

128. *Psilocybe cyanescens* Wakef. *Trans. Brit. Myc. Soc.* **29**: 141, 1946.

Figs. 578-583, 640, 772, 777-778 & Plate 8

Pileus (10-) 20-50 (-75) mm in diam., subconic or convex to campanulate, becoming irregularly expanded plano-convex or applanate to depressed, sometimes subumbonate, glabrous, even, but margin slightly striate when moist, viscid, hygrophanous, orangish brown, brownish red, grayish pinkish brown, or chestnut color, fading to yellowish, straw color, or ochraceous. Easily staining blue when touched or injure.

Lamellae adnate to sinuate, yellowish brown or orangish-brown to violaceous brown, sometimes somewhat mottled, with edges concolorous or nearly whitish.

Stipe (40-) 60-90 (-110) × (3-) 4-6 (-7) mm, equal, cylindrical or subbulbous, straight or sometimes irregularly flexuous, frequently with the base curved, hard and cartilaginous, solid to hollow, surface white to whitish, silky-fibrillose or scabrous toward the base. Readily changing to blue when bruised. Base with conspicuous white rhizomorphs.

Veil cortinate and well developed, delicate and white in young stages, evanescent in the adults or the remnants remains, fibrillate in the upper part of the stipe. Annulus not present.

Context yellowish and pliant or fleshy in the pileus, whitish to orangish-yellow and cartilatinous in the stipe mainly toward the base. Odor and taste farinaceous, but more strongly so in young fruit bodies. Easily staining blue when cut. KOH stains the context and the pileus reddish-yellow or reddish brown; in the stipe is brownish or not at all.

Spore print dark brown violet or fuscous.

Spores (8.8-) 11-13.2 (-15.4) × (6-) 6.6-7.7 (-8.5) × 5.5-7 μm , elongate-ellipsoid both face and side view or slightly broader in face view, thick walled (1-1.5 μm), dark yellowish brown, with a distinct broad apical germ pore.

Basidia 20-27 (-36) × 7-8.5 (-11) μm , 4-spored, rarely 2-spored, hyaline, vesiculose-subpyriform, sometimes with a slight median constriction.

Pleurocystidia 17-33 × 4.9-8.8 μm , hyaline, fusoid-ventricose or subpyriform but all the time mucronate, rarely with a more or less long neck, not so abundant, more frequently near to the edge of the gill.

Cheilocystidia (12-) 16-27 (-30) × (5-) 6.6-8.8 μm , hyaline, abundant, sublageniform or fusoid-ventricose, rarely pedicellate or with a more or less long cylindrical base, with a long neck, bifurcate or simple, up to 6 × 1.5-3.5 μm .

Subhymenium subhyaline or yellowish, with moderate amount of pigment and irregularly incrustated on the walls of the hyphae, seemingly subcellular with short elements. Trama regular, hyaline to yellowish, with hyphae walls non incrustated, and thin walled. Epicutis consisting of a subgelatinized thin layer of interwoven and loosely arranged hyaline narrow hyphae. Hypodermium hyaline to brownish, formed by compact globose to elongated hyphae, 10-70 μm thick, moderately incrustated. Clamp connections very common.

HABITAT AND DISTRIBUTION. Rarely scattered, more frequently gregarious, sometimes forming rings on humus or subnigricolously on very rotten wood mixed with soil, or on sawdust or soil mulched containing wood chips or bark, in deciduous forests, but also very common in gardens under bushes, very rarely in grasses. Known from Great Britain, Netherlands, and Germany, and in the Northwestern North America, from Vancouver to California. Not known from the eastern North America. Fruiting in October to December.

STUDIED MATERIAL. CANADA, Vancouver, *Bandoni* s.n. (Oct. 9, 1965) (WTU as *P. pelliculosa*); *Guzmán* 16622; 16623; 16630; 16633; 16710 (all in ENCB); *Pollock* 10-26-76 (ENCB).

U.S.A., California, San Francisco, Golden Gate Park, *Thiers* 24723; 26886 & 32138 (SFSU); *Duncan* s.n. (12-6-74) (Vergeer Herb.; ENCB); *Ower* s.n. (3-9-75) (Vergeer Herb.); *Vergeer* 11-74 (Vergeer Herb.). Mt. Sutro, *Stevens & Orr* s.n. (12-8-1975) (Vergeer Herb.). Oregon, Portland, *Oswald* s.n. (Dec. 1, 1960) (MICH); *Guetz* s.n. (Oct. 30, 1960) (MICH); *Guzmán* 16642; 16644 (ENCB). Eugene, *Sipe* 1281 (MICH). Milwaukee, *Shoemaker* s.n. (Oct. 30, 1960) (MICH). Lane, *Leslie* 3951; 3972 (ENCB). Siltcoos Station, Westlake, *Menser* 887; 4502; 4504 & 4551 (ENCB); *Guzmán* 16648, 16670 (ENCB). Philomath, *Menser* 4528 (ENCB). Canary, *Menser* 4567. Washington, Mercer Island, *Chilton et al.* 75-2 (ENCB); *Leslie* 2759 (ENCB). Olympia, *Leslie* 2732; 3692; 3835; 3854 & 4021 (all in ENCB); *Guzmán* 16640 (ENCB); *Bigwood* 04 (ENCB). Near Tacoma, *Stamets* 78-34 (ENCB). Seattle, *Benedict & Brady* 1961 (part) (MICH; ENCB); *Benedict & Brady* 1962 (part) (MICH; ENCB); *Guzmán* 16600; 16601; 16612 (all in ENCB); *Rafaneldi* s.n. (Oct. 26, 1970) (WTU 16383 as *P. baeocystis*).

GREAT BRITAIN, Edinburgh, Royal Botanical Garden, *Henderson* 1213 (E); *Harrison* 4016 (E); *Watling* 5354 (E).

HOLLAND, Gelderland, Warnsborn, *Tjallingii-Beukers*, s.n. (Nov. 4, 1975) (L).

DISCUSSION. The type was not examined by the author, who has based his interpretation of this species on European collections from England (type locality) and from Netherlands, which were identified by Watling and by Tjallingii-Beukers, respectively (this latter reported by Tjallingii-Beukers, 1976), and in the study of Wakefield's description (in Dennis & Wakefield, 1946) and in Singer & Smith (1958b). This species is close to *P. serbica* Moser & Horak and *P. liniformans* Guzmán & Bas, but those species do not have pleurocystidia. It is also close to *P. maire* Sing., but this species has very long pleurocystidia.

This species is one of the more common hallucinogenic fungi in Northwest of North America and is unfortunately used by the young people as a recreation drug. Benedict *et al.* (1962) and Tyler & Stuntz (1962) reported on the chemistry of this fungus, but see discussion in *P. stuntzii* Guzmán & Ott concerning the confusion of the material used by Benedict *et al.* (1962). It is interesting to see that *P. cyanescens* is very common in the Northwestern North America, and apparently rare in Europe and unknown in the Eastern U.S.A.; it may have been introduced to Europe from the Northwestern North America, but more explorations are necessary to learn the exact distribution of *P. cyanescens*. The references of Singer & Smith (1958b),

Dennis & Wakefield (1946), Tjallingii-Beukers (1976), Pegler (1966b), and Bresinsky & Haas (1976) seem to be the only reports of this species from Europe. Smith (in Benedict *et al.*, 1962) reported *P. cyanescens* from Northwestern U.S.A. Guzmán *et al.* (1976) and Duffy & Vergeer (1977) reported *P. cyanescens* from the Western North America. The report of *P. maire* from California (U.S.A.) by Duffy & Vergeer (1977) is probably *P. cyanescens* which is further discussed below.

There was some confusion of the identification of those specimens collected by Duncan in San Francisco, California. The wild fruit bodies were identified by Singer as probably *P. maire*. Duncan made a culture and the cultured fruit bodies were passed to J. Bigwood who showed them to Singer who identified them as *P. subaeruginascens* Höhnelt. But it seems that there was some mistake with the culture labels, because the cultured fungus showed to Singer has a ring, and is really *P. subcubensis* Guzmán (see discussion of this). On the other hand, the specimens collected by Ower (3-9-75) in California were identified by Singer as *P. maire*, even though they have cheilocystidia and pleurocystidia exactly like those of the typical *P. cyanescens*. Cultures of *P. cyanescens* are deposited in the Institute for Fermentation at Osaka (Japan), as well as in many North American institutions.

The name of the species refers to the conspicuous blue-green color of this fungus when touched or cut, as is characteristic in all the hallucinogenic species.

SELECTED ILLUSTRATIONS. Ott & Bigwood (1978, fig. 7); Stamets (1978, fig. 18).