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## ***Psathyrella fragrans*, a morphological type revision**

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**Key words:**

*Basidiomycota*  
*Agaricales*  
*Psathyrellaceae*

**Abstract:** The type of *P. fragrans* was studied by Voto, Dovana & Garbelotto (2019) but only its phylogenetic results were reported; anatomical data and pictures obtained by Voto which were not published then are documented in the present contribution.

### **INTRODUCTION**

As the scope of Voto, Dovana & Garbelotto (2019) was an in-depth study on sect. *Spadiceogriseae* Kits van Wav. of the genus *Psathyrella* Fr. ex Quél., the revision of the type of *P. fragrans* A.H. Sm. was only cited in relation to the sequences obtained which was useful as it could prove the taxon to be autonomous from the similar and close *P. piluliformis* (Bull.) P.D. Orton.

As there is still little knowledge of this species in Europe, data and pictures obtained from its type's micro morphological revision are documented in this paper.

### **MATERIALS AND METHODS**

The dried material was first imbibed with either 5 % KOH or 10 % NH<sub>4</sub>OH. Then a 5 % KOH stain was used to determine pigmentation of the marginal cystidia and of the underlying cells while a 10 % NH<sub>4</sub>OH dilution was used to determine traits of pleurocystidia including wall thickness, presence of incrustation, and pigmentation. Congo red was used instead for staining and picture-documentation of microanatomical features of interest.

### **TAXONOMY**

#### ***Psathyrella fragrans* A.H. Sm.**

*Memoirs of the New York Botanical Garden* 24: 372 (1972)

Material examined: USA, Idaho, Valley, Upper Payette Lake, Payette National Forest, on conifer debris, 31.VIII.1954, A.H. Smith 47114, MICH 5347, typus, loan of a full pileus and a half in good condition.

Spores: 4.9 – 6.7 × 3.0 – 4.1 µm, Q = 1.3 – 1.9, on average 1.5; in front view oval to elliptic or narrowly elliptic, sometimes triangular-oval, base rounded to subtruncate, sometimes truncate, in side view adaxially flattened to subphaseoliform or sometimes elliptic; pale salmon-brown in water and in NH<sub>4</sub>OH, pale brownish grey in KOH; germ pore small or a callus, 0.7 – 1.2 µm broad, sometimes swollen in KOH.

Pleurocystidia: 35.0 – 60.0 × (7.0) 10.0 – 17.0 µm, apex 7.0 – 15.0 µm broad; utriform capitate to utriform subcapitate or utriform, sometimes clavate-utriform to clavate or cylindraceous-utriform, apex sometimes 2- to 3-forked, base often thickset and not pedicellate in shorter cells (35 – 40 µm long); walls thin and sometimes with a pale purple-brownish shade; numerous.

Cheilocystidia: 28.0 – 50.0 × 9.0 – 17.0 µm, apex 6.0 – 11.0 µm broad, hyaline, occasionally sub thick-walled, dominating the gill edge.

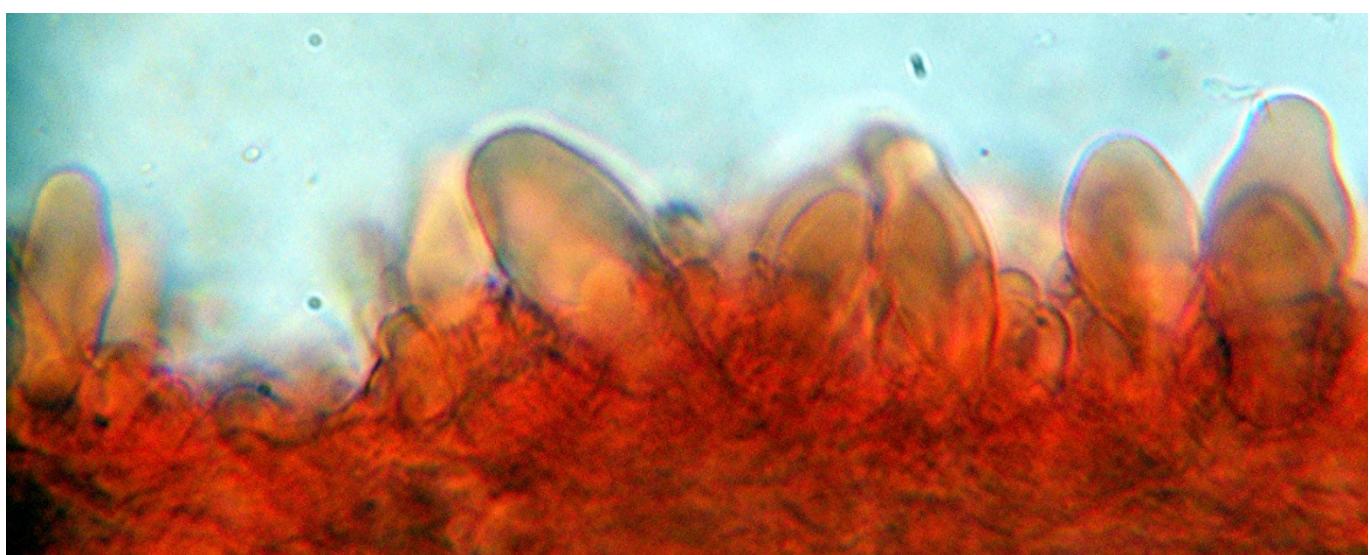
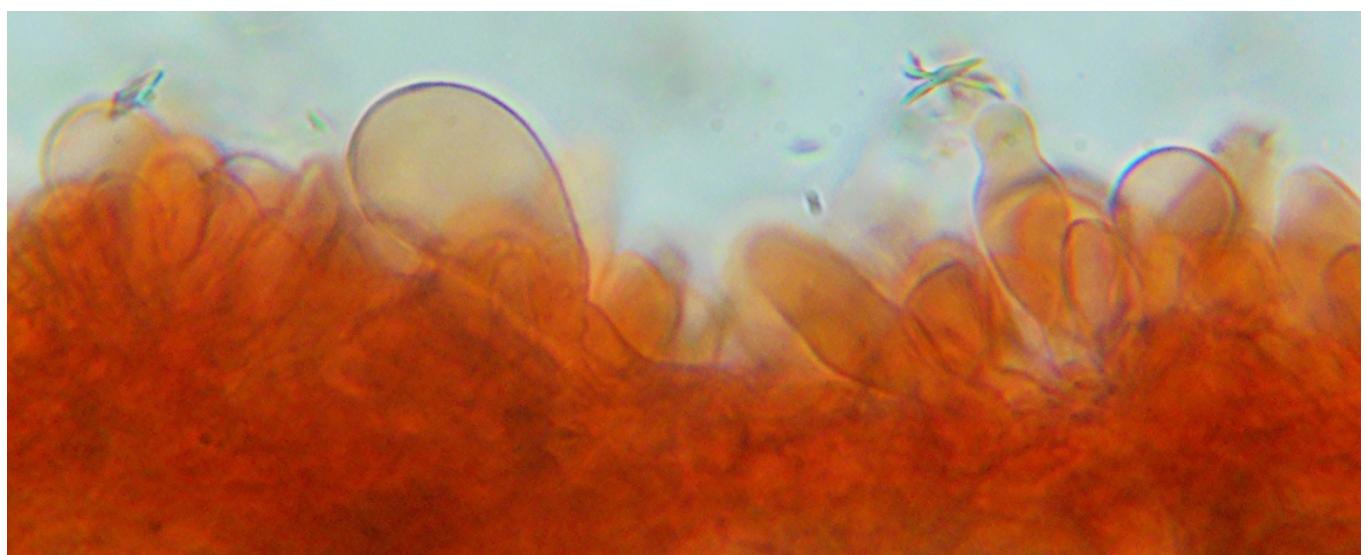
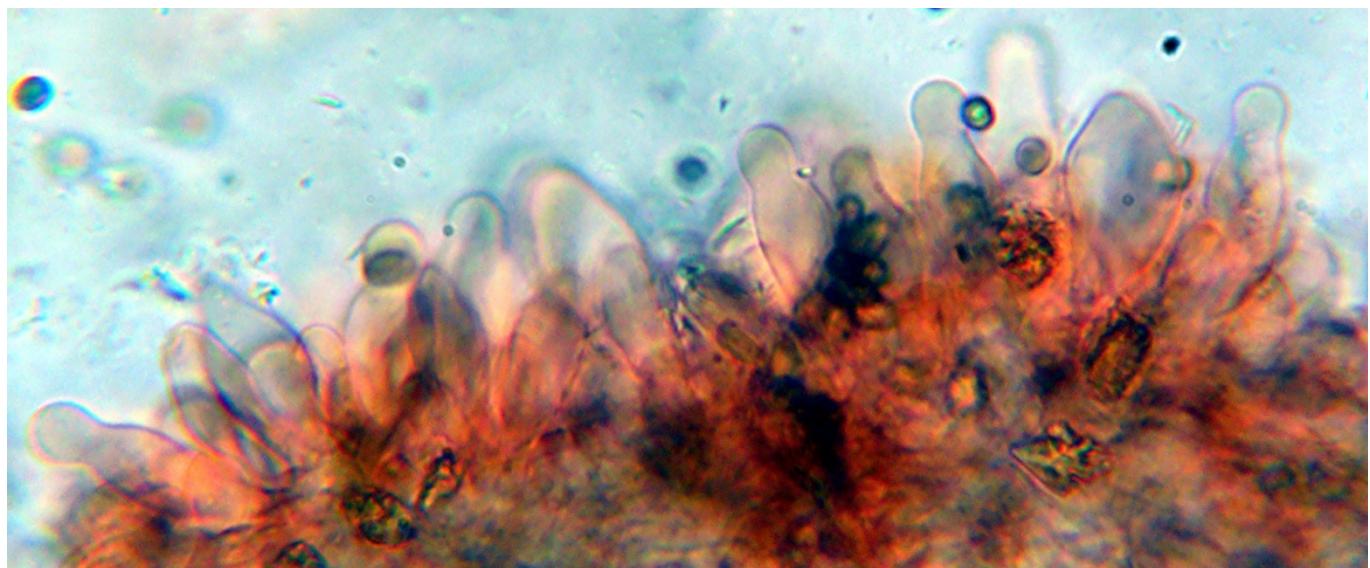
Paracystidia: 10.0 – 38.0 × 5.5 – 18.0, sometimes fusiform-rhomboid, hyaline, occasionally sub thick-walled.

Clamp connections: present.

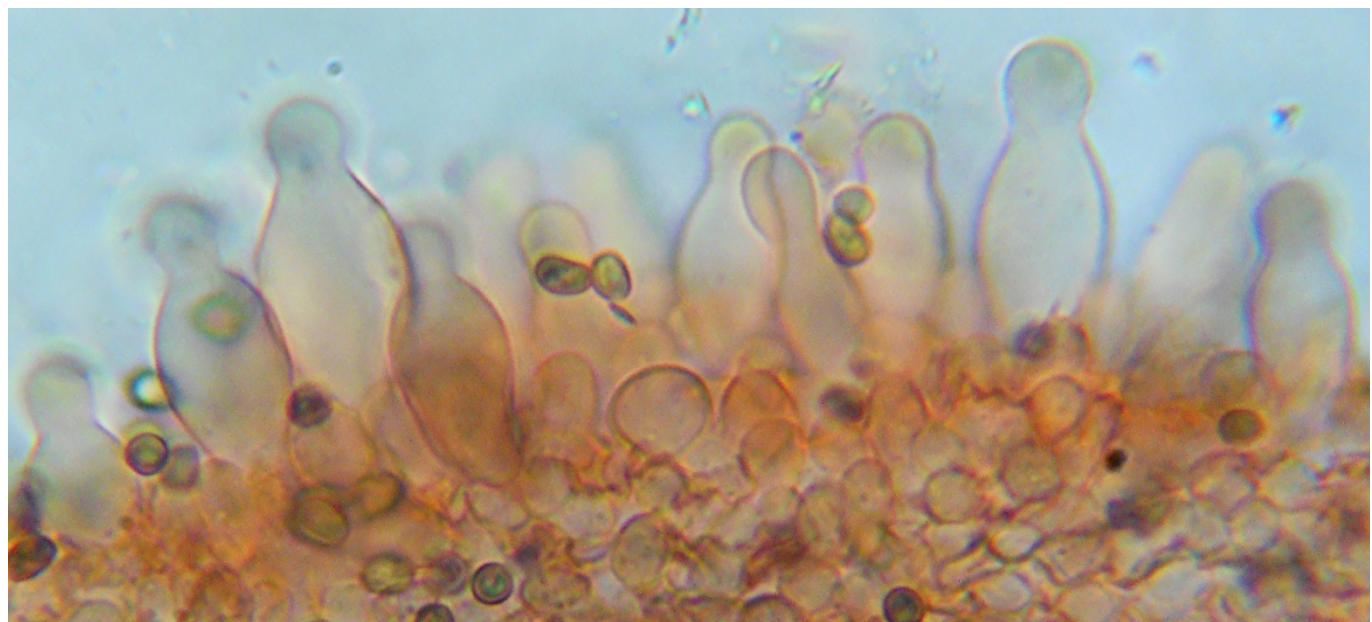
### **NOTES**

The type revision showed spores somewhat larger respecting both the European description by Kits van Waveren (1985), 5.5 – 6.6 × 3.0 – 3.5 µm, and Smith's (1972) original description, 5.0 – 6.0 × 2.0 – 3.5 µm, this last indeed somewhat perplexing with regard to the reduced spore breadth.

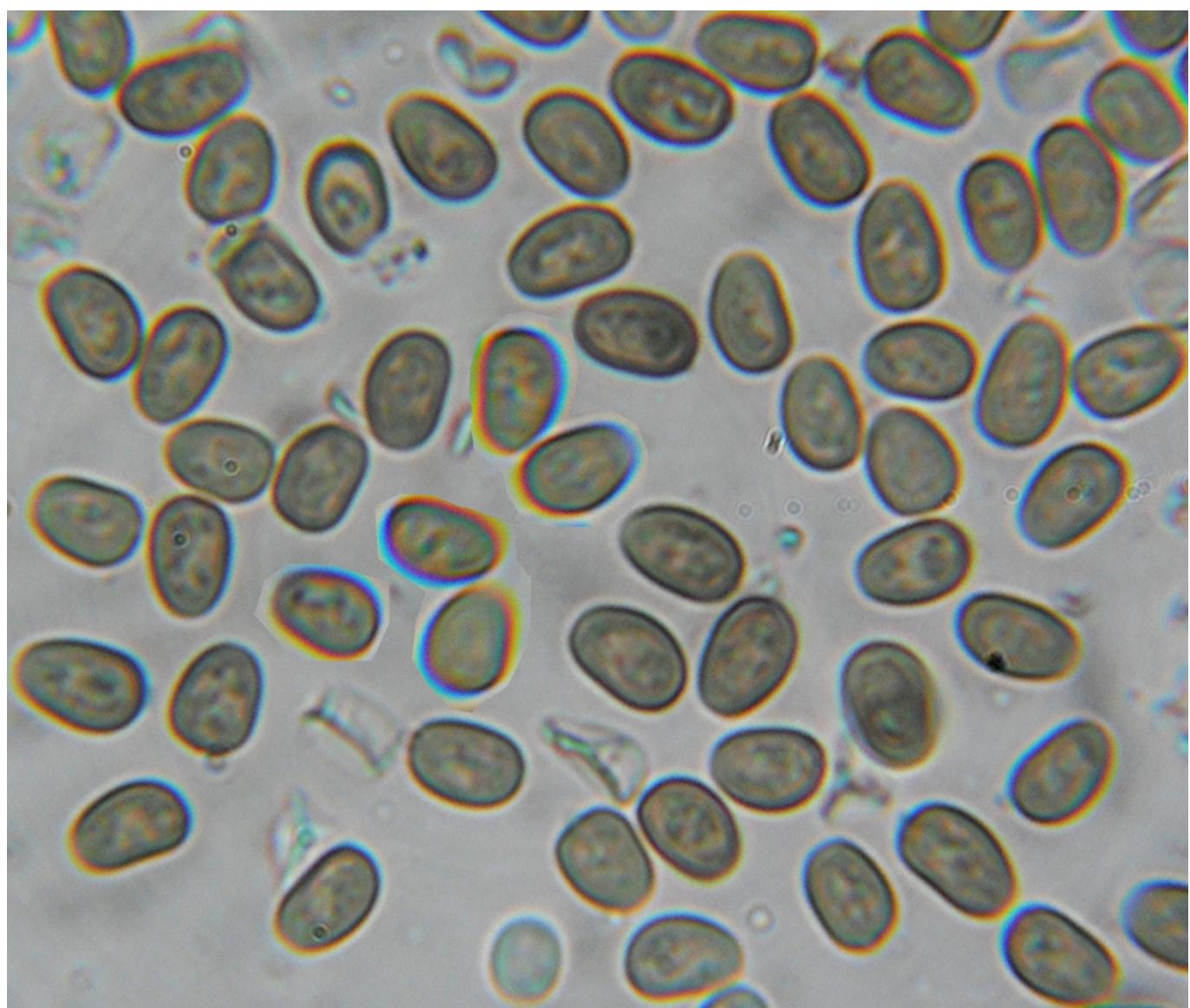
Pleurocystidia are in all respects as documented by Kits van Waveren (1985), including some clavate cells, but we add the occasional presence of forked elements.



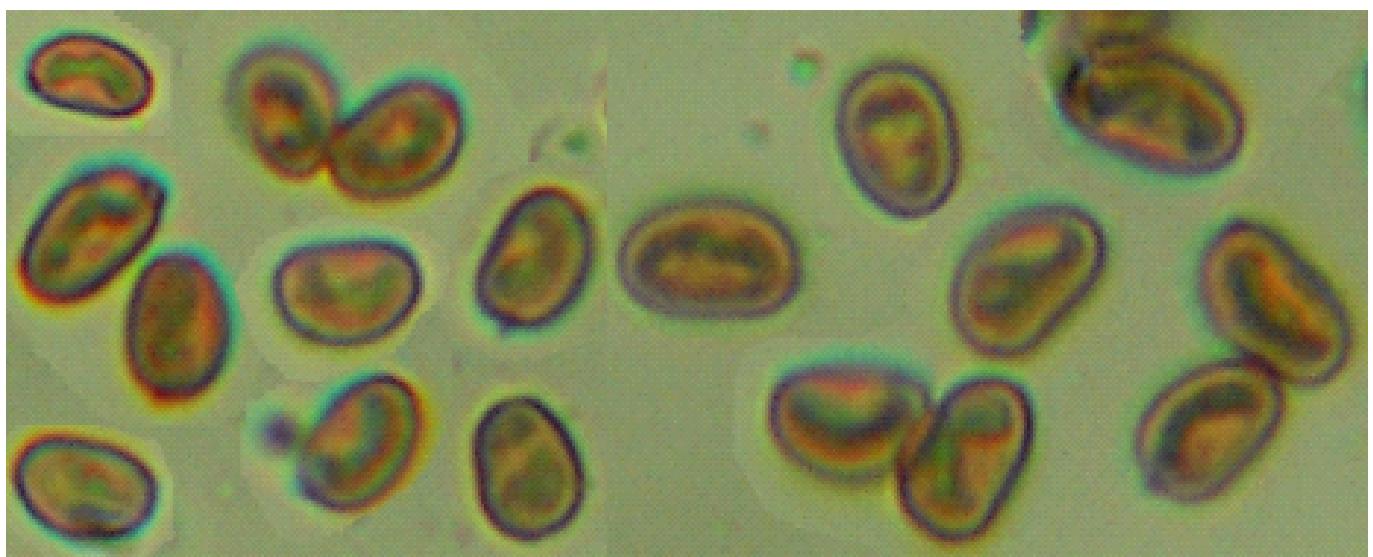
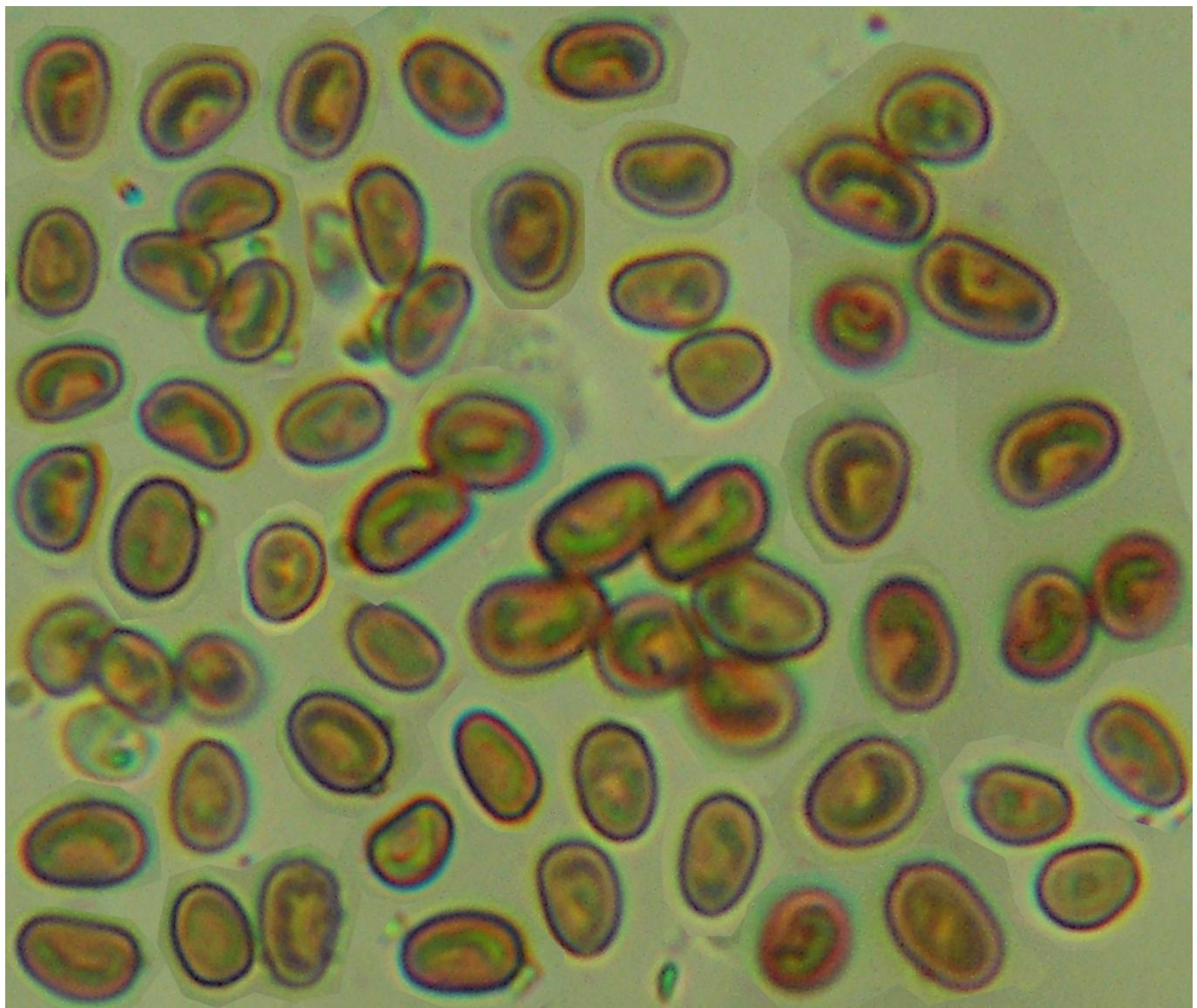
Gill edge cystidia / cistidi del filo lamellare



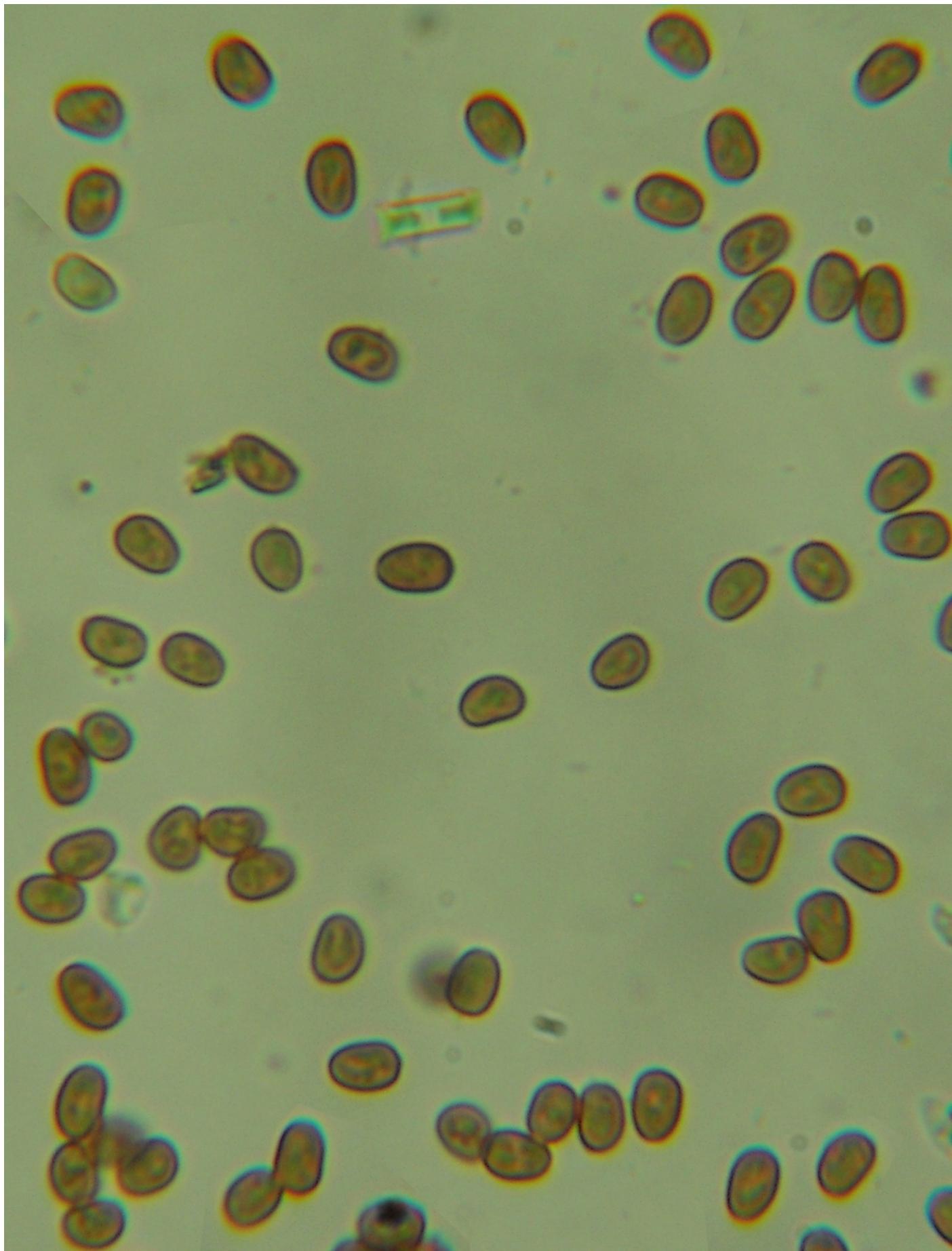
Gill edge cystidia / cistidi del filo lamellare



Spores in KOH / spore in KOH

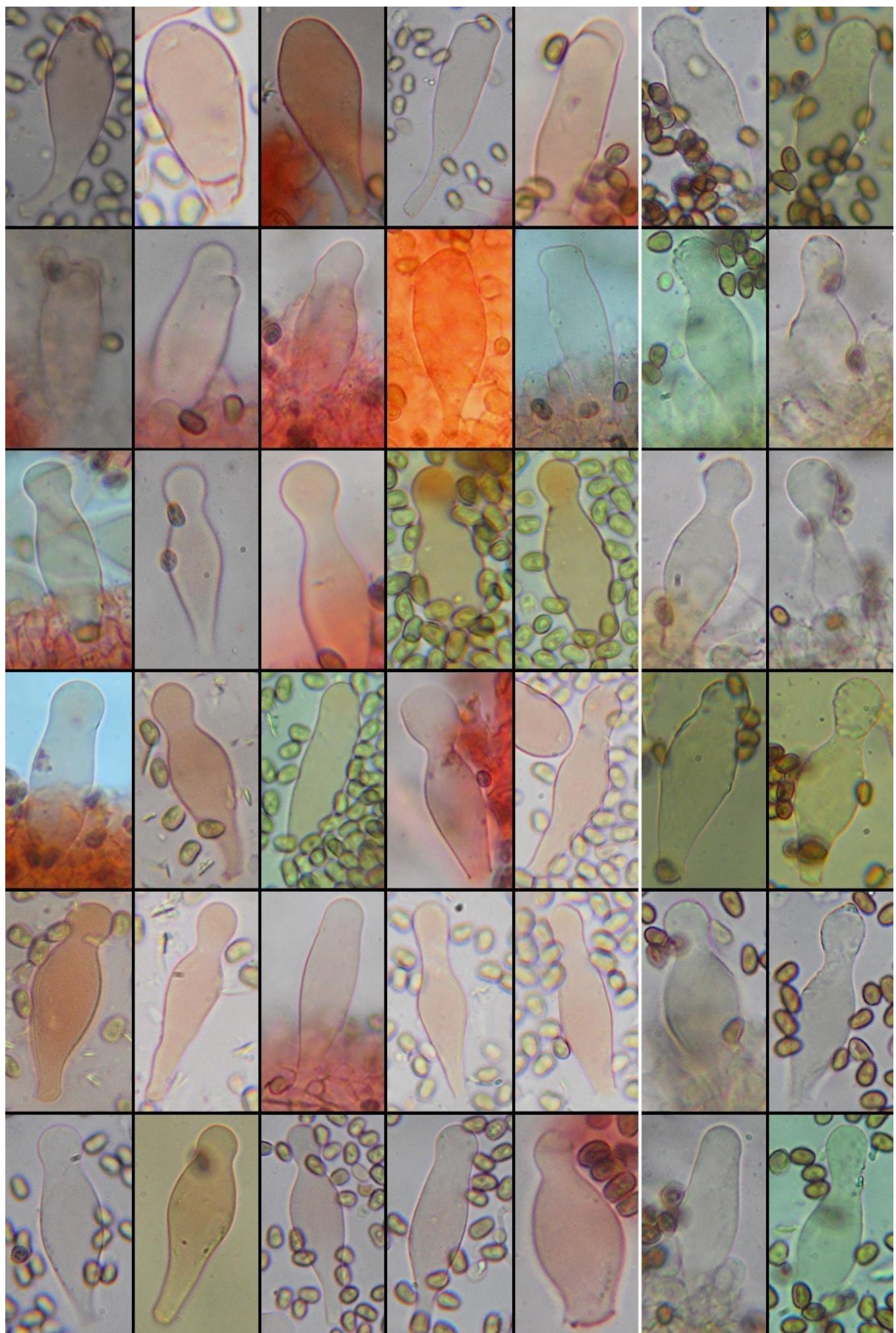


Spores in water / spore in acqua



Spores in ammonia / spore in ammoniaca

Next page. Pleurocystidia in Congo red (left), in ammonia (right) / pagina seguente. Pleurocistidi in rosso Congo (sx), in ammoniaca (dx)



## REFERENCES / BIBLIOGRAFIA

- Kits van Waveren E (1985) The Dutch, French and British species of *Psathyrella*. *Persoonia Suppl* 2:1–300
- Smith AH (1972) The North American species of *Psathyrella*. *Memoirs of the New York Botanical Garden* 24:1–633
- Voto P, Dovana F, Garbelotto M (2019) A revision of the genus *Psathyrella*, with a focus on subsection *Spadiceogriseae*. *Fungal Systematics and Evolution* 4:97–170

## *Psathyrella fragrans*, revisione morfologica del typus

### Parole chiave:

*Basidiomycota*  
*Agaricales*  
*Psathyrellaceae*

**Abstract:** The type of *P. fragrans* was studied by Voto, Dovana & Garbelotto (2019) but only its phylogenetic results were reported; anatomical data and pictures obtained by Voto which were not published then are documented in the present contribution.

## INTRODUZIONE

Poiché lo scopo di Voto, Dovana & Garbelotto (2019) era uno studio approfondito sulla sez. *Spadiceogriseae* Kits van Wav. del genere *Psathyrella* Fr. ex Quél., la revisione del typus di *P. fragrans* A.H. Sm. fu solo citata in relazione alle sequenze ottenute che risultarono utili a dimostrare la sua autonomia rispetto al simile e prossimo *P. piluliformis* (Bull.) P.D. Orton.

Dato che c'è ancora poca conoscenza di questa specie in Europa l'autore, che ha studiato la micromorfologia del typus, ha deciso di documentare le osservazioni che ne ha ottenuto sia come dati che come microimmagini.

## MATERIALI E METODI

Il materiale essiccato è stato dapprima rigonfiato con KOH al 5 % o NH<sub>4</sub>OH al 10 %. A 5 % KOH stain was Poi una immersione in KOH al 5 % è stata usata per determinare il pigmento dei cistidi marginali e delle cellule sottostanti mentre una diluizione in NH<sub>4</sub>OH al 10 % è stata usata per determinare alcuni tratti dei pleurocistidi inclusi lo spessore parietale, la presenza di incrostazioni, e il pigmento. Rosso Congo è stato invece usato per colorare e documentare con fotografie elementi di microanatomia di interesse.

## TASSONOMIA

### *Psathyrella fragrans* A.H. Sm.

*Memoirs of the New York Botanical Garden* 24: 372 (1972)

Materiale esaminato: USA, Idaho, Valley, Upper Payette Lake, Payette National Forest, su detriti di conifera, 31.VIII.1954, A.H. Smith 47114, MICH 5347, typus, prestito di un cappello e mezzo in buone condizioni.

Spore: 4.9 – 6.7 × 3.0 – 4.1 µm, Q = 1.3-1.9, in media 1.5; in vista frontale da ovali a ellittiche o strettamente ellittiche, alcune triangolari-ovali, base da arrotondata a subtroncata, alcune troncate, in vista laterale da adassialmente appiattite a subfaseoliformi o alcune ellittiche; di colore bruno-salmone pallido in acqua e in NH<sub>4</sub>OH, grigio brunastro pallido in KOH; poro germinativo piccolo o un callo, 0.7 – 1.2 µm di diametro, a volte rigonfio in KOH.

Pleurocistidi: 35.0 – 60.0 × (7.0) 10.0 – 17.0 µm, apice largo 7.0 – 15.0 µm; da utriformi capitati a utriformi subcapitati o utriformi, alcuni da clavato-utriformi a clavati o cilindraceo-utriformi, apice a volte bi- o triforcato, base sovente tozza e non pedicellata negli elementi più corti (35 – 40 µm long); parete sottile e a volte con una sfumatura porpora-brunastra pallida; numerosi.

Cheilocistidi: 28.0 – 50.0 × 9.0 – 17.0 µm, apice largo 6.0 – 11.0 µm, ialini, occasionalmente a parete subispessita, dominanti il filo lamellare.

Paracistidi: 10.0 – 38.0 × 5.5 – 18.0, alcuni fusiformi-romboidali, ialini, occasionalmente a parete subispessita.

Giunti a fibbia: presenti.

**COMMENTI**

La revisione del tipo ha mostrato spore un po' più grandi rispetto sia alla descrizione europea di Kits van Waveren (1985),  $5.5 - 6.6 \times 3.0 - 3.5 \mu\text{m}$ , sia alla descrizione originale di Smith (1972),  $5.0 - 6.0 \times 2.0 - 3.5 \mu\text{m}$ , quest'ultima in particolare un po' disorientante in merito alla ridotta larghezza sporale.

I pleurocistidi sono in ogni rispetto come documentati da Kits van Waveren (1985), inclusi alcuni elementi clavati, ma aggiungiamo la presenza occasionale di elementi forcati.