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Early illustrations of *Xylaria* species

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Abstract: Four 17th and early 18th Century examples of illustrations of *Xylaria* species are presented. One of the earliest illustrations of a *Xylaria* species is that in Mentzel's *Pugillus rariorum plantarum* published in 1682 and which Fries referred to *Sphaeria polymorpha*. An 1711 illustration by Marchant is noteworthy in the detail of the observations; perithecia and ascospores are noted and illustrated. Marchant considered this fungus to be related to marine corals. The plate was subsequently redone and incorporated by Micheli in his 1729 publication, *Nova plantarum genera*; this Micheli plate was listed by Fries under a different species, *Sphaeria digitata*. Although Fries mentions several illustrations of *Sphaeria hypoxylon* not all the sources he cited contain illustrations. The earliest illustration associated

with this species that was located is Micheli's in 1729. These illustrations are included along with discussion of the authors and books in which the illustrations appear.

Key words: Fries, Marchant, Mentzel, Micheli, *Xylaria*, early illustrations

The genus *Xylaria* Hill ex Schrank is one that many people recognize but only few understand. Jack Rogers is one of those who has added refinement and substance to the taxonomy of this most misunderstood genus. He has demonstrated that species delimitations are often too broadly conceived, that names often are misapplied, and that deceptively similar morphologies belie the fact that there are many more species than previously suspected. It is then perhaps not surprising that confusion has been a part of the history of these species from the earliest days of descriptive mycology. Even the name of the genus has been questioned on nomenclatural grounds. Dennis (1958), after a series of papers on tropical members of the genus *Xylaria*, proposed a series of combination in the genus *Xylospheera* Dumort. for species previously treated in *Xylaria*. The application of the name was called into question because of the broad and imprecise early application of the generic name that introduced ambiguity regarding its typification. Although this name controversy was resolved through conservation of *Xylaria* under the rules of the International Botanical Code (see Holm and Müller 1965), the situation serves to point-up the confusion that existed from the beginning of systematic mycological studies over the identity of fungi that share the trait of producing clavate fruitbodies. Before microscopic features were consistently employed these claviform Ascomycota and Basidiomycota were often grouped together. *Clavaria*, *Cordyceps* and other taxa confused the typification of *Xylaria*.

My purpose in this brief note is to present and document some of the early illustrations of fungi that might be assigned with some confidence to the genus *Xylaria*, to examine some of the

literature related to the illustrations, and to provide brief commentary on the authors of these books and the illustrations themselves. I began the search for these illustration by consulting Fries's *Systema Mycologicum*.

In the *Systema Mycologicum* volume 2 (Fries 1823) in which most of the Ascomycota were treated, one finds several familiar specific epithets now associated with *Xylaria*. These are found under the genus *Sphaeria* division *Compositae*, section *Periphericae*, tribe *Cordyceps* series *Hypoxylon*. This classification reflects the gross characters of these fungi, i. e., many perithecia oriented in the outer layer of a clavate stroma. Fries included abbreviated author citations and titles that, to the modern user, are cryptic. These short notations have served to guide my forays into the pre-Linnaean literature that Fries consulted in his attempt to establish names and their usage.

At the beginning it is important to understand something about the methods Fries used in researching and assembling the *Systema Mycologicum*. To do this I draw on an unpublished translation of the introduction done for me several years ago by Sarah E. Schurr, then a graduate student in Classics at Harvard University. From this we can glean something of Fries's plan of work and motives. He (Fries 1821) intended the *Systema* to be a compilation of the known species of fungi which he concluded would be a major undertaking. He commented in the introduction that the number of described species of fungi then was more than all the plants included by Linnaeus in the *Species Plantarum*. Sixty-eight years after Linnaeus's *Species Plantarum* Fries was dealing with a large, diffuse, largely European literature. Pfister et al. (1990)

summarize the major publications of this period. Fries used abbreviated typography, shortened descriptions and reduced citations in order to save space; without such conventions he estimated the volumes would have been three times their published size. The *Systema* introduced a classification devised by Fries based on principles expressed by contemporary taxonomists/natural philosophers, particularly Lorenz Oken is mentioned. Fries also outlined his personal preparation for writing the *Systema*. First he spent 10 years diligently seeking, examining and describing the fungi from different parts of Sweden ... the flat areas and the mountains, conifer forests and deciduous forests. He entered into exchange of specimens and corresponded with the most illustrious mycologists of the day in Germany. Then he read all the writings about fungi of which he knew. Through these approaches Fries distinguished himself from many of his contemporaries; he takes into account previous work, he includes an ecological component, he creates a classification system, and establishes collaborative and consultative interactions. The *Systema* indeed is a testament to his field knowledge of fungi and to his bibliographic scholarship. Even a casual look at his citations demonstrates that he made use of a large and rich library. The short and often cryptic citations gathered by Fries provided the primary literature that guided my search.

Fries included in section *Hypoxylon* the following names¹: *S. mucronata* Schwein.: Fr., *S. digitata* (L.:Fr.) Grev., *S. polymorpha* Pers.: Fr., *S. bulbosa* Pers.: Fr., *S. hypoxylon* (L.:Fr.) Pers., *S. carpophila* Pers.: Fr., *S. persicaria* Schwein.: Fr., *S. filiformis* Alb. & Schwein.: Fr. These at various times all have been considered *Xylaria* species. Three of these names, *S. digitata*, *S. polymorpha*, and *S. hypoxylon*, have histories and usage that extend to the pre- Linnaean period from the late 17th and early 18th centuries

¹ Here I have cited the names with Fries as sanctioning author.

and also have illustrations which supplement their brief polynomial descriptions. These fungi and the books in which their illustrations appear are taken up below.

***Sphaeria digitata* = *Xylaria digitata* (L.) Grev.**, see Rogers (1984) regarding the various interpretations and misinterpretations of this name.

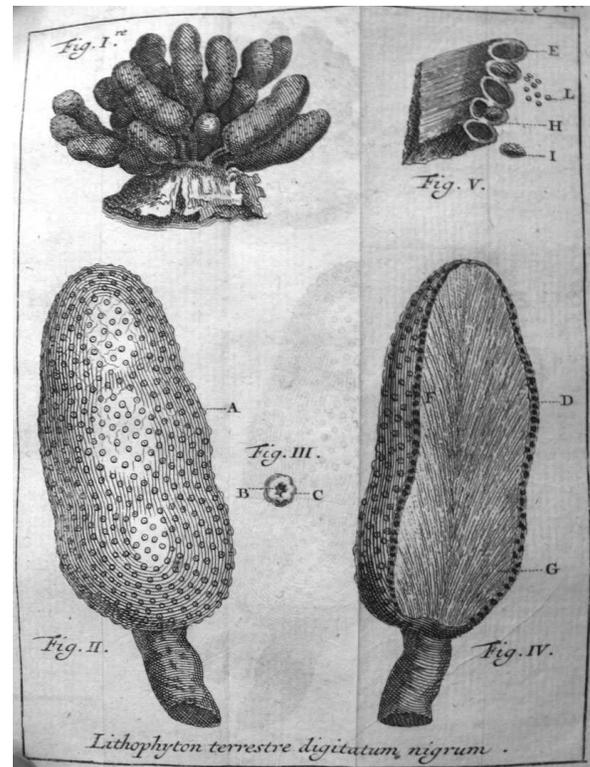


Fig. 1. *Sphaeria digitatum*, cited by Fries, reproduced from Marchant (1711).

The first entry in Fries (1823: 326) under this species was "*Lithophytoides digitatum* &c. Mem. Ac. Sc. Par. 1711. P. 100. c. ic." This citation leads to an article by Jean Marchant (1650-1738), son of another botanist Nicholas Marchant who was the director of the Jardin du Roi in Paris. In this article (Marchant 1711) there is a detailed and well-executed illustration, under the polynomial *Lithophyton terrestre digitatum nigrum* that can be easily taken as a species of *Xylaria* (reproduced here as Figure 1). Marchant described this fungus that he first observed in the

spring of 1709. It was found in his garden growing on a maple trunk that had been cut in February 1708. He commented in detail on the development of this fungus and observed it with a magnifying loupe. The plate shows the fungus in natural size, enlarged and with portions magnified. Among the details in the illustrations are perithecial cavities, extracted perithecia and ascospores, structures he said resemble grains of vanilla but infinitely smaller. This is among the first illustrations and references to fungal spores. He wrote that at the same time he was making observations on this fungus he had before him a collection of marine organisms provided by the Rev. Pere Gouye. From his comparative studies of the fungus and these marine creatures he concluded that some of these marine organisms and the fungus he described belonged to the same group. Thus, this well described and carefully observed fungus is described as a terrestrial member of the soft corals in the genus *Lithophyton* (a name still used today for some soft corals, Nephtheidae). It is not clear where or when the name *Lithophytoides* was used prior to Fries's listing. Ainsworth (1976) reproduced this figure but labeled it *Xylaria polymorpha*.

***Sphaeria polymorpha* = *Xylaria polymorpha* (Pers.:Fr.) Grev.**, see Rogers and Callan (1986).

In this entry Fries (1823: 326) cryptically and erroneously listed "Hypoxylon. Menz. [sic] pugill. t. 6." A search of the literature brought us to Christian Mentzel's *Pugillus rariorum plantarum* of 1682. Christian Mentzel (1622-1701) was a German physician, botanist and philologist specializing in Chinese language; also he was an advisor to the King of Prussia. Plate 6 of the *Pugillus* is reproduced here (Figure 2). In the lower right, labeled *Hypoxylon* is the figure to which Fries refers. Indeed, it does seem to depict a *Xylaria*. With the date 1682 this is among the earliest of the illustrations that could be attributed to the genus. Although it is unlikely the earliest illustration of a *Xylaria* species,

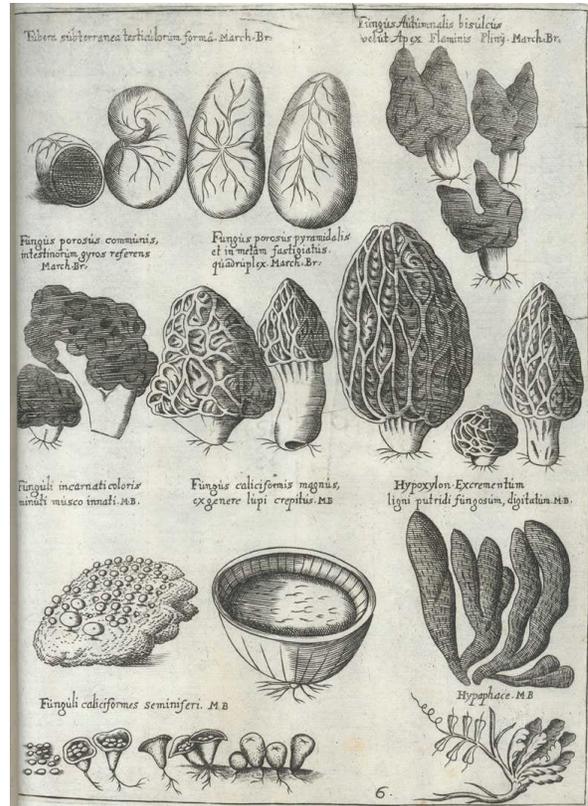


Fig. 2. *Sphaeria polymorpha*, cited by Fries, reproduced from Mentzel (1682).

it does serve as a placeholder in the pre-Linnaean literature and certainly this plate, taken as a whole deserves our attention. It is well executed and detailed; furthermore, it includes a wide array of other fungi. In addition to the *Hypoxylon*, it shows several species of *Morchella* and *Gyromitra*, a truffle, a small agaric, a cup-fungus, and a detailed rendering of bird's nest fungi, including a developmental series as well as peridioles with funicular attachments.

In addition to the above citation Fries also listed "Mich. gen. t. 54. f. 4." This refers to Pier' Antonio Micheli's (1679-1737) *Nova plantarum genera* published in 1729. Interestingly, this figure, a portion of which is reproduced here as Figure 3, seems to be nearly identical to the Marchant plate cited above under *Sphaeria digitata*. Obviously Fries confused these citations in some way. There is no indication that

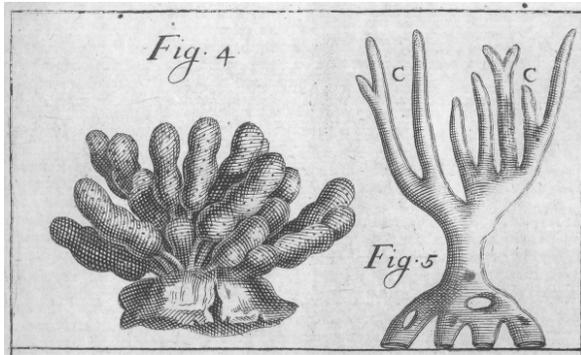


Fig. 3. *Sphaeria polymorpha*, cited by Fries, reproduced from Micheli (1729), plate 54, fig. 4 and 5. The illustration on the right refers to this species.

Micheli routinely copied plates but a more thorough search of the plates might well give other examples. Of all the works consulted it is that of Micheli (1729) that include the widest range of *Xylaria* illustrations. Micheli gave three figures illustrating fungi that can be referred to *Xylaria*. These appear in figures 54 nos. 4 mentioned above and 55 nos. 1 and 2, which are commented on below and reproduced herein as Figure 4. Further information on this book and on Micheli can be found in the facsimile edition with a introduction by Hawksworth (1976).

***Sphaeria hypoxylon* L. = *Xylaria hypoxylon* (L.) Grev.**

Under this listing Fries (1823: 327) includes four references. The initial one is "Bocc. Mus. t. 116, 266." This seems to refer to the following: Paulo Boccone, *Museo di fisica e di esperienze...* published in 1697. Several copies of this work were examined in order to locate associated illustrations but to no avail. Search of subsequent citations were also inconclusive. The search of "Blackst. sp. Bot. 2, t. 1" (referring to Blackstone (1746)) and "Pet. Gaz. t. 62, f. 2" (referring to Petiver (1702-1709)) failed to find illustrations. Thus, the earliest traceable, verified illustration of this variously interpreted species is "Mich. gen. t. 55, f. 1" or Micheli's *Nova*

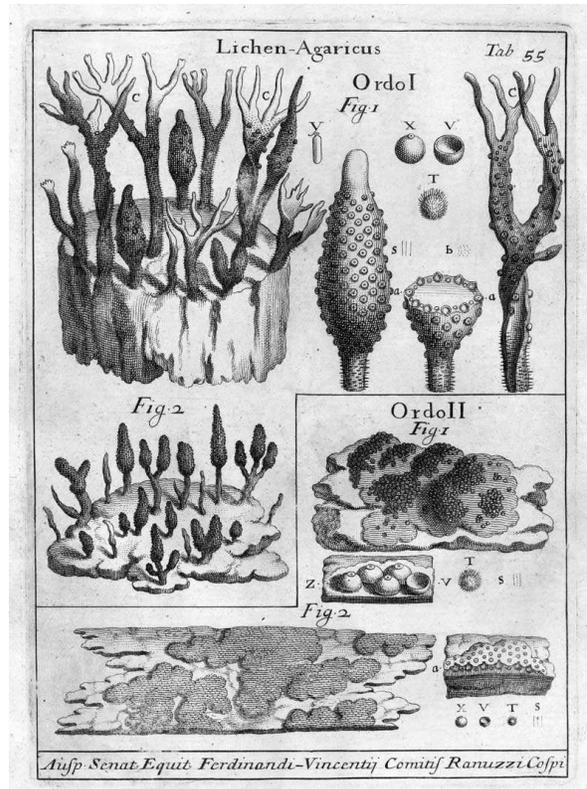


Fig. 4. *Sphaeria hypoxylon*, cited by Fries, reproduced from Micheli (1729).

plantarum genera (1729). Plate 55 is reproduced here as Figure 4.

The debate of the late 20th century regarding Fries's *Systema* as a literal starting point for the nomenclature of large groups of fungi has given way to the current use of the volumes to sanction names. The diligence with which Fries researched the literature of his time leads to the taxonomic imprimatur he provides for us today. This study might serve to remind us that Fries did base his work on solid ground in the descriptive literature available to him.

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