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First records of *Callistosporium pinicola* in the Czech Republic and new findings on its ecology

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Callistosporium pinicola has been collected at ten localities in the Czech Republic. They represent the first records in this country. Three finds from Ukraine are published as well. Detailed macro– and microscopic descriptions of the species are provided. *C. pinicola* grows on strongly decayed fallen trunks of *Abies alba* and *Picea abies*, however, it has once also been found on a frondose tree. Its preference for old-growth forests with spruce and fir in the Czech Republic is discussed, including its possible usage as a local bioindicator of such forests. It is very interesting that all collections of *C. pinicola* in the Czech Republic are recent (collected in the period 2004–2008). It suggests that the species is spreading for unknown reasons. In Europe, *C. pinicola* usually occurs in localities fulfilling two conditions: a humid climate and strongly decayed wood.

Key words: *Callistosporium pinicola*, taxonomy, distribution, bioindication, Ukraine.

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Druh *Callistosporium pinicola* byl sbírán na deseti lokalitách v České republice. Jsou to první nálezy u nás; kromě toho jsou publikovány tři sběry z Ukrajiny. Je sestaven podrobný makroskopický a mikroskopický popis. Druh roste na silně zetlelých padlých kmenech jedlí a smrků, ale jednou byl nalezen i na dřevě listnáče. Je rovněž diskutováno jeho možné zařazení mezi bioindikační druhy přirozených lesů se smrkem a jedlí v České republice. Je také zajímavé, že všechny sběry pocházejí z nedávné doby (2004–2008). To by mohlo znamenat, že druh se z neznámých důvodů šíří. V evropském měřítku lze zobecnit, že *C. pinicola* se vyskytuje na lokalitách, kde je vlhké klima a je přítomno silně zetlelé dřevo.

INTRODUCTION

During their field studies, all authors of this paper independently found an interesting and distinct small-spored *Callistosporium* species growing on strongly decayed wood (mostly) of conifers. In comparison with recent literature we identified it as *C. pinicola*, a species new to the mycobiota of the Czech Republic. The aim of this paper is to publish a detailed description of its macro– and microscopic characters (based exclusively on our own collections) and to evaluate its ecology and distribution in the Czech Republic in relation to the situation in Europe.

MATERIALS AND METHODS

The macroscopic description is based on fresh basidiocarps, microscopic features are described from dried material mounted in H_2O, 5 % KOH solution, Melzer's reagent and Congo Red. For basidiospores, the factors E (quotient of length and width in any one spore) and Q (mean of E-values) are used. In each collection, 10–20 spores were measured. For micromorphological terminology, see Bas et al. (1988). Authors of fungal names are cited according to the International Plant Names Index website (http://www.ipni.org/ipni/authorsearchpage.do), colour abbreviations follow Kornerup and Wanscher (1983).

The degree of naturalness of forest stands is described using the terms virgin forest, natural forest and near-natural forest (representing so-called old-growth forests), man-influenced forest and man-made forest (for detailed explanation, see Holec 2008).

Voucher specimens are deposited in the BRNM (Moravian Museum, Dept. of Botany, Brno), BRNU (Masaryk University, Brno), CB (Museum of South Bohemia, České Budějovice) and PRM (National Museum, Mycological Department, Prague) herbaria. Abbreviations: CR: Czech Republic, PLA = protected landscape area.

RESULTS

Callistosporium pinicola Arnolds, Acta Mycol. 41(1): 32, 2006.

Syn.: *Callistosporium xanthophyllum* f. *minor* Bon ad int., in Flore mycologique d'Europe, Doc. Mycol. Mém. hors Sér. 2: 95. 1992 (invalid name, ICBN Art. 32.1). – *Callistosporium luteoolivaceum* f. *minor* Verbeken & Walleyn, Doc. Mycol. 32(127–128): 3. 2003. – *Callistosporium minor* (Verbeken & Walleyn) Wilhelm, Schw. Z. Pilzk. 85(4): 137. 2007 (a superfluous combination: at the species level, the name *Callisposporium pinicola* Arnolds 2006 has priority).

Basidiocarps single or in small groups. Pileus 8–32 mm broad, hemispherical, then convex to applanate, plane to slightly depressed at centre, and some-

times with a low rather indistinct umbo within the depression, involute then inflexed or straight at margin, sometimes with cuticle exceeding the margin, smooth, apparently glabrous and slightly greasy-shining when moist, slightly tomentose when dried up, not hygrophanous or weakly hygrophanous (old basidiocarps), at first vividly yellow with olive tinge (2A7), finely white tomentose-pruinose, after touching rusty brown (6C7), then ochraceous (6C–D6) to rusty ochre (5B7) with yellow-ochre margin, at maturity sordid rusty brown (5D8) with olive tinge to dark brown (7E–F6–8), pallescent to (olivaceous) ochraceous yellow (±3–4A4, 5–6A–B3–5). Lamellae (moderately) distant, L = 26–35, l = 2–4 (irregular), abruptly emarginate and attached with tooth, rather broad, then ventricose, lemon yellow (2A6) to yellow (3–4A2–3) when young, then rusty yellow (3–4A4–5), sordid olive-yellow (3B6) to olive-brownish when old (4C7), with concolorous, irregular (when old), smooth to uneven edge. Stipe 10–40 × 1.5–4 mm, central or slightly eccentric, cylindrical, sometimes curved, slightly broadened upwards, slightly clavate at base, finely longitudinally fibrillose or fibrillose-pruinose, this covering white at first, later yellowish white, surface lemon yellow (1A6) when young, then ochre (4B7), at maturity ± concolorous with lamellae at apex, yellow-brown, ± concolorous with pileus in lower part, sordid olive-brown (4D8), ochre-brown (5D8) to brown (6C–D6), dark brown (7D5–6) when old; with yellowish white basal tomentum. Context thin-fleshed, concolorous with surface in pileus and stipe, hollow in stipe, with indistinct to distinct farinaceous smell and bitterish to bitter taste.

Basidiospores (2.5–)3.0–4.0(–4.5) × 2.0–3.0(–3.5) µm, E = 1.1–1.8, Q = 1.4–1.5 (for individual measurements, see Tab. 1), broadly ellipsoid, ellipsoid to ovoid-ellipsoid, rarely almost subglobose, with small but distinct hilar appendix, smooth, thin-walled, non-dextrinoid, pale violaceous grey in KOH, with distinct oil droplets. Basidia 14–23 × 4–7 µm, 4– (very rarely 2–) spored, (narrowly) clavate, with pale violaceous grey content in KOH. Basidioles 8–20 × 3–6 µm, (narrowly) clavate to cylindrical, with pale violaceous grey content in KOH. Cheilocystidia absent, lamella edge fertile with scattered irregularly clavate or lageniform basidioloid cells. Pleurocystidia absent. Hymenium (the whole layer) violaceous grey to dark brown-violaceous in KOH. Tramal hyphae of cylindrical to subinflated cells, ± thin-walled, non-dextrinoid, 6–16 µm wide, with pale yellow membranal and incrusting pigmentation in KOH; lamellar trama regular, pale yellow-brown in mass. Pileipellis a cutis made up of radially arranged, cylindrical, thin-walled, smooth or incrusted, 4–8 µm wide hyphae; the whole layer yellow-brown to brown-violaceous in KOH, cells with yellow-brown membranal and incrusting pigment; terminal cells and lateral projections ± cylindrical to narrowly clavate, adpressed to erect, ± thin-walled, smooth. Stipitipellis a cutis consisting of cylindrical, parallel, ± slightly thick-walled, smooth or incrusted, up to 6 µm wide hyphae, at places with nests of ascending and interwo-

ven hyphae with narrowly clavate, cylindrical-subcapitate to narrowly lageniform, regular or irregular, terminal cells (caulocystidia), (12–)18–41 × 3–7 µm, thin-walled. Clamp-connections absent in all tissues.

Tab. 1. Variability of basidiospore size of studied collections of *Callistosporium pinicola*.

Specimen	Size of basidiospores (µm)	Average size (µm)	E	Q
BRNM 691390	(3.25) 3.5–4.0 (4.25) × 2.2–3.0	3.7 × 2.5	1.2–1.7	1.5
BRNM 712716	(3.0) 3.5–4.5 × (2.25) 2.5–3.0	3.9 × 2.6	1.2–1.8	1.5
BRNU 594530	(3.25) 3.5–4.0 (4.25) × (2.0) 2.75–3.5	3.7 × 2.7	1.1–1.6	1.4
BRNU 594531	(3.25) 3.5–4.0 (4.5) × 2.5–3.0	3.8 × 2.7	1.3–1.6	1.4
BRNU 594557	3.2–4.0 (4.5) × 2.5–3.0	3.6 × 2.7	1.2–1.5	1.4
BRNU 594528	3.5–4.0 (4.25) × 2.0–3.0	3.7 × 2.7	1.2–1.7	1.4
BRNU 594529	3.0–4.5 (4.75) × (2.25) 2.5–3.25 (3.5)	4.0 × 2.8	1.2–1.7	1.4
BRNU 594532	(3.0–)3.5–4.0 × (2.0–)2.5	3.6 × 2.5	1.2–1.8	1.4
BRNU 594533	(3.0–)3.5(–4.0) × (2.0–)2.5	3.5 × 2.5	1.2–1.8	1.5
CB 15031	2.5–3.5 (4.0) × 2.0–2.5	3.2 × 2.2	1.3–1.8	1.5
CB 15032	3.0–3.5 (4.0) × 2.0–2.5	3.2 × 2.2	1.2–1.8	1.5
CB 15701	2.5–3.5 × 2.0 (2.5)	3.1 × 2.1	1.3–1.8	1.5
CB 15702	3.0–4.0 (4.5) × 2.0–2.5 (3.0)	3.5 × 2.4	1.2–1.6	1.4
PRM 899105	3.2–4.0 × 2.4–2.8	3.5 × 2.5	1.1–1.7	1.4
PRM 911738	(2.8) 3.2–3.6 (4.0) × 2.4–2.8	3.4 × 2.5	1.1–1.5	1.3
PRM 909460	(3.2) 3.6 (4.0) × 2.4(2.8)	3.6 × 2.5	1.3–1.5	1.5
PRM 909450	(2.8) 3.0–3.6 × (2.0) 2.2–2.4 (2.8)	3.2 × 2.4	1.3–1.5	1.4

Ecology in the Czech Republic

Saprotrophic, on strongly decayed fallen trunks of almost exclusively conifers, especially *Abies alba* (8 records), less frequently *Picea abies* (2 records), twice on an unidentified conifer (*Abies*?, *Picea*?), once on wet decaying wood of a frondose tree (apparently *Fagus sylvatica*; Moravian Karst, Pustý žleb, BRNU 594557). The trunks have soft wood or they are almost completely decayed (disintegrated), with or without moss cover.

The habitats include a wide range of forests with natural occurrence of *Abies alba* and/or *Picea abies*: mixed ravine and slope forests (mainly composed of *Acer*, *Fraxinus*, *Tilia*, *Carpinus*, and *Fagus*), limestone beech forests (finds from the Moravian Karst and the vicinity of Brno) and herb-rich beech forests. They are represented by old-growth forests (for terminology, see Material and methods), mostly near-natural forests (6 records), natural forests (5 records) and a virgin forest (1 record). Only in one case the species was found in a man-influenced stand composed of *Picea* with admixed *Abies* (for concrete data on habitats, see Studied specimens). The data show that in the Czech Republic *C. pinicola* clearly

prefers old-growth forests but it cannot be considered a species confined exclusively to virgin forests. However, the preference is so strong that at least in the conditions of the Czech Republic (and maybe in Central Europe as a whole – see also the Ukrainian records) the species could be considered a bioindicator of old-growth forests with admixed *Abies* and/or *Picea*.

Tab. 2. Altitudinal distribution of *C. pinicola* in the Czech Republic. In the case of boundary values (500 and 800 m), records were assigned to the belts according to the character of the surrounding landscape.

	0–200 m (lowlands = planar belt)	200–500 m (highlands = colline belt	500–800 m (submontane belt)	800–1100 m (montane belt)
no. of records	0	7	1	3

In the colline belt (Tab. 2), *C. pinicola* occurs exclusively in stream valleys (at the bottom or in low parts of their slopes) or in gorges (Moravian Karst). At higher altitudes, the species grows on hill and mountain slopes. In both cases the microclimate is relatively cold and humid, which is caused either by the higher altitude (submontane and montane belts) or by the more or less pronounced climatic inversion in stream valleys and gorges.

Material studied

Czech Republic. Bohemia. Křivoklátsko PLA, Rakovník, Skryje, Týřov National Nature Reserve, valley of Prostřední potok stream, 49° 57' 30" N, 13° 48' 00" E, alt. 350 m, near-natural mixed forest (*Tilia*, *Acer*, *Quercus*, *Carpinus*, *Ulmus*, *Fraxinus*, rarely *Picea* and *Abies*), on strongly decayed, almost disintegrated lying trunk of a conifer (*Abies alba* or *Picea abies*), covered by mosses, 28 Aug. 2008 leg. et det. D. Dvořák 326/08 (BRNU 594531). – Křivoklátsko PLA, Beroun, Roztoky, Stříbrný luh Nature Reserve, part called Čertův luh (valley of a small stream), 50° 01' 03'' N, 13° 53' 46" E, alt. 270–300 m, near-natural mixed forest (*Carpinus*, *Fagus*, *Acer pseudoplatanus*, *Picea)*, on strongly decayed lying trunk of *Picea abies*, 27 Aug. 2008 leg. et det. D. Dvořák 315/08 (BRNU 594530). – Šumava Mts., Lenora, Zátoň, Boubínský prales National Nature Reserve, core area, coord. of its centre: 48° 58' 30.3" N, 13° 48' 46.7" E, alt. 1020 m, montane virgin forest composed of *Fagus sylvatica*, *Picea abies* and *Abies alba*, on decaying fallen trunk of *Abies alba*, 19 Sept. 2008 leg. et det. J. Holec (PRM 899105). – Křemešnická vrchovina highland, Blažejov, Jindřišské údolí valley, left bank of the Hamerský potok stream, upper part of a steep slope, 49° 08' 31" N, 15° 04' 31" E, alt. 500 m, man-influenced spruce-fir forest, on fallen decaying stem of *Abies alba*, 31 Aug. 2006 leg. et det. M. Beran (CB 15031). – Táborská pahorkatina highland, Dobřejovice, Libochovka Nature Reserve, near path on the valley bottom, 49° 04 '50" N, 14° 28' 45" E, alt. 400 m, herb-rich near-natural beech forest with scattered *Tilia platyphyllos* and *Picea abies*, in cavities of fallen, strongly decayed trunk of *Picea abies*, 7 Aug. 2008 leg. et det. M. Beran (CB 15701). – Novohradské hory Mts., Hojná Voda, Hojná Voda National Nature Reserve, 48° 42' 27" N, 14° 45' 12" E, alt. 800 m, herb-rich near-natural beech forest, on part of fallen, strongly decayed and disintegrated trunk of *Abies alba*, 1 Oct. 2008 leg. et det. M. Beran (CB 15702). Moravia. Moravskoslezské Beskydy Mts., Bílá, Salajka National Nature Reserve, montane natural forest of *Fagus*, *Picea* and *Abies*, on strongly decayed fallen trunk of conifer (*Abies alba*?), 49° 24' 05'' N, 18° 25' 10" E, alt. c. 800 m, 5 Aug. 2004 leg. V. Antonín (04.154) and D. Janda (BRNM 691390). – Ibid.,

at two sites, on strongly decayed fallen trunk of *Abies alba*, 31 July 2008 leg. V. Antonín (08.131) and D. Janda (BRNM 712716). – Hostýnské vrchy hills, Rajnochovice, Tesák Nature Reserve, herb-rich near-natural beech forest, on totally decayed fallen trunk of *Abies alba*, 49° 22' 23" N, 17° 47' 18" E, alt. 620 m, 2 Sept. 2006 leg. et det. M. Beran (CB 15032). – Moravian Karst PLA, Vilémovice, Vývěry Punkvy National Nature Reserve, Pustý žleb gorge, bottom of the gorge, 49° 22' 30" N, 16° 43' 22" E, alt. 380–400 m, natural mixed forest (*Fagus sylvatica*, *Fraxinus excelsior*, *Ulmus glabra* etc.), on wet, decayed piece of hardwood (apparently *Fagus sylvatica*), 21 July 2004 leg. et det. D. Dvořák 52/04 (BRNU 594557). – Ibid., Suchý žleb gorge, lower part of slope, 49° 21' 37" N, 16° 42' 46" E, alt. c. 350 m, near-natural mossy mixed forest on scree slope dominated by *Picea abies*, on lying trunk of *Abies alba*, 24 Sept. 2005 leg. et det. D. Dvořák 298/05 (BRNU 594528). – Ibid., on the same trunk, 21 Oct. 2006 leg. et det. D. Dvořák 459/06 (BRNU 594529). – Drahanská vrchovina highland, Adamov, N of Brno, Coufavá Nature Reserve, lower part of slopes in Coufavá stream valley, 49° 17' 45.9" N, 16° 38' 08.4" E, alt. 455 m, natural forest (mainly composed of *Fagus sylvatica* and *Abies alba*), on strongly decayed lying trunk of *Abies alba* covered by mosses, 25 Oct. 2008 leg. et det. D. Dvořák 791/08 (BRNU 594532). – Ibid., other site, alt. 410 m, on strongly decayed piece of lying trunk of *Abies alba* covered by mosses, 25 Oct. 2008 leg. et det. D. Dvořák 816/08 (BRNU 594533).

Ukraine. Zakarpatska oblast region, Eastern Carpathians, NNE of the village of Kvasy NNE of the town of Rachiv, Mt. Menchul, NNW slope above Tisa river, c. 2.2 km W of the summit, 48° 10' 27.6" N, 24° 17' 45.6" E, alt. 720 m, natural multi-aged *Fagus sylvatica-Abies alba* forest with many fallen trunks, on decaying fallen trunk of *Abies alba* covered with mosses, 27 June 2007 leg. et det. J. Holec (PRM 909450). – Ibid., Mt. Menchul, W slope above Tisa river, c. 2.5 km WNW of the summit, 48° 10' 30" N, 24° 17' 40.8" E, alt. 800 m, *Fagus sylvatica-Abies alba* virgin forest, on decaying fallen trunk of *Abies alba* covered with mosses, 29 June 2007 leg. et det. J. Holec (PRM 909460). – Ibid., NE of the village of Kvasy, Mt. Menchul, NW slope, 48° 10' 51.6" N , 24° 17' 52.2" E, alt. 600 m, mixed virgin forest (*Fagus sylvatica*, *Abies alba*, *Acer platanoides*, *A. pseudoplatanus*, *Picea abies*), on decaying fallen trunk of *Abies alba* covered with mosses, 11 July 1999 leg. J. Holec, det. V. Antonín (PRM 911738).

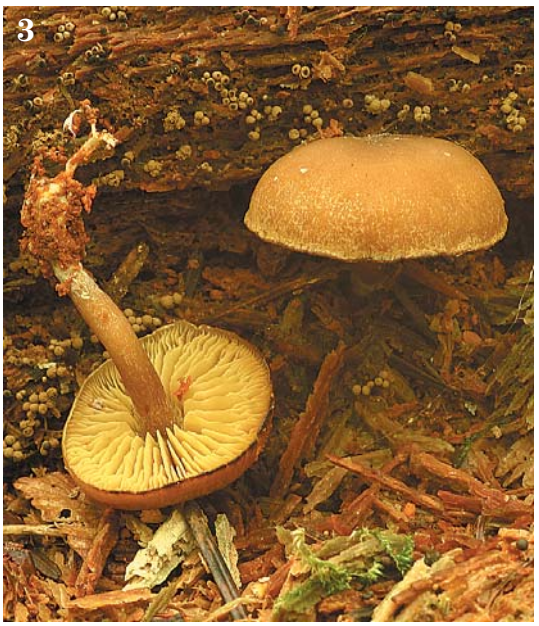
DISCUSSION

Taxonomy and nomenclature

Callistosporium pinicola differs from all similar species of this genus by having small basidiospores (for the variability of basidiospore size, see Tab. 1). It is also very distinctive by its farinaceous smell and bitterish to bitter taste. Our description agrees with those by Arnolds (2006), Ludwig (2001) and Wilhelm (2007), but none of these authors mention the presence of simple ascending terminal cells of the stipitipellis (caulocystidia). These terminal cells are (sometimes scatteredly) present in all basidiocarps studied. Although the hymenium is always violaceous grey to brown-violaceous in KOH, the colour intensity is rather variable. Arnolds (2006) writes that basidiocarps of *C. pinicola* lack green colours (with one exception) which are typical of *Callistosporium* species. However, in our collections an olive tinge was present, at least in older basidiocarps (both on pileus, lamellae and stipe).

Bon (1992) recognised this taxon for the first time. However, he published its name invalidly as *Callistosporium xanthophyllum* f. *minor* Bon ad int., without

Figs. 1–2. *Callistosporium pinicola*, finds from the Czech Republic. 1. Šumava Mts., Lenora, Zátoň, Boubínský prales National Nature Reserve, photo J. Holec. 2. Hostýnské vrchy hills, Rajnochovice, Tesák Nature Reserve, photo J. Burel. For details, see Material studied.



Figs. 3–6. *Callistosporium pinicola*, finds from the Czech Republic. 3. Moravskoslezské Beskydy Mts., Bílá, Salajka National Nature Reserve, photo V. Antonín. 4. Táborská pahorkatina highland, Dobřejovice, Libochovka Nature Reserve, photo P. Špinar. 5 & 6. Křivoklátsko PLA, Beroun, Roztoky, Stříbrný luh Nature Reserve, photo D. Dvořák. For details, see Material studied.

a Latin diagnosis. Bon´s name was validly published by Verbeken and Walleyn (2003) as *Callistosporium luteoolivaceum* f. *minor*. Under the same name, Wilhelm (2003) published records from Germany. At the species level it was described first by Arnolds (2006; date of effective publication is June 2006, Lawrynowicz in litt.). One year later (15 Aug. 2007), a paper by Wilhelm (2007) with the superfluous new combination *C. minor* (Verbeken & Walleyn) Wilhelm was published.

A description and good drawings of this species were also published by Ludwig (2000 and 2001) as *C. luteoolivaceum* var. *minor* Bon ined. Roux (2006) also mentioned the existence of this taxon.

Arnolds (2006) wrote that *C. pinicola* was sometimes misidentified as *Calocybe cerina* (Pers.: Fr.) Donk. We checked this possibility in the rich collections of the PRM herbarium where numerous specimens of *Calocybe cerina* are kept (as *Tricholoma cerinum*). However, all of them represent a terrestrial fungus which is the true *C. cerina* in its original sense (the taxon is currently treated as a variety of *Calocybe chrysenteron*, see Arnolds 2006) and not the lignicolous *Callistosporium pinicola*. In CB, there are no collections of *Calocybe cerina*.

Ecology

Callistosporium pinicola grows preferably on wood of conifers. Bon (1992) studied a collection from a *Pinus* stump. Arnolds (2006) mentioned its occurrence on strongly decayed stumps and trunks of mainly *Pinus sylvestris* but also *Pinus pinea* and *Picea abies*. Basidiocarps of the collections from the Czech Republic were found on *Abies alba* (also in Ukraine) and *Picea abies*. There is also one record from wood of a frondose tree (probably *Fagus sylvatica*, BRNU 594557). Similarly, Verbeken and Walleyn (2003) collected *Callistosporium pinicola* on hardwood (*Fagus sylvatica*). The Ukrainian records (this paper) are from fallen trunks of *Abies alba* in natural to virgin forests.

In the Czech Republic, *C. pinicola* has been found in old-growth forests (with one exception, see Results) in rather cold stands (montane or submontane forests and stream valleys or gorges in the colline belt). However, Wilhelm (2007) recorded it in a thermophilic forest, with *Quercus*, *Carpinus* and partly *Pinus*, on sand-gravel covered with a neutral or slightly basic soil. Arnolds (2006) mentioned coniferous and mixed forests mainly on acidic, sandy and loamy soils. He kindly sent us detailed information on habitats of *C. pinicola* in The Netherlands. All stands of *Picea abies* and *Pinus sylvestris* have been planted and *Picea abies* is not even a native tree. *C. pinicola* grows on strongly decayed stumps of cut trees of 40 to 70 years old (not on fallen logs) in first-generation forest plantations. Therefore the species cannot be regarded as an indicator species of old-growth forests on an European scale.

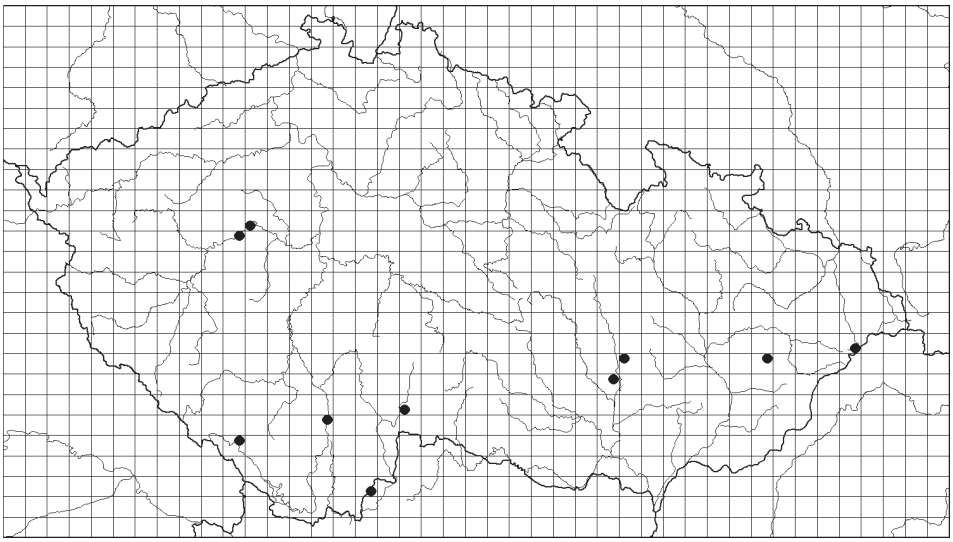


Fig. 7. Distribution of *C. pinicola* in the Czech Republic.

Generally, the data on habitats of *C. pinicola* from various parts of Europe are heterogeneous. More collections are necessary to fully understand the habitat requirements of this species. However, the linkage of *C. pinicola* to strongly decayed wood (of mostly conifers) is well documented. Such wood (usually of fallen trunks) is much commoner in old-growth forests than in forest managed by man. This fact might be the main reason for the preference of old-growth forests in the Czech Republic. However, even in this country the species is not confined only to "virgin forest conditions" (long-term vegetation continuity and stable habitat conditions) such as *Amylocystis lapponica* (Holec and Kučera 2007), a species growing exclusively in virgin forest refuges (in Central Europe).

The current data suggest that *C. pinicola* usually occurs in localities fulfilling two conditions: a humid climate and strongly decayed wood (of mostly conifers). In Western Europe the first condition is ensured by the oceanic character of its climate and the species is probably limited by a poor supply of suitable substrate in local forests. In Central Europe, the humid meso– and microclimate of old-growth forests and their rich supply of decaying wood creates suitable conditions for *C. pinicola*. However, this hypothesis has to be confirmed by other finds.

As a rare species confined to endangered natural habitats (mostly protected as nature reserves), *C. pinicola* should certainly be included into the new edition of the Red List of fungi of the Czech Republic. In the current list (Holec and Beran 2006), the only included species from the genus *Callistosporium* is *C. luteoolivaceum*.

Distribution

In the Czech Republic, *C. pinicola* is known from central Bohemia (Křivoklátsko PLA), southern Bohemia (Šumava Mts., Novohradské hory Mts., Táborská and Křemešnická vrchovina highlands), central Moravia (Moravian Karst) and eastern Moravia (Hostýnské vrchy hills, Moravskoslezské Beskydy Mts.). The distribution shows no clear geographic tendency and the species is to be expected in other regions, especially those with old-growth forests (mostly preserved in nature reserves).

An attempt was made to find older collections of *C. pinicola* in the main herbaria of the Czech Republic. All *Callistosporium* collections were revised in PRM, BRNM and CB, the leading mycological herbaria, but without success. Generally, *Callistosporium* collections are very rare in these herbaria. In PRM, only one collection of *C. luteoolivaceum* from the Czech Republic is preserved: Soběslav, forest Svákov, 2006 (Kotlaba 2006). CB possesses several collections identified as *C. xanthophyllum* sensu Bon from Horní Skrýchov near Jindřichův Hradec (Beran and Papoušek 1995; Papoušek 2004; Holec and Beran 2006, as *C. luteoolivaceum*). The only two *Callistosporium* collections from the Moravian part of the CR are preserved in BRNM: Brno-Lesná, Suchá hora, 1991 (as *C. xanthophyllum*, Antonín and Vágner 1993), and Lanžhot, Doubravka, 1998 (as *C. luteoolivaceum*, Antonín et al. 2000).

It is very interesting that all collections of *C. pinicola* in the CR are recent (collected in the period 2004–2008). This could have three reasons: 1) the species was overlooked in the past, 2) the intensity of recent mycological research in old-growth forests of the CR is higher than in the past and, consequently, the chance that *C. pinicola* is found increased, 3) the species is spreading for unknown reasons. We think that the reality is a mixture of all these reasons, but with a prevalence of the recent spread, as it is inconceivable that older mycologists overlooked such a remarkable fungus with bright colours.

In Europe, *C. pinicola* is hitherto known from Austria (Arnolds 2006, Kalamees 2004), the Czech Republic (this paper), France (Bon 1992, Arnolds 2006, Wilhelm 2003), Germany (Ludwig 2001; Wilhelm 2003, 2007), Italy (Arnolds 2006), The Netherlands (Arnolds 2006), Belgium (Verbeken and Walleyn 2003), Switzerland (Kalamees 2004), and Ukraine (this paper).

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