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## NOTES ON TOMENTELLOID FUNGI V. ADDITIONAL NEW SPECIES OF *PSEUDOTOMENTELLA*

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Three species of *Pseudotomentella* are described as new from western North America: *P. molybdea* from Montana, *P. fumosa* from Oregon, and *P. kaniksuensis* from Idaho. All are dimittic and associated with brown-rotted wood of *Pseudotsuga menziesii* (Mirb.) Franco. A morphological basis for subgeneric grouping is discussed briefly.

The methodology pertinent to basidiocarp study, preparation of descriptions, and spore terminology is detailed elsewhere (Larsen, 1971a). Photomicrographs were prepared with the aid of a Leitz Ortholux microscope and Orthomat camera. Numerical surface-color expressions are those of the Munsell Color Co. (1929–1942) and herbarium abbreviations those of Holmgren and Kueken (1974).

### DESCRIPTION OF SPECIES

***Pseudotomentella molybdea*** M. Larsen, sp. nov.

FIGS. 1–3

Basidiocarpis arachnoideis, area fecunda et subicula griseo; fibulis nullis, basidiis 35–50 × 6–7 (–9) μm; basidiosporis 6–8 μm latis, globosis vel globosis irregulanties.

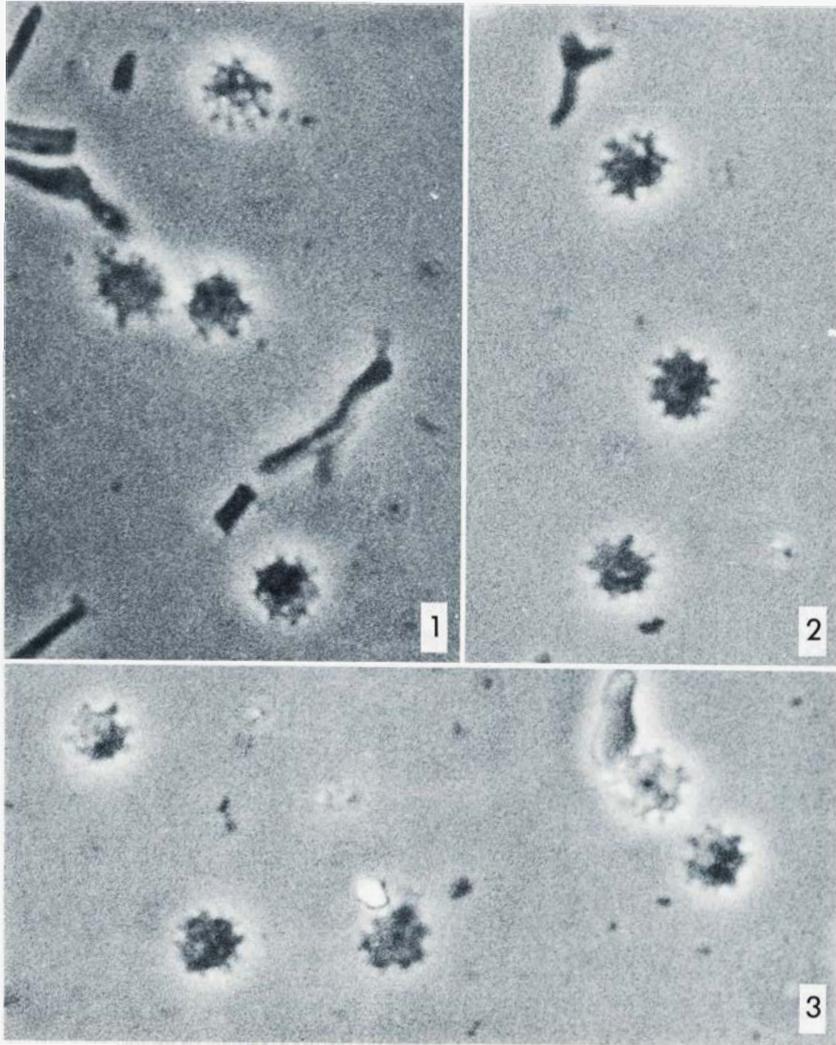
Holotypus: U.S.A., Montana, Flathead National Forest, ad ligna *Pseudotsuga menziesii* (Mirb.) Franco, legit M. J. Larsen, 6–IX–1974FP<sup>2</sup> 133849 (CFMR).

Basidiocarps effuse, up to 0.4 mm thick, separable in small pieces, arachnoid; fertile areas continuous to discontinuous, gray (near N 4.5); subiculum byssoid, gray and appearing somewhat darker than the fertile area; margin arachnoid to byssoid, slightly darker than the fertile areas; cordons evident at 10×.

Hyphal system dimittic with clamp connections absent. *Subicular hyphae* of two kinds, some generative, 2 μm diam, septate, thin-walled, pale tan; some skeletal, 2 μm diam, aseptate, thick-walled, pale tan (hyphae of both kinds dull grayish blue in Melzer's reagent; reaction diffuse or appearing localized in granular material adhering to cell walls); *cordons* in the subiculum up to 20 μm diam, composed of both generative and skeletal hyphae, frequently appearing tan to pale brown; *subhymenial hyphae* 2 μm diam, thin-walled, hyaline to pale tan;

<sup>1</sup> In cooperation with the University of Wisconsin

<sup>2</sup> Designation for CFMR herbarium numbers.



### M151711

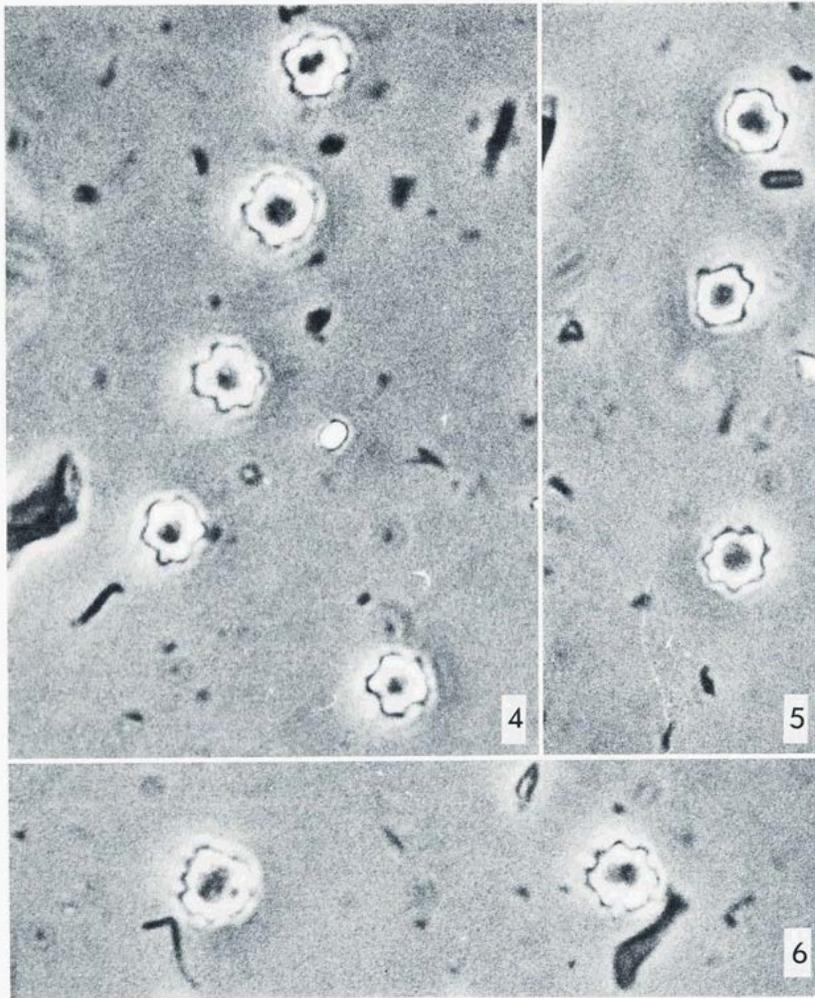
FIGS. 1–3. Basidiospores of *Pseudotomentella molybdea* (from holotype). Basidiospores, phase contrast,  $\times 1200$  (M151711)

*basidia*  $35\text{--}50 \times 6\text{--}7\text{--}(9)\mu\text{m}$  diam, napiform to sphaeropedunculate when immature, clavipedunculate when mature, 4-sterigmate, encrusting material on basidial walls frequently associated with the basal  $15\text{--}20\mu\text{m}$  and turning bluish black in KOH, not reacting with Melzer's reagent; *basidzospores*  $6\text{--}8\mu\text{m}$  across, pale yellow to pale tan, globose to irregularly globose, sometimes irregular, warted with the warts frequently bearing bifurcate echinuli.

ETYMOLOGY: from *molybdeus* (L., adj.) = lead gray, referring to the color of fertile areas and subiculum of basidiocarps.

*Specimen examined* — Known only from the type.

*Pseudotomentella molybdea* is similar to *P. griseopergarnacea* M. Lars. How-



### M151712

FIGS. 4-6. Basidiospores of *Pseudotomentella fumosa* (from holotype). Basidiospores, phase contrast,  $\times 1200$ . (M151712)

ever, the symmetrically lobed basidiospores, cordons up to  $150 \mu\text{m}$  in diam, and parchment-like basidiocarps readily separate it from *P. molybdea*. *Pseudotomentella fumosa* and *Pl kaniksuensis* are also similar, but possess longer basidia,  $50-70 \mu\text{m}$  and  $60-80 \mu\text{m}$ , respectively.

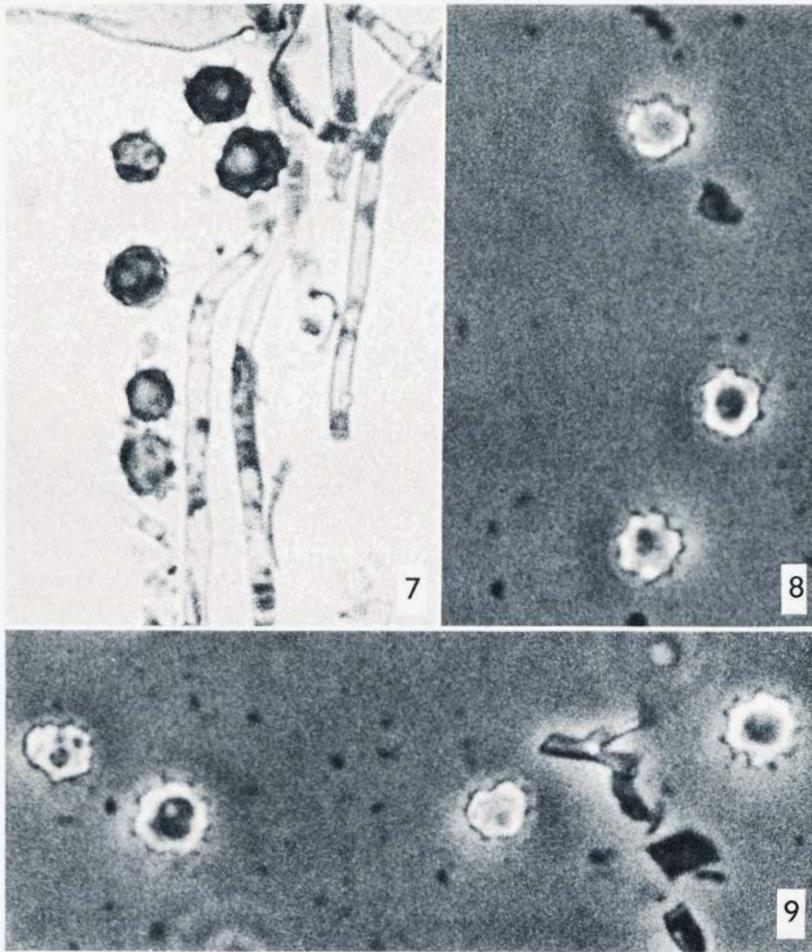
#### *Pseudotomentella fumosa* M. Lars., sp. nov.

FIGS. 4-6

Basidiocarpis effusus, archnoideis.; area fecunda griseo tingenti brunneo; fibulis nullis; hyphis subhymeniis  $3.5-4.5 \mu\text{m}$  diam; basidiis  $50-70 \times 7-8 (-9) \mu\text{m}$ ; basidiosporis  $6-8 (-9) \mu\text{m}$  latis, lobatis, verrucatis plerumque bifurcatis, hyalinis.

Holotypus: U.S.A., Oregon, Willamette National Forest, ad lignum *Pseudotsuga menziesii* (Mirb.) Franco, legit M. J. Larsen, 16-XI-1972, FP 133500 (CMFR).

Basidiocarps effuse, archnoid, fertile areas continuous to discontinuous, gray



### M151713

FIGS. 7-9. Basidiospores of *Pseudotomentella kanilksuensis* (from holotype). 7, bright field; 8, 9, phase contrast, all  $\times 1200$ . (M151713)

with brown tint (near 2.5 Y S/2); subiculum arachnoid, somewhat darker than the fertile area; margin not determinable; cordons evident at  $10\times$ .

Hyphal system dimitic with clamp connections absent. *Subicular hyphae* of two kinds, some generative, 2-3  $\mu\text{m}$  diam, septate, thin-walled, pale tan to hyaline; other hyphae skeletal, 2  $\mu\text{m}$  diam, thick-walled, pale citrine, aseptate; *cordons* 2  $\mu\text{m}$  diam frequent, 10-20  $\mu\text{m}$  diam, pale brown, normally constructed of generative hyphae but with randomly associated skeletal hyphae; *subhymenial hyphae* 3.5-4.5  $\mu\text{m}$  diam septate, thin-walled, pale brown to tan; *basidia* 50-70  $\times$  7-8 (-9)  $\mu\text{m}$ , napiform when immature, clavipedunculate when mature, with secondary wall thickenings and median transverse septa, 4-sterigmate; *basidiospores* 6-8(-9)  $\mu\text{m}$  wide, distinctly lobed and warty, with the warts normally bifurcate. Fungal parts not reacting with Melzer's reagent.

ETYMOLOGY: from *fumosus* (L. comp. form, adj.) = gray with tints of brown, smoky, referring to the color of fertile areas of basidiocarps.

TABLE I  
APPARENT SUBGENERIC GROUPING IN *Pseudotomentella*

Group	Basidiospore <sup>1</sup> morphology	Hyphal system	Subic- ular Clamp hyphae connec- dark tions brown		Species
I	Spores lobed when mature	Dimitic			<i>P. atrofusca</i> M Lars <i>P. fumosa</i> <i>P. griseopergamacea</i> <i>P. griseoveneta</i> M Lars
II	(as in Group I)	Dimitic	+	+	<i>P. humicola</i>
III	Spores lobed when mature, becoming irregularly globose to irregular in outline	Dimitic	-	-	<i>P. flavovirens</i> (Hoehn. & Litsch.) Svrcek <i>P. molybdea</i> <i>P. kaniksuensis</i> <i>P. mucidula</i> <sup>2</sup> <i>P. nigra</i> (Haehn & Litsch.) Svrcek <i>P. tenebrosa</i> (Malenc.) M. Lars
IV	(as in Group 111)	Monomitic	+	-	<i>P. atrocyanea</i> (Wakef.) Burds. & Lars <i>P. vepallidospora</i> M Lars
V	Spores not lobed when mature; becoming irregularly globose to irregular in outline and coarsely warted	Monomitic	-	+	<i>P. longisterigmata</i> M Lars <i>P. tristis</i>

<sup>1</sup> All microscopical observations in 10% KOH.

<sup>2</sup> Generic nomenclatural type species.

*Specimen examined.* —Known only from the type

*Pseudotomentella fumosa* may be distinguished by the color of fertile areas, basidial size, and distinctly lobed spores. *Pseudotomentella griseoveneta* M. Lars. is similar, but possesses a dull honey-yellow brown subiculum and smaller basidiospores [5.5–6.5(–7)μm]. *Pseudotomentella griseopergamacea* M. Lars. is also similar, but is readily diagnosed by the parchment-like character of basidiocarps, larger cordons (up to 150 μm diam), and smaller diameter of subhymental hyphae [2–3(–3.5)μm]. Also, see comments under *P. molybdea*.

***Pseudotomentella kaniksuensis* M. Larsen, sp. nov.**

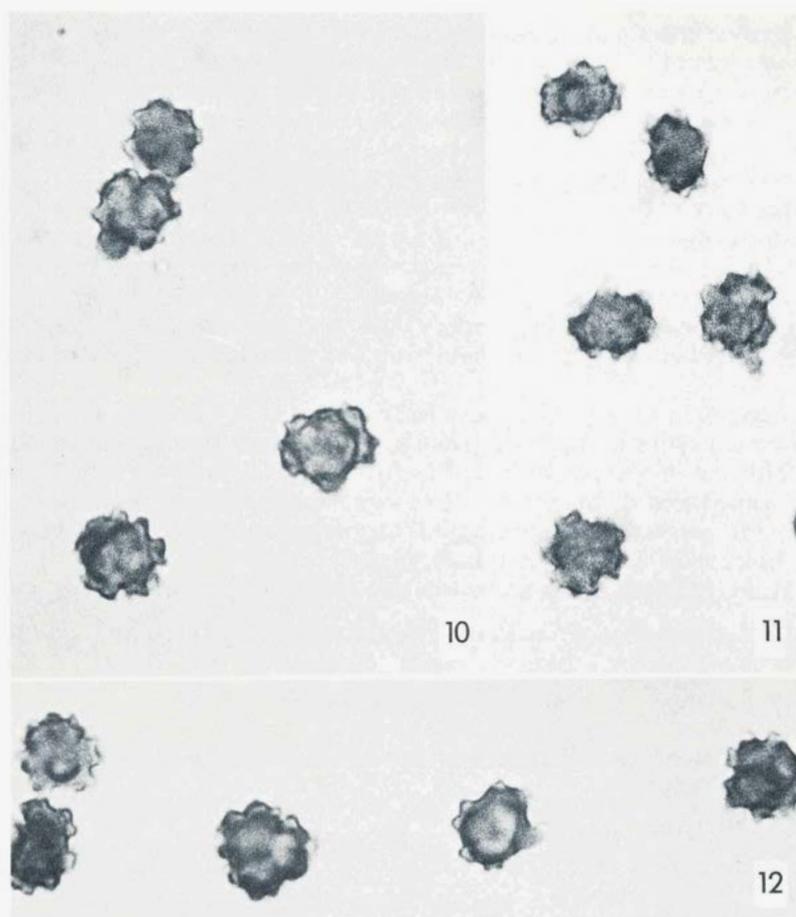
FIGS. 7–9

Basidiocarpis effusus; area fecunda fuscogrisea tingenti viridi; fibulis nullis; basidiis 60–80 × 6–8 μm, non distinctis clavipedunculatis; basidiosporis 7–8(–8.5)μm latis, irregularibus globosis, verrucatis plerumque bifurcatis.

Holotypus: U.S.A., Idaho, Priest River, Priest River Experimental Forest, ad lignum *Pseudotsuga menziesii* (Mirb.) Franco, legit M. J. Larsen, 23–VII–1981FP 134609 (CFMR)

Basidiocarps effuse, up to 2 mm thick, arachnoid to byssoid, separable in small pieces; fertile areas continuous to discontinuous, dark gray with a faint green tint (near 5.0 GY 4/2); hymenial surface smooth; subiculum byssoid, dull gray, margin arachnoid to byssoid, with cordons evident at 10×.

Hyphal system dimitic with clamp connections absent. *Subicular hyphae* of two kinds, some generative and 2–3 μm diam, septate, thin-walled, pale brown; other hyphae skeletal, 2–3 μm diam, aseptate, thick-walled, pale yellowish brown; *cordons* in the subiculum up to 35 μm, abundant and composed of both generative



### M151714

FIGS. 10-12. Basidiospores of *Pseudotomentella tristis* (from FP 100522), bright field, X1200. (M151714)

and skeletal hyphae; *subhymenial hyphae* 2.5–3.5 $\mu$ m diam, septate; *basidia* 60–80  $\times$  6–8 $\mu$ m, napiform when immature, long-clavate to clavipedunculate when mature, 4-sterigmate; *basidiospores* 7–8(–8.5) $\mu$ m wide, pale yellow, echinulate to warted with echinuli and warts frequently becoming bifurcate, irregular in outline to irregularly globose. Fungal parts not reacting with Melzer's reagent.

ETYMOLOGY: from Kaniksu + *-ensis* (L., suffix) indicating origin and proximity of the specimens to the Kaniksu National Forest in northern Idaho and eastern Washington (administered as part of the Idaho Panhandle National Forests).

*Additional specimen examined* — Idaho Priest River, Priest River Experimental Forest, on *P. menziesii*, coll. M. J. Larsen, 28-VII-1981 FP 134618 (CFMR).

*Pseudotomentella kaniksuensis* is readily diagnosed by size and shape of basidiospores and dimensions of basidia. *Pseudotomentella molybdea* is similar but is separated by lead gray fertile areas and distinctly clavipedunculate basidia measuring 35–50  $\times$  6–7(–9) $\mu$ m.

The generic criteria of *Pseudotomentella* (Svrcek, 1958), as redefined by Larsen (1971b) and readily observable in the generic nomenclatural type [*P. mucidula* (Karst.) Svrcek], are napiform to sphaeropedunculate immature and clavipedunculate mature basidia, and pale colored basidiospores (in KOH) with protuberances or warts with blunt to sharply pointed bifurcate processes. Immature spores are characteristically lobed in early stages of development.

The proposal of the three species prompted a reevaluation of the use of basidiospore morphology in the taxonomy of the genus. The morphology of spores when correlated with other characters, appears to circumscribe subgeneric units. The results are presented in TABLE I. Morphology of mature basidiospores for Groups I and II is represented by *P. fumosa* (FIGS. 4–6), for Groups III and IV by *P. kaniksuensis* (FIGS. 7–9), and Group V by *P. tristis* (Karst.) M. Lars. (FIGS. 10–12).

The species in Group III appear to represent the “core” of the genus, with Group I closely allied and differing only by the occurrence of symmetrically-lobed spores. The sole member of Group II, *P. humicola*, differs further from Group III by clamped and distinctly dark brown subicular hyphae. Species in Groups IV and V are perceived as representing major departures from the main generic concept because of their monomitic hyphal system.

Dr. H. H. Burdsall, Jr. is acknowledged for his helpful discussion.

Key Words: *Pseudotomentella*, *P. molybdea*, *P. fumosa*, *P. kaniksuensis*.

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