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DESTUNTZIA, A NEW GENUS IN THE HYMENOGASTRACEAE (BASIDIOMYCOTINA)

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ABSTRACT

A new genus in the Hymenogastraceae, *Destuntzia*, is created to accommodate two species formerly placed in *Hymenogaster*, *H. ruber* and *H. subborealis*, and three previously undescribed species, *D. fusca*, *D. saylorii*, and *D. solstitialis*. *Destuntzia* is characterized by the locules lacking an organized hymenium and being filled with a gel containing pigmented, verrucose to rugulose spores.

Key Words: Hymenogastreales, hypogeous fungi, taxonomy.

From its conception, *Hymenogaster* has included all hypogeous Basidiomycetes that have non-gelatinous trama, brown spores possessing smooth to verrucose or warty-rugulose ornamentation, and a columella that is absent to narrow and decurrent (Dodge and Zeller, 1934; Smith, 1973). Dring (1973) has further characterized *Hymenogaster* as having aulacate sporocarp development and basidia arranged in an organized hymenium. A rather unusual fungus collected by Trappe during the 1971 Stuntz Foray in Mendocino County, California, has led us to re-evaluate the inclusion of some species in *Hymenogaster*.

The fungus collected by Trappe and a second specimen of the same fungus collected by Fogel in Marin County, California, has small, spherical, gel-filled locules, loosely arranged basidia, a thick peridium that stains blue when bruised, and spores that are light olive in KOH and ornamented with warts. Attempts to identify this fungus as a member of the Melanogastraceae *sensu lato*, characterized by gel-filled locules and loosely arranged basidia, were unsuccessful. Subsequent study showed that this distinctive fungus has been described as *Hymenogaster ruber* by Harkness (1899). The lack of detailed notes on fresh sporocarps of the type and its preservation in liquid probably account for the lack of mention of gel in the locules and the structure of the hymenium in earlier descriptions. The anomalous position of the species in *Hymenogaster* was recognized by Dodge and Zeller (1934). They noted some similarity in the gelatinous gleba and olivaceous spores of *H. ruber* with some species of *Hysterangium* (a genus of the Phallaceae producing hypogeous sporocarps, several species of which have light green spores enclosed in a wrinkled utricle), but retained it in *Hymenogaster* "... because of the verrucose spores and the lack of a columella." Smith (1966) later noted that the spores of *H. ruber* are much too deeply pigmented for placement in *Hysterangium*.

Other fungi possessing some of the features exhibited by *H. ruber*, including *H. subborealis* Smith, have since come to our attention. The combination of gel in the locules, lack of an organized hymenium, and pigmented, verrucose to

rugulose, ellipsoidal spores is sufficiently distinctive that we propose a new genus, *Destuntzia*, to accommodate these species. The Hymenogastraceae thus exhibits a phyletic line consisting of *Cortinarius*–*Thaxterogaster*–*Hymenogaster*–*Destuntzia* which is parallel to other lines between agarics and hypogeous fungi, e.g., the asterogastraceous series of the Russulaceae.

The phylogenetic lines between agarics and hypogeous fungi are characterized by increasing specialization for mycophagous dispersal of spores and a concomitant reduction in complex morphological adaptations for aerial dispersal of spores. Among the changes, the stipe is reduced to a columella and then finally becomes absent. Diminution of the stipe is accompanied by a change from lamellae bearing basidia in a palisade to locules lined with basidia. Ultimately, the hymenium consisting of a palisade of basidia and basidioles becomes disorganized with isolated basidia projecting into gel-filled locules as in the *Cortinarius*–*Destuntzia* line and the *Rhizopogon*–*Alpova*–*Melanogaster* line described by Trappe (1975).

MATERIALS AND METHODS

Methods of collection and study were essentially those of Smith (Smith and Zeller, 1966). Color names were given by the ISCC-NBS names (Kelly and Judd, 1955). Dried herbarium material was prepared for scanning electron microscopy by pressing the gleba against the surface of double-coated tape affixed to aluminum stubs. Spores adhering to the tape after removal of the sporocarps were coated with approximately 200 Å of gold prior to microscopy. Herbarium names were abbreviated according to Holmgren and Keuken (1974).

TAXONOMIC TREATMENT

Destuntzia Fogel & Trappe, gen. nov.

Fructificationes pulvinatae vel subglobosae, pallidae. Peridium in crassitie varians, duplex. Gleba gelatinosa, loculis repletis, fuscis vel olivaceis, venis pallidis sterilibus separatis. Columella nulla vel pulvinata. Sporae griseoflavae vel olivaceae, ellipsoideae vel obovoideae, verruculosae vel rugatae.

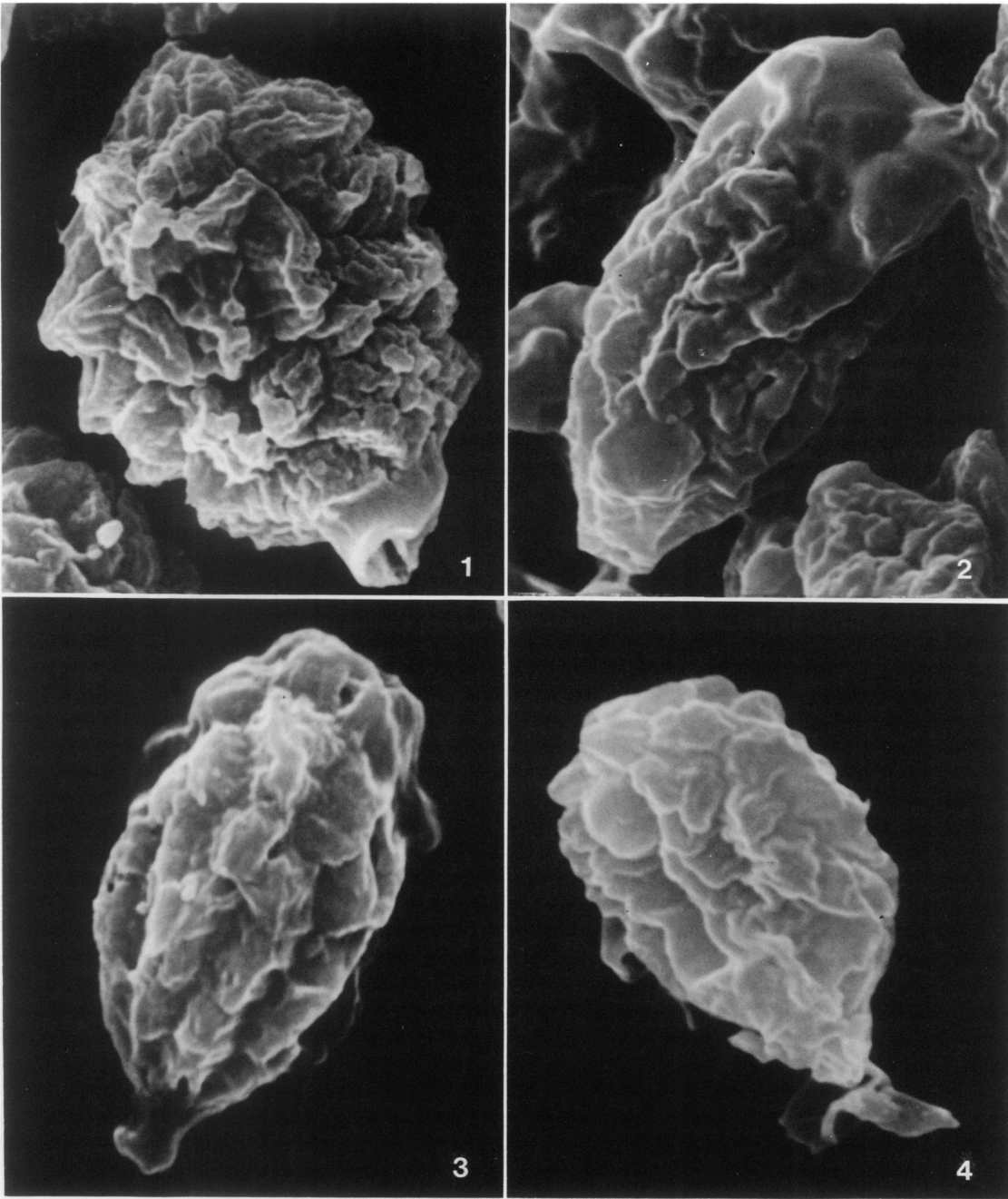
Basidiocarps hypogeous, pulvinate to subglobose or irregular. *Peridium* well developed, variable in thickness, duplex. *Gleba* solid, with gel-filled locules separated by pallid veins, the chamber contents dark grayish brown to dark yellowish brown or moderate to grayish olive. *Columella* lacking or consisting of a small, basal, sterile patch. Clamp connections present on hyphae of peridium and trama. *Basidiospores* grayish yellow or light olive, ellipsoid to obovoid, verrucose to rugulose.

TYPE SPECIES: *Hymenogaster ruber* Harkness, Calif. Acad. Sci. Proc. Bot. III 1: 246. 1899.

ETYMOLOGY: In honor of Prof. Daniel E. Stuntz.

KEY TO SPECIES OF DESTUNTZIA

1. Gleba moderate to grayish olive; peridium 875–1500 μm thick; spores ornamented with conical warts $0.5\text{--}2 \times 1.5 \mu\text{m}$ *D. rubra*
1. Gleba deep yellow brown to dark grayish brown; peridium 300–800 μm thick; spores ornamented with warts or irregular ridges less than 1 μm high 2
 2. Peridium less than 300 μm thick, hyphae of mediostratum and epicutis $2\text{--}3 \mu\text{m}$ in diam *D. subborealis*
 2. Peridium 400–800 μm thick, hyphae of mediostratum and epicutis $3\text{--}5 \mu\text{m}$ in diam, some cells of epicutis inflated to 12 μm in diam 3
3. Peridium 650–800 μm thick; spores ornamented with warts $0.5\text{--}1 \mu\text{m}$ long; spherocysts present in axes of tramal plates *D. solstitialis*



FIGS. 1-4. *Destuntzia*. SEM illustrations of basidiospores. 1. *D. rubra* (Fogel F1033), $\times 8000$. 2. *D. fusca* (Trappe 5419, HOLOTYPE: OSU), $\times 8200$. 3. *D. subborealis* (Miller 2404, HOLOTYPE: MICH), $\times 8000$. 4. *D. solstitialis* (Smith 67278, HOLOTYPE: MICH), $\times 8000$.

3. Peridium 400-600 μm thick; spores ornamented with warts less than 0.5 μm long, spherocysts absent in axes of tramal plates 4
4. Spores 8-12 μm long (mean = 8.8 μm); basidia 2- or 4-spored, 40-50 \times 8-11 μm .. *D. fusca*
4. Spores 5-8 μm long (mean = 6.7-7 μm); basidia monosporous, 12-14 \times 4 μm .. *D. saylorii*

Destuntzia rubra (Harkness) Fogel & Trappe, comb. nov. Figs. 1, 5, 10, 11

Hymenogaster ruber Harkness, Calif. Acad. Sci. Proc. Bot. III 1: 246. 1899.

Hymenogaster versicolor Harkness, Calif. Acad. Sci. Proc. Bot. III 1: 245. 1899.

Basidiocarps reniform to subglobose, up to 20–25 mm broad when fresh, 16 × 12 mm as dried, found in small veins of white rhizomorphs. *Peridium* 1–1.5 mm thick, pubescent, soil adhering, white in youth, becoming deep pink above, grading to white below at maturity, slowly staining bluish pink when bruised, pink when cut, drying medium red. *Gleba* composed of dark grayish yellow to olive brown, spherical locules *ca.* 0.2 mm broad, filled with gel-embedded spores at maturity. Columella absent or a pulvinate base up to 6 × 3 mm with a few radiating branches. *Rhizomorphs* basal, concolorous with peridium. *Chemical reactions* of the peridium: KOH, brownish black on epicutis, yellow brown on subcutis; FeSO₄ negative; ethanol deep red. *Odor* strong, “fishy-rancid.”

Spores subglobose to ellipsoid, 8–11 × 7–9 μm including ornamentation but not pedicel, mean length 10.1 ± 0.8 μm, width 7.8 ± 0.8 μm, L/W = 1.3 (n = 20 spores) light olive in KOH and Melzer's reagent, immature spores hyaline, cyanophilic; ornamented with conical, vertically striate warts 0.5–2 × ± 1.5 μm broad, warts smaller on sides of spore than on ends, inner spore wall 0.5 μm thick, base truncate with a cup or eared flange formed from the pedicel in mature spores, pedicel of immature spores 2–3 × 2 μm. *Basidia* cylindrical to clavate, 40–50 × 4–8 μm, hyaline, walls thickened slightly, clamp connection present at basal septum, single-spored, projecting into locules, not forming a euhymenium. *Basidioles* clavate, 40–50 × 8–10 μm, hyaline, walls thickened slightly. *Trama* 35–50 μm wide, of subparallel, hyaline, thin-walled, gelatinous, refractive, septate hyphae 2–4 μm in diam, cells inflated to 8 μm in diam, clamp connections rare, occasional large (9 μm broad) hyphae present. *Peridium* 875–1500 μm thick, two-layered; epicutis 250–470 μm thick, of tightly interwoven, hyaline, thin-walled hyphae 2–4 μm broad, cells becoming inflated to 5 μm in diam; clamp connections small, common. Subcutis 625–1030 μm thick, confluent with trama, of tightly interwoven, hyaline, thin-walled hyphae 3–4 μm broad at septa, cells inflated to 10 μm in diam, clamp connections infrequent. A band of interwoven, irregular, aseptate, thick-walled (1–2 μm) hyphae 4–12(–18) μm broad occurs at the junction of the epicutis and subcutis. Associated with the thick-walled hyphae are hyaline, thick-walled (2 μm), subglobose to ellipsoid cells 29–54 × 22–48 μm which arise from the thin-walled hyphae; no thick-walled hyphae were noted penetrating through the epicutis to the outside of the sporocarp.

ETYMOLOGY: *Ruber* = red (L.) possibly in reference to color of peridium in alcohol.

OTHER REFERENCES: Dodge and Zeller (1934: 636–637), Smith (1966: 106), Soehner (1962: 103–104).

ILLUSTRATIONS: Dodge and Zeller, 1934: pl. 18, fig. 32.

HABITAT AND SEASON: Hypogeous under *Pseudotsuga menziesii* (Mirb.) Franco, *Quercus*, and *Lithocarpus* from December to July.

MATERIAL EXAMINED: CALIFORNIA: Marin County, Mill Valley, in the forest, July, Harkness 248 (NY: HOLOTYPE). Bootjack Campground, Mt. Tamalpais State Park, 30 April 1975, Fogel F1033 (MICH). Mendocino County, Jackson State Forest, Woodland Camp on hill above camp 1 mess hall, 4 December 1971, Trappe 3096 (OSU). Santa Cruz County, Marshall Fields, University of California Santa Cruz Campus, 7 July 1984, H. Saylor 2042 (SFSU). Sierra County, Wild Plum Campground, Tahoe National Forest, 16 October 1983, H. Saylor 1680, 1682 *pro parte* (SFSU, MICH). OREGON: Linn County, ½ mile above Roaring River Fish Hatchery, 20 March 1934, Zeller 8208 (NY).

Destuntzia rubra is easily separated from the other species in the genus by the distinctive monosporous basidia (FIG. 10), thick peridium, and the prominent, striate, conical warts ornamenting the spores (FIG. 1). The basidia of *D. subborealis* have not been described, but the narrow pedicel (FIG. 3), compared to the very

broad pedicel of *D. rubra*, suggests that the basidia of *D. subborealis* bear two or more sterigmata.

Queries to NY, UC, and BPI failed to locate the type of *Hymenogaster versicolor*. We synonymize it with *Destuntzia rubra* on the basis of the type descriptions (Harkness, 1899) which indicate that both species are similar in shape and size, the peridium of both is thick and colored pink or becomes pink, both have minute, brown locules, and both were collected in Mill Valley, Marin County, California. Dodge and Zeller (1934) reached the same conclusion presumably after examining the type specimens of both species.

Two other collections, Parks 3100 (UC 276308) and Thaxter 9 (F 5177), cited in Dodge and Zeller (1934) are excluded from *D. rubra* because they have short (20–25 μm), four-spored basidia arranged in a hymenium, and spore ornamentation that is less than 0.5 μm high. Parks 3100 is a *Hymenogaster* species. Thaxter 9 has been referred to *Thaxterogaster magellanicus* Singer by Halling (1981).

The thick-walled elements occurring in the peridium (FIG. 11) resemble those noted in the other *Destuntzia* species as well as in other hypogeous fungi, i.e., *Protuberia maracuja* Moell. and *Phlebogaster laurisylvicola* Fogel (Imai and Kawamura, 1958; Fogel, 1980).

***Destuntzia subborealis* (Smith) Fogel & Trappe, comb. nov.**

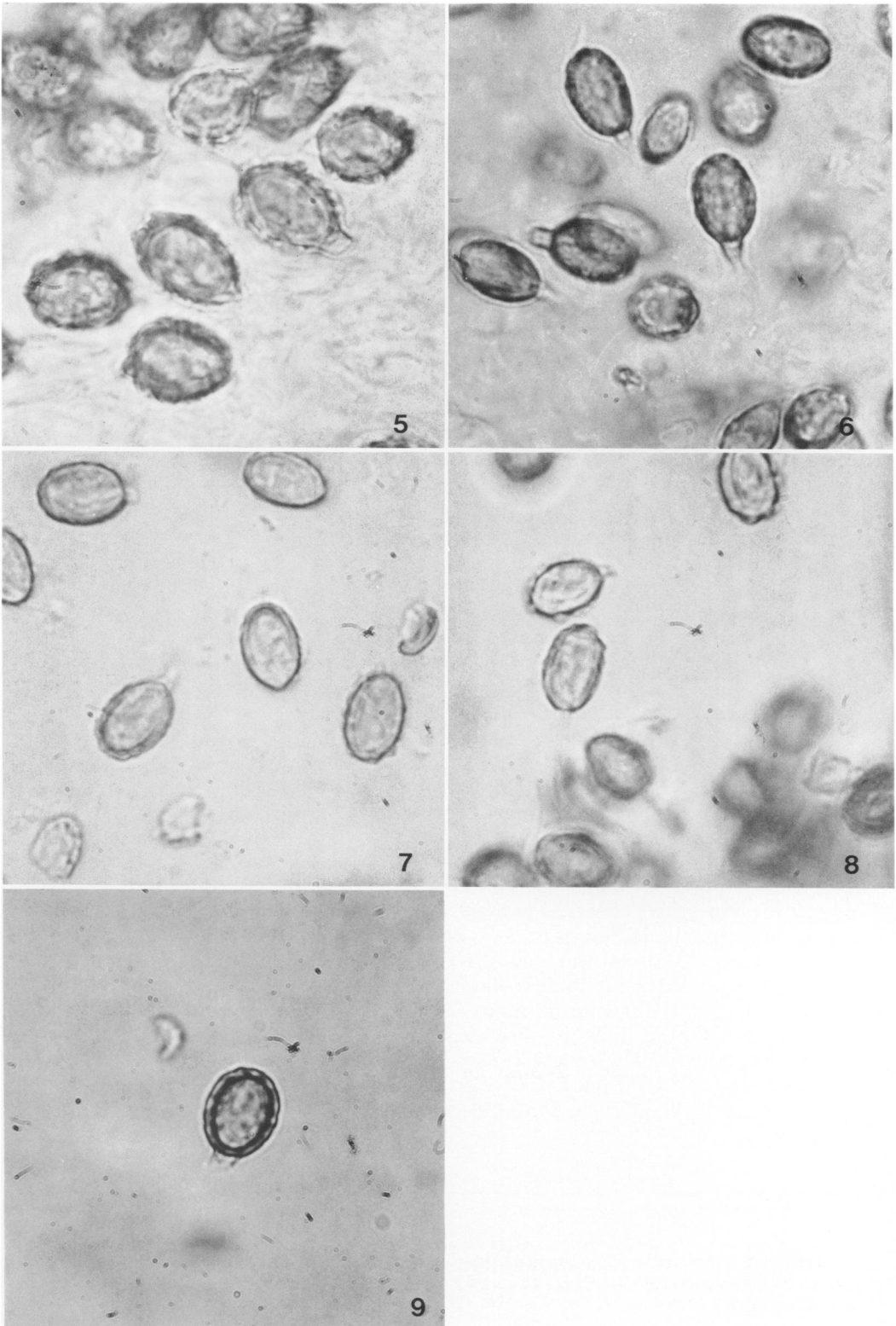
FIGS. 3, 7

Hymenogaster subborealis Smith, Mycologia 58: 111–112. 1966.

Basidiocarps globose to lobed, 4–12 mm in diam, up to 6 mm broad as dried. *Peridium* “dry, whitish, fibrillose, on aging, the fibrils turn yellowish,” light orange as dried. *Gleba* of dark yellow brown, spherical to slightly elongate locules ± 0.1 mm broad filled with gel-embedded spores; tramal plates wider toward the peridium. *Columella* absent. “*Rhizomorphs* over the surface as in a *Rhizopogon* species, lacking a definite point of attachment.” *Chemical reactions* of the peridium: KOH, “negative”; FeSO_4 , “negative.” *Odor* not recorded.

Spores ellipsoid, $7\text{--}9 \times 5\text{--}6 \mu\text{m}$ including the ornamentation but not pedicel, mean length $8.2 \pm 0.7 \mu\text{m}$, width $5.5 \pm 0.5 \mu\text{m}$, $L/W = 1.49$ ($n = 20$ spores), grayish yellow in KOH, inner spore wall $\pm 0.5 \mu\text{m}$ thick; ornamented with warts $0.5\text{--}1 \mu\text{m}$ long, $0.5 \mu\text{m}$ broad at base, apex rounded, warts smaller on sides of spore than on ends, “at times arranged obscurely into diagonal lines or an obscure reticulum, usually no pattern evident, no apical differentiation (pore or callus) observed,” pedicel central, tubular, $1 \times 1 \mu\text{m}$. *Basidia* and *basidioles* not reviving. *Trama* $30\text{--}35 \mu\text{m}$ wide, of interwoven, hyaline, thin-walled, septate, gelatinous hyphae $2\text{--}3 \mu\text{m}$ broad, clamp connections occasionally present. *Peridium* $250 \mu\text{m}$ thick as dried, two-layered; epicutis $160 \mu\text{m}$ thick, of periclinal, hyaline, thin-walled, hyphae $2\text{--}3 \mu\text{m}$ broad, cells uninflated; clamp connections occasional, the layer obscured by diffuse, intercellular, yellow pigment in KOH; thick-walled hyphae $10\text{--}12 \mu\text{m}$ broad also present. Subcutis $140 \mu\text{m}$ thick, of interwoven, hyaline, thin-walled hyphae $2\text{--}3 \mu\text{m}$ in diam, occasional cells inflated to $15 \mu\text{m}$ broad; hyaline, thick-walled ($2\text{--}3 \mu\text{m}$) hyphae $10\text{--}12$ – $16 \mu\text{m}$ in diam also present and probably attached to empty, thick-walled ($2\text{--}4 \mu\text{m}$), subglobose vesicles $60\text{--}65 \times 45\text{--}50 \mu\text{m}$.

FIGS. 5–9. *Destuntzia*. Basidiospores in Melzer’s reagent. 5. *D. rubra* (Fogel F1033). 6. *D. fusca* (Trappe 5419, HOLOTYPE: OSU). 7. *D. subborealis* (Miller 2404, HOLOTYPE: MICH). 8. *D. solstitialis* (Smith 67278, HOLOTYPE: MICH). 9. *D. saylorii* (Saylor 1645, HOLOTYPE: SFSU). All FIGS. $\times 1600$.



ETYMOLOGY: *Subborealis* = nearly boreal (L.).

OTHER REFERENCES: None.

ILLUSTRATIONS: None.

HABITAT AND SEASON: Hypogeous under *Tsuga* sp. in July.

MATERIAL EXAMINED: IDAHO: Bonner County, Granite Creek, Priest Lake, 7 July 1964, O. K. Miller 2404 (MICH: HOLOTYPE).

Scanning electron micrographs of *D. subborealis* spores (FIG. 3) support Smith's (1966) observation that the warts comprising the spore ornamentation are at times arranged into lines. The warts have a sharper apex and are better defined than those of *D. fusca* or *D. solstitialis*; they are less pronounced and lack the striae characteristic of the warts ornamenting *D. rubra* spores. The thin peridium also distinguishes *D. subborealis* from the other species in the genus.

The type description (Smith, 1966) gives the date of the holotype collection as "Sept. 7, 1964"; the field label indicates the date as "7-7-64."

***Destuntzia solstitialis* Fogel & Trappe, sp. nov.**

FIGS. 4, 8

Fructificationes 12 mm crassae, subglobosae, albae vel subroseobrunneae. Gleba atrolignea. Loculis repletis. Columella nulla. Sporae $7-10 \times 5-7 \mu\text{m}$, ellipsoidae, verrucatae, verrucae $0.5-1 \times 0.7-1.5 \mu\text{m}$ crassae. Typus: A. H. Smith 67278 (MICH).

Basidiocarp subglobose to "flattened-globose," up to 12 mm broad, 10×6 mm as dried. *Peridium* ca. 1 mm thick, glabrous except for "felty patches of rhizomorphs near the base, felty areas white, but soon pale yellow when handled, finally faintly pinkish brown," drying light brown to tan, soil adhering to felty patches. *Gleba* "violaceous black"; as dried, consisting of dark yellowish brown, spherical to slightly elongate locules $0.25-0.5$ mm broad, filled with gel-embedded spores at maturity, locules separated by light tan to buff tramal plates which are wider near the peridium, up to 1 mm broad. *Columella* absent. *Rhizomorphs* appressed, basal and scattered in patches over the surface, concolorous with the peridium as dried, ca. 0.5 mm in diam. *Chemical reactions* of the peridium: FeSO_4 , "negative." *Odor* not recorded.

Spores ellipsoid, $7-10 \times 5-7 \mu\text{m}$ including ornamentation but not pedicel, mean length $8.1 \pm 0.7 \mu\text{m}$, width $6 \pm 0.5 \mu\text{m}$, $L/W = 1.35$ ($n = 20$ spores), grayish yellow in KOH and Melzer's reagent; ornamented with conical warts $0.5-1 \times 0.7-1.5 \mu\text{m}$ broad, warts smaller on sides of spore than on the ends, not forming longitudinal ridges or lines; inner spore wall $1 \mu\text{m}$ thick; pedicel central, tubular, $1-3 \times 1 \mu\text{m}$ broad. *Basidia* obclavate, $35-50 \times 5 \mu\text{m}$ at apex, hyaline, thin-walled, no clamp connections observed at basal septum, 2- to 4-spored, mostly 2-spored, not forming a euhymenium. *Basidioles* obclavate, $35-40 \times 7-9 \mu\text{m}$, hyaline, thin-walled. *Trama* $20-30 \mu\text{m}$ wide, up to $100 \mu\text{m}$ wide near peridium, of subparallel, hyaline, thin-walled, gelatinous, septate hyphae $3-4 \mu\text{m}$ in diam, cells not becoming inflated; clamp connections present. *Peridium* $650-800 \mu\text{m}$ thick, two-layered; epicutis $150-200 \mu\text{m}$ thick, of periclinal, yellow, thin-walled hyphae $3-5 \mu\text{m}$ in diam, a few thick-walled hyphae $7-8 \mu\text{m}$ in diam also present; clamp connections rare. Subcutis $500-600 \mu\text{m}$ thick, of hyaline, thin-walled spherocysts $20-30 \times 15-20 \mu\text{m}$, probably derived from the few remaining $3-4 \mu\text{m}$ broad hyphae that are present.

FIGS. 10, 11. *Destuntzia rubra*. Melzer's reagent. 10. Monosporous basidium, phase contrast (Fogel F1033), $\times 1600$. 11. Peridium showing the dark, thick-walled hyphae and subglobose to ellipsoid cells in the subcutis (Trappe 3096), $\times 160$. FIG. 12. *D. saylorii*. Monosporous basidium (Saylor 1645, HOLOTYPE: SFSU), $\times 1600$.



ETYMOLOGY: *Solstitialis* = pertaining to summer (L.), the season of collection.

HABITAT AND SEASON: Hypogeous under *Tsuga* and hardwoods in August.

MATERIAL EXAMINED: MASSACHUSETTS: Franklin County, Tannery Falls, under hemlock, 26 August 1963, A. H. Smith 67278 (MICH: HOLOTYPE).

The large warts comprising the spore ornamentation of *Destuntzia solstitialis* (FIG. 4) permit easy delineation of this species from *D. fusca* (FIG. 2) and *D. subborealis* (FIG. 3). The warts of *D. solstitialis* are not quite as long and lack the striae characteristic of *D. rubra* warts. *Destuntzia solstitialis* is further distinguished from the other species in the genus by the combination of the thick peridium, and the lack of spherocysts.

Destuntzia fusca Fogel & Trappe, sp. nov.

FIGS. 2, 6

Fructificationes 12–15 mm crassae, pulvinatae, glabrae, pallidae vel brunneoroseae. Gleba fusca. Loculis gelatina repletis. Columella pulvinata. Sporae 8–11 × 5–6 μm ellipsoidae, verrucatae-rugulosae. Typus: Trappe 5419 (OSU).

Basidiocarps pulvinate, up to 12–15 mm broad when fresh, 12 × 8 mm as dried. *Peridium* ±0.25 mm thick, glabrous, pallid, in time (overnight) becoming “dull brownish rose,” drying brownish orange. *Gleba* as dried composed of brownish black, elongate locules 0.7 × 0.25–0.5 mm in diam, filled with gel-embedded spores, separated by white to dull yellow veins. *Columella* a pulvinate base up to 3 × 5 mm with irregular branches. *Rhizomorphs* lacking. *Chemical reactions* of the peridium not recorded. *Odor* not distinctive.

Spores ellipsoid, 8–11 × 5–6 μm including ornamentation but not pedicel, mean length 8.8 ± 0.8 μm, width 5.7 ± 0.4 μm, L/W = 1.54 (n = 20 spores) dark grayish yellow in KOH; ornamentation warty-rugulose, 0.5 μm or less long, inner spore wall 0.25 μm thick, pedicel central, tubular, hyaline, 1–4 × 1.5 μm broad. *Basidia* reviving poorly, obovate, 40–50 × 8–11 μm, hyaline, thin-walled, no clamp connection observed at basal septum, 4-spored, sterigmata tubular, 2–4 × 1.5–2 μm. *Basidioles* not rehydrating. *Trama* 25–75 μm wide, of interwoven, hyaline, thin-walled, gelatinous, septate hyphae 3–4 μm in diam, cells inflated to 12 μm, clamp connections present, spherocysts common in axes of tramal plates. *Peridium* 440–519 μm thick, two-layered; epicutis 198–250 μm thick, of periclinal, hyaline, thin-walled hyphae 3–4 μm broad, cells not becoming inflated, clamp connections present. One sporocarp with hyaline, thick-walled hyphae 5–10 μm in diam, attached to thick-walled, terminal, subglobose vesicles 50 × 40 μm in diam, subtending hyphae constricted at point of attachment to vesicle. Subcutis 190–231 μm thick, confluent with trama, of periclinal, hyaline, thin-walled hyphae 3–4 μm broad at septa, cells becoming inflated to 8 μm, clamp connections present.

ETYMOLOGY: *Fuscus* = very dark blackish brown (L.). Refers to color of gleba.

HABITAT AND SEASON: Hypogeous in *Tsuga-Pseudotsuga-Lithocarpus* stands in December.

MATERIAL EXAMINED: CALIFORNIA: Mendocino County, W of Leggett, 3 December 1978, Trappe 5419 (OSU: HOLOTYPE). Van Damme State Park, 2 December 1978, Trappe 5420 (OSU).

Destuntzia fusca is easily distinguished from the other members of the genus by its short spore ornamentation, presence of spherocysts in axes of the tramal plates, the brownish black gleba, and the bone-like consistency of the sporocarps when dried. The gel in the locules obscures the spore ornamentation in scanning electron microscopy (FIG. 2). The SEM micrographs suggest that the spore ornamentation consists of irregular, rounded processes coalesced to form short ridges.

Destuntzia saylorii Fogel & Trappe, sp. nov.

FIGS. 9, 12

Fructificationes 14×10 mm crassae, reniformis vel subglobosae, albae vel roseae. Gleba testaceae. Columella nulla. Basidia subcylindrica vel obclavata, $12\text{--}14 \times 4$ μm , monosporum. Sporae $5\text{--}8 \times 5\text{--}6.5$ μm , ellipsoideae, verrucatae, verrucae <0.5 μm longae. Typus: H. Saylor 1645 (SFSU).

Basidiocarps reniform to subglobose, up to 14×10 mm as dried. *Peridium* 0.5 mm thick as dried, pubescent, holding soil, white slowly becoming pink. *Gleba* deep yellow brown, locules spherical ca. 0.2 mm broad, filled with gel-embedded spores at maturity, separated by pale yellow veins. Columella absent. Rhizomorph single, basal, 0.5 mm broad, concolorous with peridium. *Chemical reactions* of the peridium not recorded. *Odor* not recorded.

Spores broadly ellipsoid, $5\text{--}8 \times 5\text{--}6.5$ μm including ornamentation but not pedicel, mean length among sporocarps 6.7 ± 0.7 to 7 ± 0.6 μm , width 5.6 ± 0.5 to 5.7 ± 0.5 μm , L/W = 1–1.4, mean 1.21–1.25 ($n = 20$ spores per sporocarp), strong yellow in KOH and Melzer's reagent, ornamented with warts 0.5 μm or less long, spore wall 0.5–1 μm thick, pedicel central, tubular, hyaline, $\pm 1\text{--}3 \times 1.5\text{--}2$ μm broad. *Basidia* subcylindric to obclavate, $12\text{--}14 \times 4$ μm , hyaline, thick-walled (0.5 μm), no basal clamp connection, not forming a euhymenium, 1-spored, sterigmata tubular, $1.5\text{--}2 \times 1.5$ μm broad. *Basidioles* not noted. *Trama* 50–100 μm wide, of loosely interwoven, gelatinous, hyaline, thin-walled hyphae 3–6 μm in diam, clamps present. *Peridium* 400–600 μm thick, two-layered; epicutis 50 μm thick, of periclinal, hyaline, thin-walled hyphae 3–4 μm broad, clamp connections present. Subcutis 350–550 μm thick, confluent with trama, of interwoven, hyaline, thin-walled hyphae 3–5 μm broad, cells becoming inflated to 12 μm broad, clamp connections present.

ETYMOLOGY: For Herb Saylor who has been so willing to share his collections of hypogeous fungi.

HABITAT AND SEASON: Hypogeous under *Alnus rhombifolia*, *Pseudotsuga menziesii*, *Quercus* sp., and *Libocedrus* along stream banks from October to June.

MATERIAL EXAMINED: CALIFORNIA: Riverside County, North Fork of San Jacinto River, San Jacinto Mountains, 2 October 1983, H. Saylor 1656. Fern Basin Campground, San Bernardino National Forest, 18 May 1984, H. Saylor 1832. Sierra County, Wild Plum Campground, Tahoe National Forest, 10 October 1983, H. Saylor 1645 (HOLOTYPE), 1650. 16 October 1983, H. Saylor 1682 *pro parte*. 10 June 1984, H. Saylor 1924; 11 June 1984, H. Saylor 1935 (all SFSU).

Destuntzia saylorii is easily separated from the other species in the genus by virtue of its small, monosporous basidia; the spores of this species are smaller than those of *D. rubra*, the other species with monosporous basidia. The thick-walled elements with terminal globose cells are similar to those noted in other *Destuntzia* species. These thick-walled elements are common but do not occur in every sporocarp.

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