ABSTRACT. Based on the results of a careful revision of type material and of a large number of additional collections, Boletellus catalaunicus Pöder, Moreno, Rocabruna et Tabarés, is synonymised with Xerocomus ripariellus Redeuilh. The considerably high variability of both macroscopic and microscopic characters of this species is illustrated, and its delimitation from similar taxa is discussed.

KEY WORDS: Boletales, Boletellus catalaunicus, Xerocomus ripariellus, X. pruinatus, Boletus fraternus, Boletellus fennicus, taxonomy.

RESUM. Partint dels resultats d'una revisió acurada del material tipus i d'un gran nombre d'altres recollitades, Boletellus catalaunicus Pöder, Moreno, Rocabruna et Tabarés es sinonimitza amb Xerocomus ripariellus Redeuilh. La variabilitat considerablement alta dels caràcters, tant macroscòpics com microscòpics, d'aquesta espècie és descrita i il·lustrada, i la seva delimitació respecte a altres tàxons propers és concretada y raonada.

RESUMEN: Basandose en los resultados de una profunda revisión del material tipo y de un gran número de otras recolecciones, Boletellus catalaunicus Pöder, Moreno, Rocabruna et Tabarés debe sinonimizarse con Xerocomus ripariellus Redeuilh. Se describe e ilustra la variabilidad considerablemente elevada de los caracteres, tanto macroscópicos, como microscópicos de esta especie y se razona su delimitación con respecto a taxones parecidos.

INTRODUCTION

In the year 1997, two new members of European Boletales with a xerocomoid habitus, Xerocomus ripariellus and Boletellus catalaunicus, were published independently by Redeuilh (1997) and Pöder et al. (1997). Microscopically, these two species share the fine ornamentation of the spore surface, and macroscopically, the mainly vivid red cap colour. Xerocomus ripariellus Redeuilh collected in a humid locality near Paris (France) under Alnus and Quercus, was published in March 1997 and was recombined into Boletellus ripariellus (Redeuilh) Redeuilh, only three months later, in June 1997. Boletellus catalaunicus Pöder, Moreno, Rocabruna et Tabarés was published in April 1997. The type material was collected in Catalonia (Spain), in a mixed deciduous forest under hardwoods (Quercus ilex, Castanea sativa, Fagus sylvatica, Alnus glutinosus, Populus sp. and Fraxinus sp.). Almost immediately, the authors of both species entered into a discussion about a probable synonymy of their species. One of the problems they encountered was that X. ripariellus is both a microscopically and macroscopically extremely variable species. This assumption was supported by data taken from the extensive collections made by Redeuilh. The structure of the pileipellis in the holotype of B. ripariellus, for example, represents with its cylindrical terminal hyphae one extreme of the species variability. The type material of B. catalaunicus consisted of only two vertical sections from one of two original basidiomata which had been sent to one of the authors together with a colour photograph taken in the field. Three of the five basidiomata portrayed on this.
photograph belong to *Xerocomus armeniacus* (Quél.) Quél., while the remaining two represent the holotype of *B. catalaunicus*. Furthermore, half of the scarce type material was lost during the first outgoing herbarium loan. Therefore, a taxonomically promising confrontation of the two taxa has not been possible until 1998, when two of the authors of *B. catalaunicus* (Rocabruna and Tabarés) rediscovered a sufficient number of mature basidiomata (three collections) of this species at the type locality.

**METHODS**

Microscopic descriptions were made from sections or pieces of tissue taken from dried basidiomata, which were mounted in KOH 3% for spore measurements, in Congo red (saturated watery solution) for pileipellis examination, and in *aqua dest.* for pigment analysis. Spore measurements and size of terminal elements of the pileipellis are given in the form (min.) mean ± standard deviation (max.); Q = length/width quotient, V = approximated volume [sample size (n) for each collection = 31]. Drawings were made from video print images (CCP Color Video Camera Module, Sony Multiscan UP-930).

**MATERIAL EXAMINED**

*Boletellus catalaunicus* Pöder et al.:


*Boletus fraternus* Peck s s Oolbekkink:


*Xerocomus ripariellus* Redeuilh:


**COMPARATION OF ORIGINAL DESCRIPTIONS**

The original descriptions of *X. ripariellus* and *B. catalaunicus* differ in fundamental aspects: REDEUILH (1997) based his description of *X. ripariellus* mainly on macromorphologic studies of different collections, whereas PÖDER et al. (1997), due to the scarce material, concentrated their research on microscopic features. Both descriptions correspond in the general habitus ("Pileus 3-7 cm, ad marginem radialiter fissuratus-tesselatus... Stipes +/- robustus... deorsum attenuatus, sursum poris subconcolor flocculosus, basim versus paulatim rubris floccis ornatus... vel floccis magis magisque vinosus ornatus, interdum usque ad summum subtiler maculatus...") in *X. ripariellus*, and "Pileus 25-45 mm latus... ad marginem subtiler rimosus-areolatus... Stipe solidus, aequalis vel acutus versus basim, subtilier pruinosis sub lente, sursum poris concolorus, rubellus vel vinosus versus basim...") in *B. catalaunicus*). Different descriptions of the context colour follow: in *X. ripariellus*, a striking context colour is described (".. *Caro albicida deinde pallida citrina vel..."
extrinsecus flava, in sectione cyanescens; basim stipitis versus sordide ochraceo-brunnea, summum versus violaceo-vinoso maculata..."); in B. catalaunicus, a yellow context is described ("... Contextus luteus..."). The description of microscopic characters is rather short for X. ripariellus: beside the given spore measurements ((10)-11-14 (16) x (4)-4.5-5 (5.5) pm, Q = 2,6-2,8), the "suprapellis" is described as "trichodermico-subhymeniformis" with terminal elements mainly 6-15 pm wide, "subisodiametric" elements reaching 30-35 μm; hyphae weakly incrusted (compare fig. 1). For B. catalaunicus, the spore measurements are given as (12,5) 14,5 ± 0,2 (16,3) x (4,5) 5,0 ± 0,3 (5,8) μm, Q = (2,6) 2,9 ± 0,2 (3,3), volume = 190 ± 30 μm³ (n = 31) and a fine but distinct longitudinal striation of the spore surface is described and illustrated. More differing from the X. ripariellus concept is the description of the pileipellis microstructure of B. catalaunicus. There, the pileipellis structure is described as "distinctly epithelioid" with strongly inflated, ovate, broadly pyriform to almost spherical terminal cells measuring (24) 36 ± 9 (54) x (21,5) 26,5 ± 5 (48) μm, Q = (1,1) 1,4 ± 0,2 (1,8) that are often "heavily incrusted" (fig. 1, F).

RESULTS AND DISCUSSION OF MICRO- AND MACROSCOPIC STUDIES

Exhaustive microscopic studies on all the available material and the comparison of photographic documentations proved that the types of X. ripariellus and B. catalaunicus in fact represent two opposite extremes of the macroscopic and microscopic variability of one species. X. ripariellus is as highly variable regarding its macroscopic characters (e.g. colour and size of basidiomata) as in its microscopic characters (size and shape of pileipellis elements and their state of pigmentation). The examination and/or measurements of hundreds of terminal pileipellis elements of both taxa resulted in the following average dimensions: (7,2) 29,2 ± 9,6 (63,4) x (4,3) 16,2 ± 6,6 (46,1), Q = (0,58) 2,0 ± 0,9 (7,4), (n = 930). The variability of the pileipellis structure and its transitional stages are illustrated in fig. 1 (A-F). The corresponding spore measurements are: (10,5) 13,3 ± 1,0 (16,8) x (3,8) 4,7 ± 0,3 (5,5), Q = (2,2) 3,6 ± 0,2 (2,9), vol = (85) 151 ± 24,8 (228), (n = 651); no significant differences in size, form, and ornamentation could be observed between the two taxa. The section Striatulisporae (REDEUILH, 1998) includes X. pruinatus (Fr.) QuéL. and X. ripariellus, both with longitudinal striated spores. Macroscopically, this two Xerocomus species might be confused. But thick-walled, inflated, and amyloid basidiomatal context hyphae, typical for all forms of X. pruinatus (LADURNER & PÖDER, 2000) have never been found in X. ripariellus. The recently described species Boletellus fennicus Harmaja (HARMAJA, 1998 and 1999) which, very likely, belongs also to the section Striatulisporae is characterised by its distinctly truncate spores. Furthermore, Boletus fraternus Peck ss. Oldekkink has been recognised as a misapplied name for X. ripariellus. The type material of Boletus fraternus Peck shows completely smooth spores and a different pileipellis structure without inflated terminal elements (compare also KlofAC & KRISAIGREILHUBER, 1992).

CONCLUSION

The results of exhaustive macro- and micro-morphological studies on authentic collections of X. ripariellus and B. catalaunicus confirm the synonymy of these two species. Beside a great variation in macroscopic characters, the structures of pileipellis and their pigmentation are also highly variable in different basidiomata. In the course of these studies, no evidence was found that contradicts the conspecificity of X. ripariellus and B. catalaunicus.

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REFERENCES


*Xerocomus ripariellus* Redeuilh (= *Boletellus catalaunicus*, Holotypus, IB 1994/0617)