

BRIEF ARTICLES

A NEW SPECIES OF ENDOGONACEAE, *GLOMUS HOI*

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A previously undescribed species of *Glomus*, found repeatedly in field collections and in pot cultures from the Pacific Northwest, is described. Color names and codes are from the ICSS-NBS Color Charts (Kelley and Judd, 1955).

Glomus hoi Berch & Trappe, sp. nov.

FIGS. 1, 2

Sporae singillatim in terra enatae, globosae, subglobosae, ellipsoideae vel irregulares, (50-)80-120(-155) × (45-)75-120(-140) μm, avellaneae. Tunicae sporarum stratis duobus, separabilibus: exteriore (2-)5-8 μm crasso, armeniaco vel luteolo, superficiali frangenti et exuenti; interiore 1 μm crasso, membranaceo, hyalino vel luteolo. Hypha affixa (5-)10-13 μm diam, cylindrica vel parum infundibuliformis, tunica 2.5-5 μm crassa, interdum ramulosa, septo curvo clausa.

Spores borne singly in the soil, globose, subglobose, ellipsoidal or irregular, (50-)80-120(-155) × (45-)75-120(-140) μm, light brown. Wall of spore composed of two distinct, separable layers: outer layer orange-yellow (71.1.OY) to light yellow (86.1.Y) in transmitted light, (2-)4-6(-8) μm thick, with an outer surface that fractures and sloughs; inner layer hyaline or light yellow, membranous, 1 μm thick. Subtending hypha single, cylindrical or slightly flared toward the point of attachment to the spore where it is (5-)8-11(-13) μm wide, with a single wall 2.5-5 μm thick, sometimes bearing fine, thin-walled, septate, lateral branches. Pore in subtending hypha occluded by a fine, curved septum at or somewhat below its point of attachment to the spore.

ETYMOLOGY: Named in honor of Dr. Iwan Ho, dedicated collector of Endogonaceae and researcher on mycorrhizae.

HOLOTYPE: U.S.A., OREGON, Benton Co., Corvallis, Oregon State University greenhouse, sieved from pot culture of *Zea mays* L. inoculated with roots of *Fragaria chiloensis* (L.) Duch. from Oregon, Linn Co., Tombstone Pass, 14.VIII.1969, Iwan Ho, Trappe 2116, OSC 29,177.

PARATYPES: (1-8). U.S.A., OREGON, Benton Co., Corvallis, OSU greenhouse: (1) 3.X.1971, sieved from pot culture of *Trifolium repens* L. originally transplanted from CANADA, BRITISH COLUMBIA, Port Mellon, 8.IV.1970, OSC 30,902. (2) 6.VIII.1970, sieved by Iwan Ho from pot culture of *Rubus ursinus* Cham. & Schlecht. originally transplanted from OREGON, Lincoln Co., Cascade Head Experimental Forest, pure conifer plot, 23.III.1970, OSC 41,499. (3) 1.VIII.1970, sieved by Iwan Ho from pot culture of *Epilobium watsonii* Barb. in Brew. & Wats. originally transplanted from eastern Oregon specific locality unknown, 12.III.1970, OSC 41,500. (4) 10.VIII.1970 sieved by Iwan Ho from pot culture of *Maianthemum dilatatum* (Wood) Nels. & Macbr. originally transplanted from OREGON, Lincoln Co., Cascade Head, pure alder plot, 24.III.1970, OSC 41,501. (5) 10.VIII.1970, sieved by Iwan Ho from pot culture of *Stachys mexicana* Benth. originally transplanted from OREGON, Lincoln Co., Cascade Head Experimental Forest, pure alder plot, 24.III.1970, OSC 41,502. (6) 10.VIII.1970, sieved by Iwan Ho from pot culture of *Stachys mexicana* originally transplanted from OREGON, Lincoln Co., Cascade Head Experimental Forest, pure alder plot, 24.III.1970, OSC 41,503. (7) 6.III.1973, sieved by Iwan Ho from pot culture of *Fragaria chiloensis* originally transplanted from OREGON, Clatsop Co., Fort Stevens State Park, 11.I.1972, OSC 34,369. (8) 5.II.1973, sieved by Iwan Ho from pot culture of *Fragaria chiloensis* originally transplanted from WASHINGTON, Pacific Co., Oysterville, 11.I.1972, OSC 34,376. (9) WASHINGTON, Skamaina Co., Polar Star, near Mount St. Helens, from rhizosphere of *Lolium* sp. seeded onto roadside volcanic ash, 26.VIII.1981, Gary Hunt, OSC 41,504.

DISTRIBUTION AND HABITAT: Spores of this fungus have been produced in pot culture from the mycorrhizae of naturally colonized plants transplanted from sand dunes, forests, and roadsides in British Columbia, Canada, and Oregon and Washington, United States.

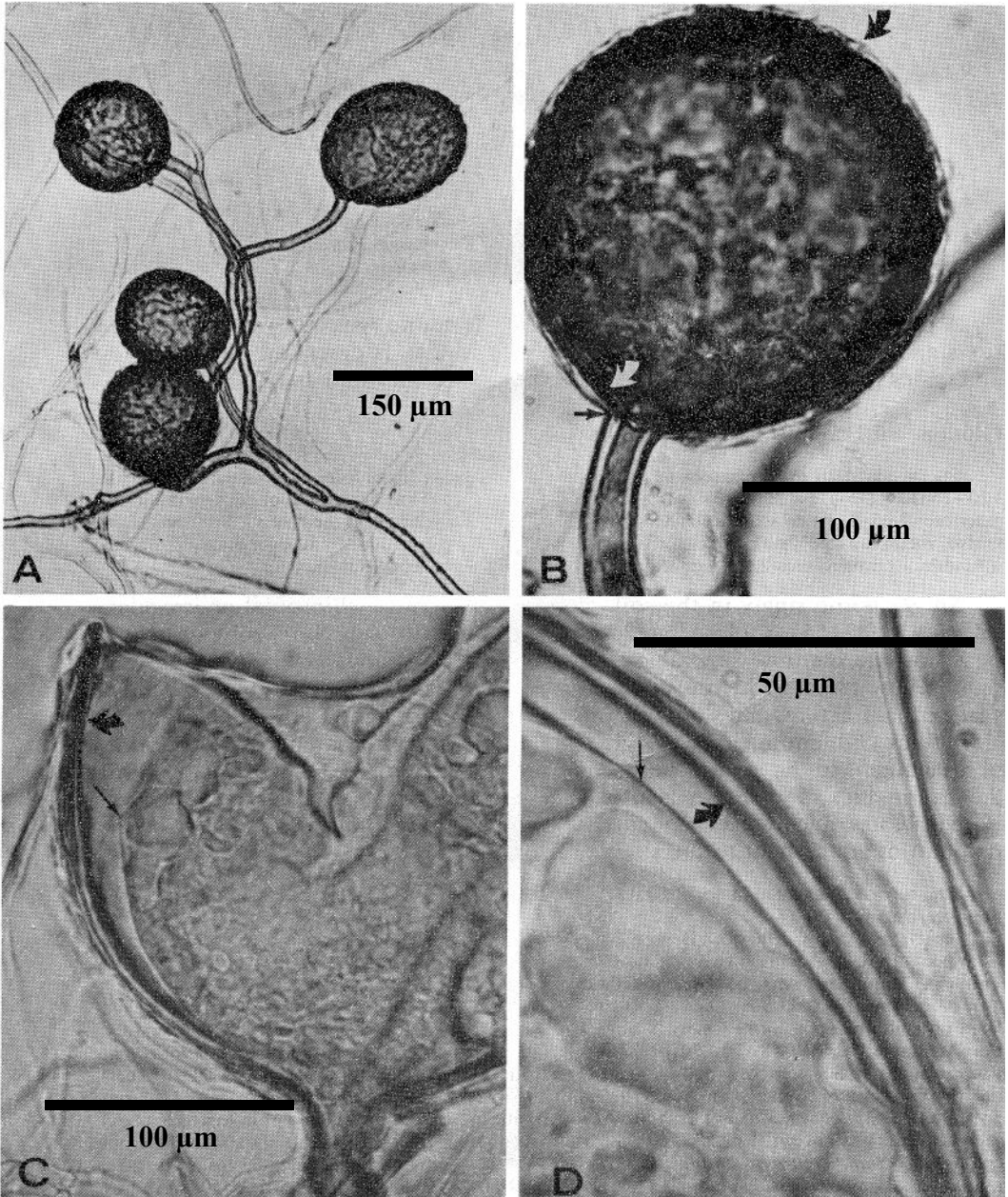


FIG. 1. *Glomus hoi* (holotype). A. Spores borne on subtending hyphae, $\times 130$. B. Fragmenting surface of outer wall layer (large black arrow), inner wall layer (white arrow), and septum in subtending hypha of a spore (small black arrow), $\times 320$. C, D. Crushed spore with outer (large arrow) and membranous inner (small arrow) wall layers. C, $\times 350$. D, $\times 950$.

Glomus hoi most closely resembles *Glomus deserticola* Trappe, Bloss & Menge (1984) in habit and overall morphology but can be readily distinguished by the fracturing and sloughing of the surface of its outer wall layer.

In a number of other *Glomus* species, the outer wall of the spores becomes

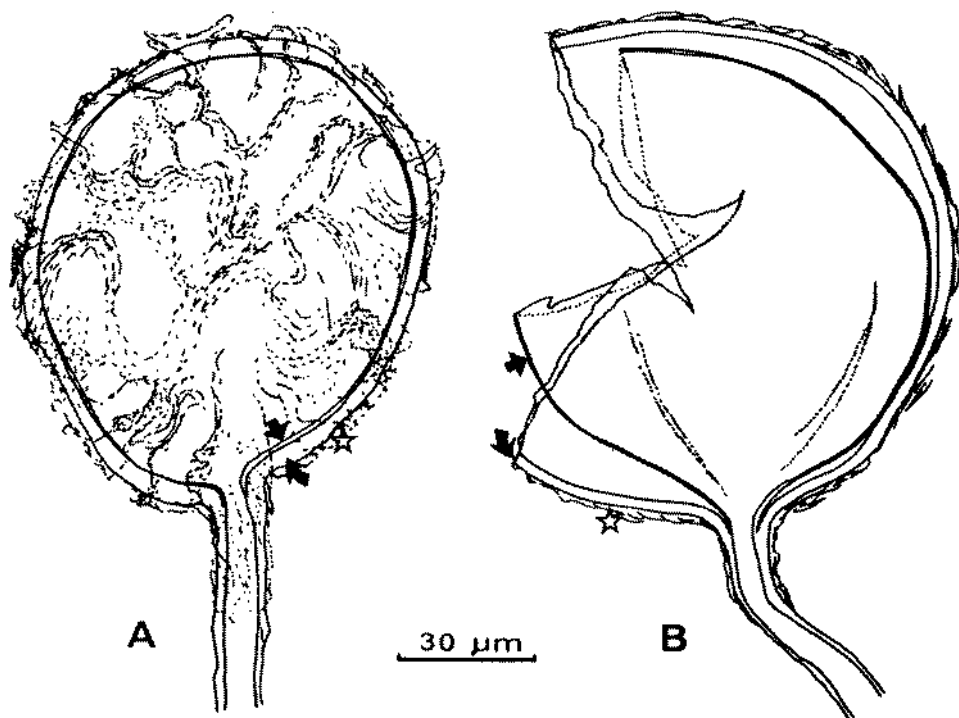


FIG. 2. *Glomus hoi* (holotype). A. Intact spore with sloughing outer wall surface (star), outer wall layer (curved arrow), and membranous inner wall layer (straight arrow). B. Crushed spore showing same as A.

roughened and sloughs with age: *G. fecundisporum* Schenck & Smith (1982), *G. albidum* Walker & Rhodes (1981), *G. etunicatum* Becker & Gerdemann (1977). *Glomus hoi* is unique, however, in having a membranous inner spore wall layer and spores that appear brown in incident light due to the coloration of the outer wall layer. A membranous inner wall layer is lacking from the spores of *G. fecundisporum*, the walls of which may become brown with age. The spores of *G. albidum* are white or off-white in incident light, have an outer wall layer that normally sloughs to become less than 1 μm thick, a laminate inner wall layer, and a subtending hypha with two wall layers. In *G. etunicatum* the inner wall layer is yellow-brown and laminate; the outer wall layer is hyaline and extends down the subtending hypha.

Although having a roughened, sloughing outer wall layer, *G. gerdemanni* Rose, Daniels & Trappe (1979), *G. halonatum* Rose & Trappe (1980), and *G. occultum* Walker (1982) are readily distinguished from *G. hoi*. The spore wall of *G. gerdemanni* consists of five layers. The size range of the spores of *G. halonatum* is 200–280 μm , the total wall thickness is 18–35 μm , and the outer wall layer is hyaline. In *G. occultum*, the spores are hyaline or white at maturity, the outer wall layer, when present, is less than 1 μm thick, and the inner wall layer may be laminate.

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Key Words: *Glomus hoi*, Endogonaceae, vesicular-arbuscular mycorrhizal fungi.

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