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## *Gyalideopsis pusilla* (Gomphillaceae, lichenized Ascomycetes), a new species from southeastern North America

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**Abstract:** *Gyalideopsis pusilla* Lücking & Tønsberg is described as new to science from U.S.A., Tennessee, the Great Smoky Mountains National Park in the Southern Appalachian Mountains, where it was foliicolous on *Rhododendron maximum*. It is distinguished from other *Gyalideopsis* species by the combination of very small, usually 3-septate ascospores, short, setiform hyphophores with filiform, non-septate diahyphae, and foliicolous habit.

**Key words:** Appalachian mountains, Great Smoky Mountains National Park, *Gyalideopsis*, new species, Southeastern North America, Tennessee.

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**Introduction:** Field work in the Great Smoky Mountain National Park by the second author in 2006 yielded material of a *Gyalideopsis* species which on close examination proved to represent an undescribed species. Accordingly it is not included in the world-wide key to and the checklist for the genus by Lücking et al. (2006) or in the revision of Eastern North American Gomphillaceae by Lücking et al. (2007). The purpose of the present note is to describe this species as new to science.

## Results

### *Gyalideopsis pusilla* Lücking & Tønsberg sp. nov. (Fig. 1.)

Mycobank # MB 818062

*Type* U.S.A., Tennessee, Sevier Co., the Southern Appalachians, the Great Smoky Mountains National Park, Alum Cave Trail trailhead, 35°37.740'N 83°27.066'W (NAD27 CONUS), alt.: 1160–1170 m, foliicolous on *Rhododendron maximum* near creek, 12 June 2006, T. Tønsberg 36650 (DUKE-holotype; B, BG-isotypes).

*Diagnosis:* *Gyalideopsis pusilla* is distinct by its very small, erumpent apothecia with lobulate thalline margin, it's very small, usually 3-septate ascospores, the presence of short, setiform hyphophores with filiform, non-septate diahyphae, and the foliicolous habit.

*Etymology:* The epithet refers to the small size of the species.

*Description:* *Thallus* foliicolous, crustose, dispersed into regularly rounded patches connected by a translucent, algal-free prothallus, 3–10 mm across, individual patches up to 0.5 mm in diam. and 15–20 µm thick, with a cartilaginous, corticiform layer, smooth, silvery grey with a greenish tinge, slightly glossy, in larger or confluent patches with a thicker, white center due to incrustation with calcium oxalate crystals. Photobiont trebouxoid, cells 9–14 µm in diam. *Apothecia*

usually formed singly in the center of individual thallus patches, erumpent, regularly rounded, 0.1–0.15 mm diam. and 50–70 µm high; disc plane, yellowish grey-brown, non-pruinose and slightly translucent; proper margin indistinct, covered by 5–8 rhomboid to triangular, thin, dark brown thalline lobules without algae. Excipulum inconspicuous, prosoplectenchymatous, 5–10 µm broad, colorless. Hypothecium 10–20 µm high, colorless; epithecium inconspicuous. Hymenium 40–50 µm high, colorless. Asci clavate, 40–50 × 10–12 µm. Ascospores 8 per ascus, fusiform-ellipsoid with slightly tapering distal end, 3(–4)-septate or, rarely, submuriform, with constrictions at the septa, (11–)12–14 × 4–4.5 µm, 2.7–3.3 times as long as broad, colorless. *Hyphophores* formed concentrically along the margins of individual thallus patches, shortly setiform with acute, often curved apex (or entire hyphophore curved), 0.15–0.2 mm high and 20–25 µm thick above the base, blackish brown in lens view, dark brown in microscope view. Diahyphae inserted (sub-)apically, unbranched to sparsely branched, filiform, non-septate, 70–100 × 0.8–1 µm, colorless.

*Chemistry:* Not tested.

*Ecology and distribution:* *Gyalideopsis pusilla* is known only from the type locality where it was found on leaves of *Rhododendron maximum* at the bank of a creek. *Tricharia santessonii* D. Hawksw. was a close associate (occurring on the same leaves) and *Fellhanera bouteillei* (Desm.) Vězda was a frequent foliicolous species on *Rhododendron* at the site. The locality is within the upper part of the Northern Hardwoods of the Southern Appalachians. The dominant species in the forest is *Betula alleghaniensis*. The new species occurred at an altitude of 1160–1170 m.

**Discussion:** This new species is characterized by its very small, erumpent apothecia with lobulate thalline margin, it's very small, usually 3-septate ascospores, and the short, setiform hyphophores with filiform, non-septate diahyphae.

Few other species in the genus form similarly small, transversely septate ascospores. The foliicolous *Gyalideopsis minutissima* Lücking forms a minutely granular, irregularly shaped thallus and sessile, smaller (0.05–0.1 mm in diam.), yellowish white apothecia without thalline margin, and the ascospores are 3(–5)-septate and slightly larger (11–17 × 4–6 µm); hyphophores are unknown. *Gyalideopsis perminuta* Vězda is also foliicolous and similar to *G. minutissima*, differing from the new species likewise in thallus morphology, ascospore septation and size and the lack of hyphophores; its apothecia are comparable to the new species in size and color but are sessile and lack a thalline margin. A third foliicolous species with 3(–5)-septate ascospores is *G. applanata* Herrera-Campos & Lücking, which deviates in the much larger (up to 1.2 mm in diam.), applanate, dark greyish brown apothecia, the larger ascospores (16–25 × 5–7 µm), and the white hyphophores with septate, moniliform diahyphae. The muscicolous *G. muscicola* P. James & Vězda also has 3–5-septate ascospores of a size similar to or slightly larger than the new species (12–20 × 4–7 µm), but the apothecia are larger and sessile, with dark brown color and lacking a thalline margin, its hyphophores are hand-shaped to denticulate, while its diahyphae agree with the new species in their filiform shape. Finally, the terricolous *Lithogyalideopsis poeltii* (Vězda) Lücking, Sérus. & Vězda agrees with the new species in the usually 3-septate, though larger (14–20 µm long) ascospores and the small, setiform, dark hyphophores, but its apothecia are larger and (dark) brown and the diahyphae are palmate, with moniliform terminal portions branching from a filiform base.

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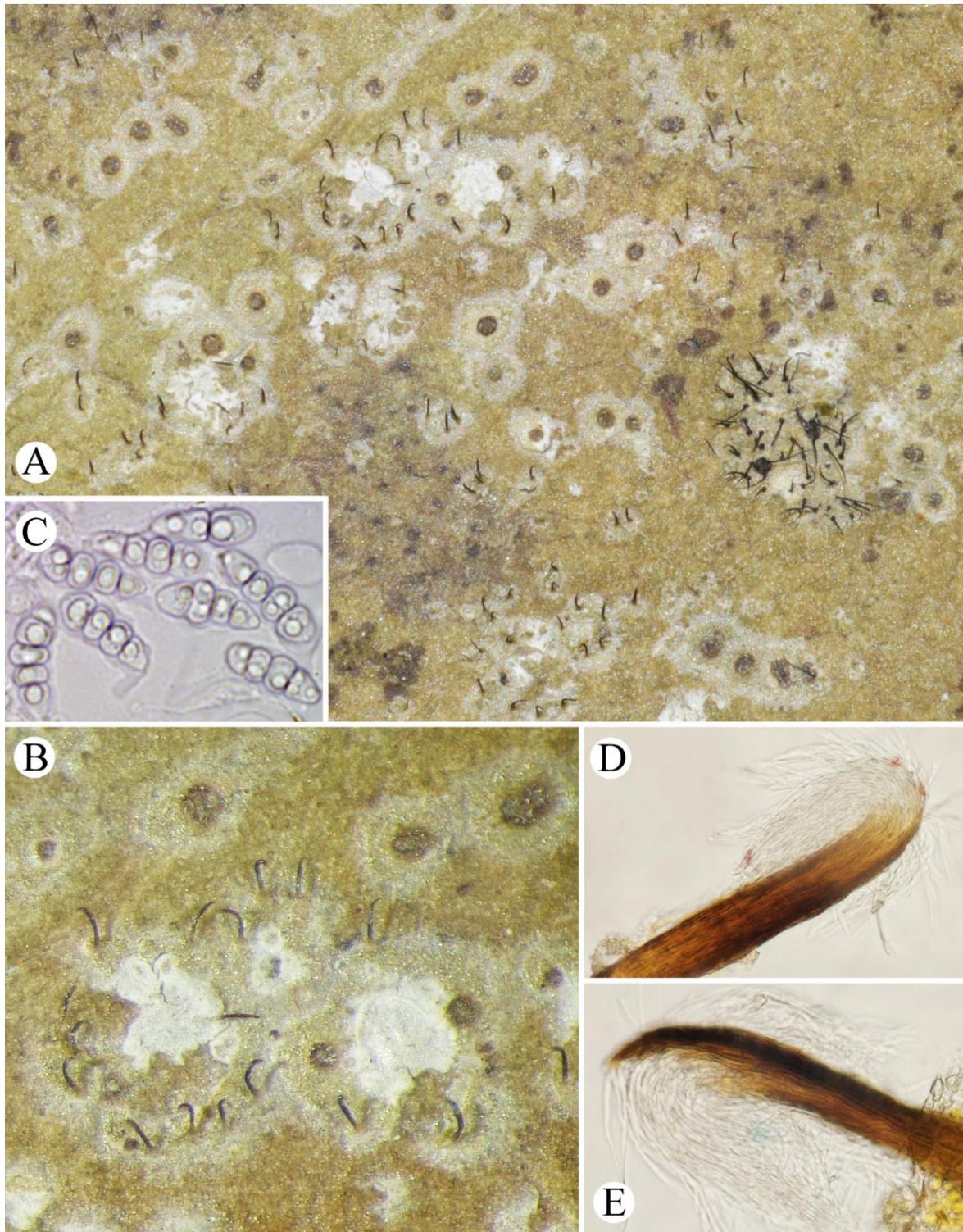


Figure 1. *Gyalideopsis pusilla*, part of holotype (DUKE). A: *G. pusilla* with *Tricharia santessonii* to the right and in the middle; B: Close up of apothecia and hyphophores; C: Ascospores; D–E: Tips of hyphophores with diahyphae. A–B: Images taken using a dissecting microscope; C–E: Images taken using a compound light microscope.