & al. 2006), thus regarding the genus name as validly published. Nonetheless, Martin (1966), raised doubts that Jacquin did not consistently employ binomial nomenclature, commenting, “A very strong case could be made for regarding *Tubulifera* as the earliest and valid synonym of *Tubifera* J.F. Gmel., 1791, and *Tubulina* Pers. 1794, but since the genus has not been recognized for so long, it should not be revived.” Martin’s doubts are not enough under the present Nomenclatural Code (McNeill & al., 2006), since Jacquin (1779) clearly employed binomial nomenclature and a proposal to conserve the name *Tubifera* against *Tubulifera* would have been sufficient to clarify the position.

In their monograph, Martin & Alexopoulos (1969: 54) repeated Martin’s concerns when they wrote, “There can be little doubt that *Tubulifera* Jacq. was published as a valid genus in 1778 [sic], although since Jacquin did not use binomials consistently, there is some question as to whether his specific names are valid.” In adding, “No useful purpose would be served by reviving *Tubulifera*”, they implied their decision to use the name *Tubifera* and list *Tubulifera* as a synonym was based on convenience and not on nomenclatural rules. Martin & Alexopoulos then (1969: 56) listed the name *Tubulifera arachnoidea* Jacq. (followed by “Possibly not valid”) as a synonym under *Tubifera ferruginosa* (Batsch) J.F. Gmel.

Additional information from the illustrations of “*Tubulifera arachnoidea*” in Müller’s and Jacquin’s books confirms the identity of the taxon and leaves no doubt that it is the same

as *Tubifera ferruginosa* (Batsch) J.F. Gmel. 1792. Curiously, as Martin (1966: 32) noticed in the “Explicatio tabularum” (p. 211) of Jacquin’s book, the name “*Tubularia*” (instead of *Tubulifera*) *arachnoidea* appeared. As “*Tubularia*” seems never to have been used later, Martin’s (1966) view that it was an unintentional error seems to be correct.

In view of this, it initially appeared that “*Tubulifera*” was a validly published generic name with priority over *Tubifera* and that the combinations for the names of the species of *Tubifera* as proposed by Lado (2001: 86–88) were justified. Further analysis of Jacquin’s text, however, shows that “*Tubulifera*” is not a validly published generic name. In his comments preceding the description of “*Tubulifera arachnoidea*”, Jacquin (1779: 144) evidently accepted a second species, “*Tubulifera ceratum*” as he wrote: “Fungus, quem TUBULIFERAM ARACHNOIDEAM fibris nimirum basi tela arachnoidea connexis vocabo, quam maxime accedit ad Tubuliferam Ceratum Florae Danicae tab. 659. fig. 2., ut ab ipsa separare ausus ne fuisset, si telae illius indicium in planta Danica observare, in meaque potuisset tubulos apertos.” This passage shows that Jacquin considered *Tubulifera arachnoidea* so similar to *Tubulifera ceratum* that he would not have dared to separate them if he had been able to see any of the arachnoid tissue (referring to the hypothallus) in the Danish species, or open tubes in his. So Jacquin accepted two species in the genus, his “*T. arachnoidea*” and O.F. Müller’s “*T. ceratum*” from which he was distinguishing his species. Consequently Art. 42.1 of the ICBN (descriptio generico-specifica) is not applicable.

## ■ CONCLUSION

In conclusion, the genus *Tubulifera* was not described by Müller (1775). Since the descriptio generico-specifica clause does not apply here, the genus name also cannot be considered validly published by Jacquin (1779). Therefore *Tubifera* J.F. Gmel. remains the earliest validly published name for the genus. Indeed the situation is not dissimilar to that presented in Art. 48 Ex. 1. The present case if expressed as another example might read:

*Ex. Ibis.* Jacquin (1779) described the new species “*Tubulifera arachnoidea*” adopting “*Tubulifera*” from its use, without generic description, by O.F. Müller (1775), who described two species, “*T. cremor*” and “*T. ceratum*”. Were *Tubulifera* to be validly published on the basis of Jacquin’s description of *T. arachnoidea*, it would not be monotypic, because Jacquin accepted “*T. ceratum* O. F. Müll.” as distinct from his new species. Consequently, none of these names is validly published.

## ■ ACKNOWLEDGEMENTS

Thanks are due to Prof. Uno Eliasson, Dr. Walter Gams and Dr. Felix Muñoz Garmendia for their valuable suggestions, to Diana Wrigley de Basanta for her linguistic assistance, and to Dr. Manuel Laínz for his help with the Latin translations. This work has been supported by the Spanish Government through grants CGL2005-00320/BOS and CGL2008-00720/BOS.

## ■ LITERATURE CITED

- Farr, M.L. 1976. Myxomycetes. Flora Neotropica Monograph 16. New York: New York Botanical Garden.
- Farr, R.E., Leussink, J.A. & Stafleu, F.A. (eds.). 1979. *Index nominum genericorum (plantarum)*. Regnum Vegetabile 100–102. Utrecht: Bohn, Scheltema & Holkema.
- Gmelin, J.F. 1792. *Caroli à Linné, ... Systema naturae*, editio decima tertia, aucta, reformata, tomus 2, pars 2. Leipzig: Beer.
- Ing, B. 1999. *The Myxomycetes of Britain and Ireland: An identification handbook*. Slough: Richmond Publishing.
- Jacquin, N.J. 1779 (“1778”). *Miscellanea austriaca*, vol. 1. Vienna: ex officina Krausiana.
- Lado, C. 2001. Nomenmyx: A nomenclatural taxabase of *Myxomycetes*. *Cuad. Trab. Fl. Micol. Iber.* 16: 1–221.
- Lado, C. 2005–2010. Nomen.eumycetozoa.com: An online nomenclatural information system of *Eumycetozoa*. <http://www.eumycetozoa.com> (accessed 17 Dec. 2010).
- Lado, C. & Pando, F. 1997. *Flora mycologica Iberica*, vol. 2, Myxomycetes, I. Ceratiomyxales, Echinosteliales, Liceales, Trichiales. Stuttgart: Borntraeger.
- Lister, A. 1925. *A monograph of the Mycetozoa*, ed. 3 rev. by G. Lister. London: printed by order of the Trustees of the British Museum.
- Martin, G.W. 1949. Fungi: Myxomycetes, Ceratiomyxales, Liceales, Trichiales, Stemonitales, Physarales. In: Britton, N.L. & Underwood, L.M. (ed.), *North American flora*, vol. 1(1). New York: New York Botanical Garden.
- Martin, G.W. 1966. The genera of *Myxomycetes*. *State Univ. Iowa Stud. Nat. Hist.* 20(8): 3–32.
- Martin, G.W. & Alexopoulos, C.J. 1969. *The Myxomycetes*. Iowa City: University of Iowa Press.
- Martin, G.W., Alexopoulos, C.J. & Farr, M.L. 1983. *The genera of Myxomycetes*. Iowa City: University of Iowa Press.
- McNeill, J., Barrie, F.R., Burdet, H.M., Demoulin, V., Hawksworth, D.L., Marhold, K., Nicolson, D.H., Prado, J., Silva, P.C., Skog, J.E., Wiersema, J.H. & Turland, N.J. (eds.) 2006. *International Code of Botanical Nomenclature (Vienna Code) adopted by the Seventeenth International Botanical Congress Vienna, Austria, July 2005*. Regnum Vegetabile 146. Ruggell, Liechtenstein: Gantner.
- Müller, O.F. 1775. *Flora danica*, vol. 4, fasc. 11. Copenhagen: Nicolaus Møller.
- Nannenga-Bremekamp, N.E. 1991. *A guide to temperate Myxomycetes*. Bristol: Biopress.
- Neubert, N., Nowotny, W. & Baumann, K. 1993. *Die Myxomyceten Deutschlands und des angrenzenden Alpenraumes unter besonderer Berücksichtigung Österreichs*, vol. 1, Ceratiomyxales, Echinosteliales, Liceales, Trichiales. Gomaringen: Baumann.
- Persoon, C.H. 1794. Neuer Versuch einer systematischen Eintheilung der Schwämme. *Neues Mag. Bot.* 1: 63–128.
- Yamamoto, Y. 1998. *The myxomycete biota of Japan*. Tokyo: Shorin Publishing.