

Crustoderma efibulatum and *Hyphodontia incrustata* (Basidiomycota, Aphyllophorales), two new species from southern Finland

Heikki Kotiranta¹ & Reima Saarenoksa²

¹⁾ Finnish Environment Institute, Research Department, P.O. Box 140, FI-00251 Helsinki, Finland (heikki.kotiranta@ymparisto.fi)

²⁾ Department of Biological and Environmental Sciences, P.O. Box 65 (Viikinkaari 1), FI-00014 University of Helsinki, Finland

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Crustoderma efibulatum Kotir. & Saaren. and *Hyphodontia incrustata* Kotir. & Saaren. are described. The former species deviates from the concept of *Crustoderma* Parmasto in being clampless and thus reminiscent of some species of *Phlebia* Fr. The latter species is at first sight reminiscent of *Hyphodontia sambuci* (Pers.) J. Erikss., but with differently shaped, encrusted basidia. The generic position of both species is somewhat uncertain.

Key words: Aphyllophorales, Basidiomycota, *Crustoderma*, *Hyphodontia*, *Phlebia*

The material studied is preserved in herbaria GB, H, and/or in the reference herbarium of Heikki Kotiranta (H.K.).

Thirty spores per specimen were measured, and the measurements were made in Cotton Blue (CB). In addition, Melzer's reagent and 5% potassium hydroxide (KOH) was used as a mounting medium. All the measurements were made in CB.

The following abbreviations are used: *L* = spore length, *L** = mean spore length, *W* = spore width, *W** = mean spore width, *Q* = range of the variation in *L/W* ratio, *Q** = quotient of the mean spore length and width (*L**/*W**). The *L* and *W* values given in boldface include at least 90% of the spores (Table 1). If more than one specimen

is studied, in the text *Q* value shows the variation between all specimens (Table 1), *Q** value the mean of all *Q** values and the spore length and width show the variation of mean sizes of each specimen and *L** the mean length of all specimens and *W** the mean width of all specimens, respectively. None of the measurements derive from spore prints.

Biological provinces and collecting sites in Finland are indicated according to the Finnish national uniform grid system (27°E), as applied to biological material by Heikinheimo and Raatikainen (1981).

The authors names in chapters "Specimens examined", and Table 1 are abbreviated as H.K. (Heikki Kotiranta) and R.S. (Reima Saarenoksa).

***Crustoderma efibulatum* Kotir. & Saaren.,
sp. nova (Fig. 1)**

*Fructificatio resupinata, tuberculata, systema
hypharum monomiticum; fibulis nullis; cystidiis
grandibus, crassi tunicatis, papillatis, sporae
fusiformes, 6.5–8.7 × 1.7–2.1 μm.*

HOLOTYPE: Finland. Uusimaa: Porvoo, Sannainen 2 km
N, Stortärnan SW, poor, semi open *Pinus sylvestris* domi-
nated rock outcrop, on decorticated branch of *Pinus sylves-*
tris kelo tree, 60°26'N, 25°47'E (Grid 27°E 67030:4337),
14.XI.2003 Kotiranta 20271 & Saarenoksa (holotype H;
isotype GB).

Basidiocarp resupinate, fairly thick, tuber-
culate, glittering under the lens due to the pro-
jecting cystidia, grayish brown, Phlebioid when
fresh, pale ochre coloured when dry, cracking,
margin thinning out, distinct.

Hyphal system monomitic, all septa without
clamps, CB–. Subiculum consisting of about
five layers of hyphae with thickened walls (up
to 1 μm), 3–5 μm wide, swelling to some degree
in KOH. Subhymenial hyphae richly branched,
2.5–3 μm wide, thin- or slightly thick-walled.
Cystidia (pseudocystidia) cylindrical, originat-
ing from subiculum, frequent, in some parts very
common, 110–160 × 11–13 μm, thick-walled
(up to 2 μm) projecting up to 75 μm above
the basidia, fairly often with an apical papilla.
Basidia forming a dense palisade, basally simple

septate, subcylindrical, or subclavate, thin-
walled, 27–35 × 4.5 μm, with four thin, up
to 7 μm long sterigmata. Spores cylindrical,
sometimes slightly bent, but not allantoid, often
gently sigmoid, (6.5–)6.7–8.7(–9) × 1.7–2.1 μm,
 $L^* = 7.6 \mu\text{m}$, $W^* = 2 \mu\text{m}$, $Q = 3.4\text{--}4.7$, $Q^* =$
3.9, thin-walled, CB–, IKI–, sometimes glued in
pairs or tetrads.

At first sight the new species looks like a
clampless *Phlebia* with very large cystidia. Espe-
cially *P. tristis* (Litsch. & S. Lundell) Parmasto
looks similar (see e.g., Kotiranta & Saarenoksa
1993: 235). According to Parmasto and Hallen-
berg (2000) *P. tristis* does not belong in the core
of *Phlebia* but is close to *P. queletii* (Bourdot &
Galzin) M.P. Christ. (= *Odontia queletii* Bourdot
& Galzin). Recently Piątek (2004) described
the genus *Cabalodontia*, with the type species
Odontia queletii. However, in our species the
visible decay is of the brown rot type, which is
characteristic for the genus *Crustoderma*. *Crus-*
toderma nakasoneae Gilb. & M. Blackw. has
fairly similar large cystidia, but the spores are
wider, 2.5–3 μm, and hyphae clamped (Gilbert-
son & Blackwell 1988). According to the lit-
erature (Nakasone 1984, Gilbertson & Blackwell
1988, Gilbertson & Nakasone 2003) this is the
first clampless *Crustoderma* species.

The growth site is extremely poor, very dry
and hot in the summer time, and cold in the
winter time due to the relatively thin snow-cover.

Table 1. Spore dimensions of the studied specimens of *Hyphodontia incrustata*. The values set in bold include at
least 90% of the spores.

	<i>L</i>	<i>L</i> [*]	<i>W</i>	<i>W</i> [*]	<i>Q</i>	<i>Q</i> [*]
R.S. 02200	(6–) 6.5–7.2 (–7.5)	6.8	(5–) 5.5–6.4 (–6.7)	5.9	1.1–1.3	1.2
R.S. 02300	6–6.6 (–6.9)	6.4	(4.9–) 5.1–5.8 (–6.1)	5.4	1.1–1.3	1.2
R.S. 02400	6–7 (–7.4)	6.4	5–6	5.5	1.1–1.3	1.2
R.S. 03000	6–7.1 (–7.3)	6.6	5.2–6 (–6.2)	5.7	1.1–1.3	1.2
R.S. 01701	(6–) 6.2–7 (–7.5)	6.7	5.3–6.2 (–6.5)	5.7	1–1.3	1.2
R.S. 10801	6.4–7.5 (–8.3)	6.9	5.2–6.5 (–7.2)	6	1–1.3	1.2
R.S. 10901	6–7 (–7.8)	6.6	5.2–6 (6.9)	5.7	1–1.3	1.1
R.S. 11001	6–7 (–7.8)	6.5	5–6 (–7)	5.5	1.1–1.3	1.2
R.S. 11101	6–7 (–7.2)	6.5	5.1–6.2 (–6.7)	5.7	1.1–1.2	1.1
R.S. 11201	6–7.5 (–8.5)	6.8	(5–) 5.2–6.7 (–7.5)	5.8	1.1–1.3	1.2
H.K. 18813 & R.S.	6–7	6.4	(5.1–) 5.3–6.1	5.6	1–1.2	1.1
H.K. 18815 & R.S.	6–7 (–7.2)	6.6	5.1–6 (–6.5)	5.7	1.1–1.3	1.2
R.S. 36994	5.5–7 (–7.3)	6.2	4.9–6.1	5.5	1–1.2	1.1
R.S. 12089	5.4–6.7 (–6.9)	6	4.9–5.8	5.3	1–1.2	1.1
Vanhanen 589	6–7.5 (–8)	6.6	5–6.3 (–6.8)	5.7	1.1–1.3	1.2

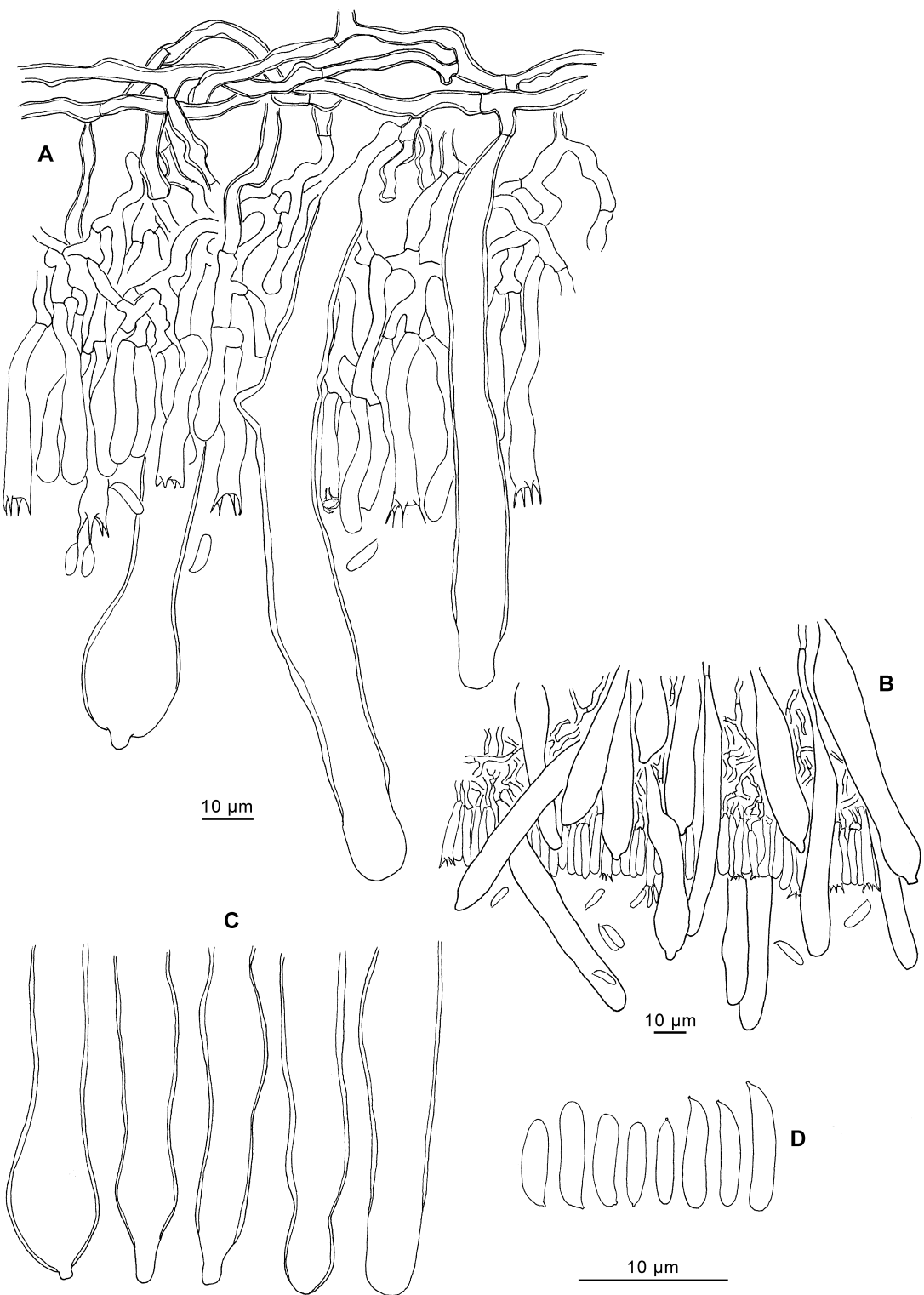


Fig. 1. *Crustoderma efibulatum* (from holotype). — **A:** Section through basidiocarp. — **B:** Area with many unusual cystidia. — **C:** Cystidial apices. — **D:** Spores.

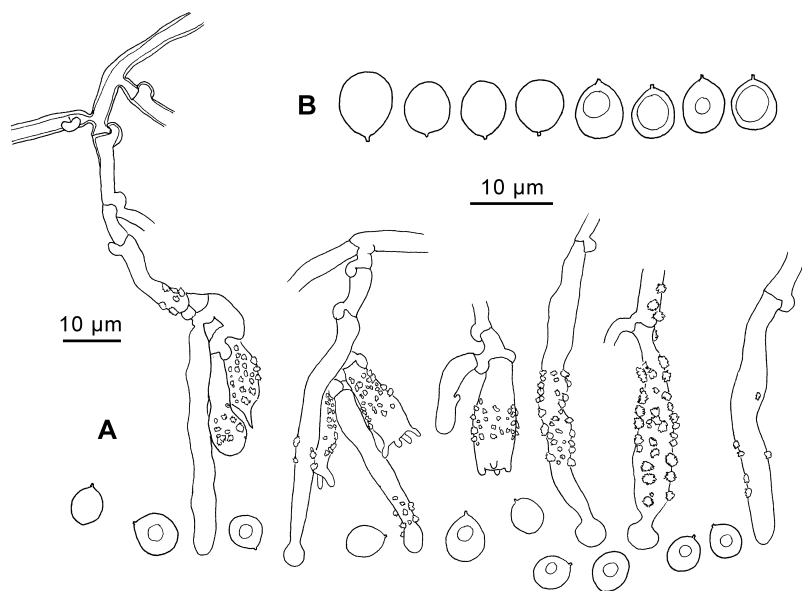


Fig. 2. *Hyphodontia incrustata* (from holotype). — **A:** Cystidia, basidia and spores. — **B:** Spores.

***Hyphodontia incrustata* Kotir. & Saaren., sp. nova (Figs. 2–3)**

Fructificatio resupinata, alba; systema hypharum monomiticum; hyphis fibulatis, cystidiis similaribus Hyphodontiae sambuci; basidia clavata, incrustata, 15–20 × 6–7 µm; sporae subglobosae, crassitunicatae, (5.5–)6–7 × 5.1–6.3 µm, non amyloideae, cyanophilae nec laeviter cyanophilae.

HOLOTYPE: Finland. Uusimaa, Helsinki, Kumpulan laakso, moist and seasonal wet grass-herb forest with deciduous trees like *Salix* spp., *Prunus padus* etc. on advanced decayed decorticated *Salix fragilis*, 60°12'N, 24°58'E (Grid 27°E 66791:3874), 13.X.2001 Saarenoksa 11201 (holotype H).

Basidiocarp fairly thin or very thin, soft, hypochnoid, pure white when fresh, slightly cream coloured when old, margin not differentiated, distinct.

Hyphal system monomitic, all hyphae clamped with roundish “*Hyphodontia*” clamps, CB+. Subiculum almost lacking, consisting of a few layers of hyphae only. Hyphae straight, distinct with thickened walls, 3–3.5 µm wide. Contextual hyphae more thin-walled, up to 4 µm wide. Subhymenial hyphae thin-walled, 3–4 µm wide. Cystidia abundant and of three types: (1) most common and in every specimen very frequent, encrusted or heavily encrusted,

thin- or more rarely thick-walled, capitate, (35–)40–70(–80) × (4–)5–7(–9) µm, very similar to those in *H. sambuci*, sometimes with adventitious septa, (2) wide, cylindrical (not capitate), seemingly lacking in many specimens, 40–53 × 6–7 µm and, (3) finger-like cystidia (cystidioles?) which may be young capitate cystidia, 25–35 × 3–4.5 µm. Basidia clavate, often stalked, very seldom subcylindrical, mostly heavily encrusted, (13–)15–20 × (5.5–)6–7 µm, with four, often curved, up to 6 µm long sterigmata. Spores broadly ellipsoid, subglobose or globose, thin- to relatively thick-walled, 6–6.9 × 5.3–6 µm, $L^* = 6.5$ µm, $W^* = 5.6$ µm, $Q = 1$ –1.3, $Q^* = 1.2$, CB+ (sometimes faint), IKI–.

We are not convinced that *Hyphodontia* is the right genus for *H. incrustata*, especially if compared with the type species *H. pallidula* (Bres.) J. Erikss. However, at present no better genus is available.

Hypochnicium capitulatum Boidin & Gilles seems to have basidia and cystidia very similar to those of *Hyphodontia incrustata* (see Boidin & Gilles 2000: 165), but the spores are rough. Also *Hyphodontia subglobosa* Sheng H. Wu has similar-shaped basidia to *H. incrustata*, but the basidiocarp of the former is odontoid, spores smaller and the hyphae are clampless (Wu 1990).

The species is hitherto found in four places in Finland: three of them are in Helsinki and the

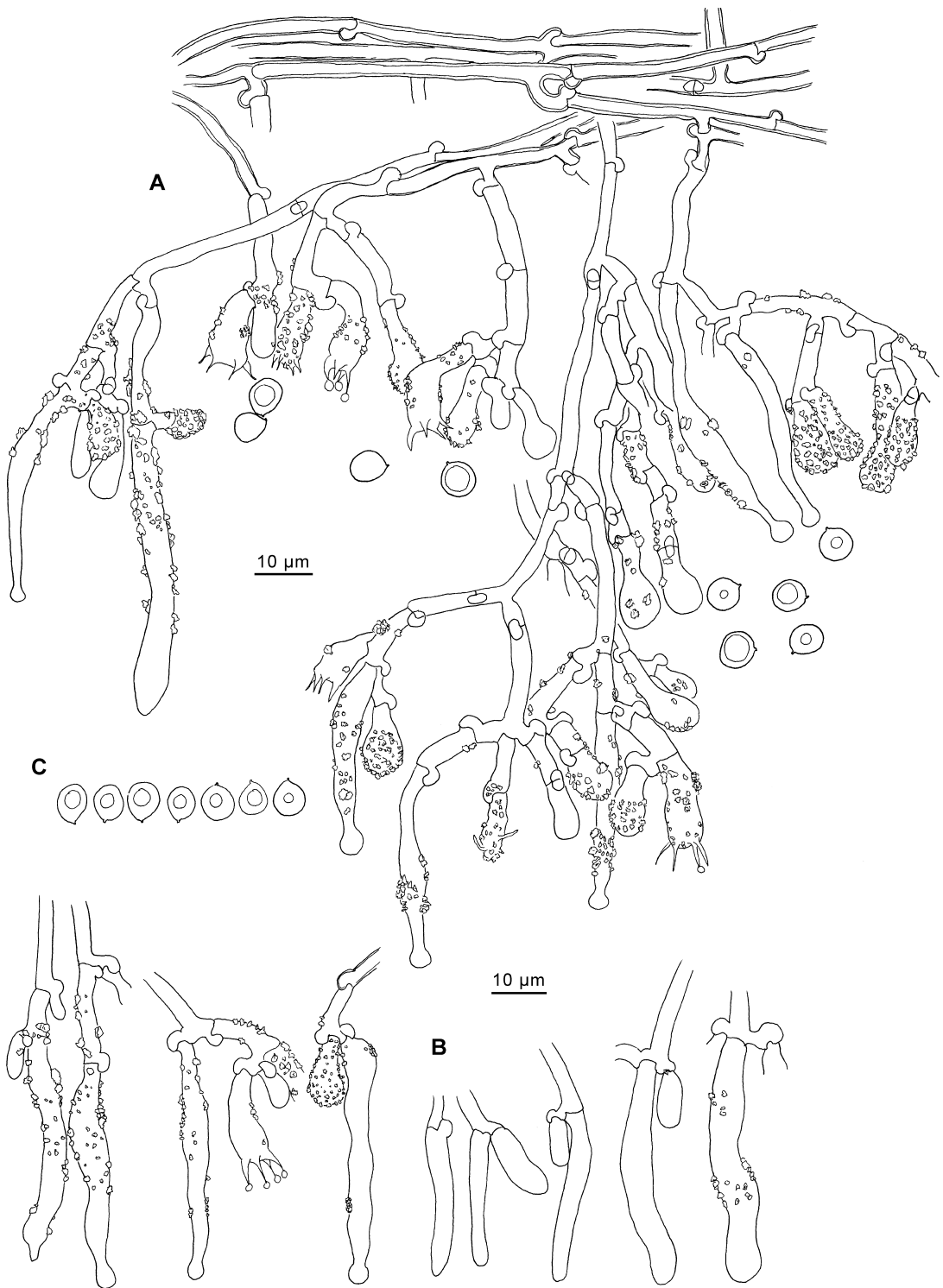


Fig. 3. *Hyphodontia incrustata* (from Saarenoksa 12089). — **A:** Section through basidiocarp. — **B:** Cystidia, basidioles and a basidium. — **C:** Spores.

fourth one in southern central Finland. The type locality harboured several, in Finland, threatened species e.g., *Gloiodon strigosus* (Sw. : Fr.) P. Karst., *Hyphoderma deviatum* (S. Lundell) J. Erikss. & Ryv. and *Lindtneria chordulata* (D.P. Rogers) Hjortstam. Now the grove has been destroyed for newly-built housing. Also the two other growth sites in Helsinki are totally or more or less destroyed, whereas the one in southern Central Finland is protected by law. All the sites are, or were, very luxuriant broad leaved forests.

ADDITIONAL SPECIMENS EXAMINED (paratypes): — **Finland.** Uusimaa: Helsinki, Kumpulan laakso, moist and seasonal wet grass-herb forest with deciduous trees like *Alnus* spp., *Salix* spp., *Prunus padus* etc., 60°12'N, 24°58'E (Grid 27°E 66791:3874); all the specimens in this site grew on pieces or thin branches/stems of *Salix caprea*, *S. fragilis* or *Salix* sp., 30.VII.2000 R.S. 02200, 02300, 02400 (H), 1.VIII.2000, R.S. 03000 (H), 4.VIII.2001 R.S. 01701 (H), 22.IX.2001 H.K. 18813, 18815 & R.S. (H.K.), 13.X.2001 R.S. 10801, 10901, 11001, 11101, (H). Helsinki, Vanhakaupunki, Annala, brook-side grass-herb forest, *S. caprea* branch, 60°12'N, 24°58'E (Grid 27°E 6679:387), 21.VIII.1994 R.S. 36994 (H). Helsinki, Viikki, grass-herb forest, dead fallen *Angelica sylvestris*, 60°14'N, 25°02'E (Grid 27°E 6682:391), 17.VIII.1989 R.S. 12089 (H). Etelä-Häme: Korpilahti, Oitila, *Ulmus glabra* dominated brook-side grass-herb forest, corticated, hard *Corylus avellana* branch, 61°56'N, 25°44'E (Grid 27°E 68707:4338), *Vanhanen* 589 (H).

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