Taxonomy of *Tricholoma* in northern Europe based on ITS sequence data and morphological characters

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previous article
view table of contents
next article
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Based on molecular and morphological data we investigated the taxonomy and phylogeny of the ectomycorrhizal genus *Tricholoma* in northern Europe. Our phylogenetic tree confirmed the presence of at least 72 well circumscribed species within the region. Of these, three species, viz. *T. boreosulphurescens*, *T. bryogenum* and *T. ilkkae* are described as new to science, based on morphological, distributional, ecological and molecular data. Several other terminal branches represent putative cryptic taxa nested within classical species or species groups. Molecular type studies and/or designation of sequenced neotypes are needed in these groups, before the taxonomy can be settled. In general our phylogenetic analysis supported previous suprageneric classification systems, but with some substantial changes. Most notably, *T. virgatum* and allies were found to belong to sect. *Tricholoma* rather than sect. *Atrosquamosa*, while *T. focale* was found to be clearly nested in sect. *Genuina* rather than in sect. *Caligata*. In total, ten sections are accepted, with five species remaining unassigned. The combination of morphological and molecular data showed pileus colour, pileipellis structure, presence of clamp connections and spore size to be rather conservative characters within accepted sections, while the presence of a distinct ring, and especially host selection were highly variable within these.

Keywords: AGARICS; BIOGEOGRAPHY; CRYPTIC SPECIES; ECTOMYCORRHIZAL FUNGI; HOST SELECTION; MORPHOLOGICAL TRAITS; PHYLOGENY; TRICHOLOMATACEAE

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