A NEW NORTH AMERICAN SPECIES OF THE LICHEN GENUS GOMPHILLUS

THEODORE L. ESSLINGER

Department of Botany
Smithsonian Institution
Washington, D.C. 20560

While collecting lichens and bryophytes in the vicinity of a large granitic outcrop in Wake County, North Carolina, I discovered an undescribed species belonging to the lichen genus Gomphillus. Until now only one species, *G. calicioides* (Duby) Nyl., had been recognized in the genus. It does not occur outside of Europe.

*Gomphillus americanus* Essl., sp. nov. Figures 1 and 2

Similis *G. calicioides* sed apothecia matura fatiscentia et stipitescens durrent.

Thallus crustose, thin and membranous, white to pale greenish-white or grayish-green, growing in roughly orbicular patches from a few centimeters to (rarely) as large as 15 cm in diameter. Mature apothecia dark brown or blackening, paler below, sessile but often appearing very short stipitate because of the pale, slightly narrowed base, (300-) 380-800 μm tall, 250-500 μm in diameter, mostly one- or two-headed, occasionally polycephalic; postmature apothecia disintegrating or dissolving and becoming distinctly stipitate, the stipe 1-3.5 mm long and 110-230 μm in diameter, slightly wider at the base and tapering upward, mostly pellucid-whitish, sometimes darkening slightly. Ascii 280-340 x 7-10 μm, cylindric; spores 180-240 μm long and (1.5-) 2-2.5 (-3) μm in diameter, transversely many-septate (the cells mostly 2-6 μm long); paraphyses less than 1 μm in diameter, branched and anastomosed. Thallus, apothecia and stipes all color tests negative (the moss substrate is sometimes K+ orange-yellow). Constituents: Atranorin (slight) and traces of 2 or 3 terpenoid compounds (these latter may have come from the substrate moss).

Type: U.S.A. North Carolina. Wake Co.: ca. 5 mi. SE of the town of Wake Forest in the vicinity of a large granite outcrop along the Cedar Fork of the Little River (35° 55' N lat., 78° 23' W long.); growing over mosses (mostly *Entodon seductrix* (Hedw.) C.M. and *Leuodonton julaceus* (Hedw.) Sull.) on a hardwood log, 28 March 1971, Esslinger 3184A (US, holotype; DUKE, Herb. Esslinger, isotypes). The following collections were made in different spots at the same locality on 15 March 1974: over mosses (mostly *L. julaceus*) and the
immediately adjacent bark on a hardwood log, Esslinger 4156 (US, DUKE, Herb. Esslinger); over mosses (L. julceus and Thuidium delicatulwm (Hedw.) BSG) on the base of living Juniperus virginiana, Esslinger 4157 (Herb. Esslinger); over mosses (L. julceus) on a branch of living Juniperus virginiana, three or four feet above the ground, Esslinger 4158 (Herb. Esslinger).

Gomphillus americanus and the European G. calicioides are very similar in most respects. The appearance of the mature apothecia, externally and internally, is virtually identical in both species although the apothecia and spores of G. americanus seem to average slightly larger than those of G. calicioides. The major difference between G. calicioides and G. americanus is the very peculiar manner in which the postmature apothecia of the latter species dissolve and become stipitate. Nothing similar to this was observed in any of the material of G. calicioides available to me (cited below) nor was any mention of such a development found in the literature.

Although the mature apothecia (nonstipitate) and postmature apothecia (stipitate) of G. americanus occur intermixed on the thall- us, few intermediate stages between the two types were seen. The process of stipe formation and apothecial dissolution in this species is apparently quite rapid. By the time the stipe has formed, very little of the apothecium itself is left. At the top of an elongated stipe, all that remains to be seen of the apothecium is a strange appearing, pale to often somewhat darkened fringe (Figs. 1 and 2, arrows) apparently formed from what remains of the paraphyses and possibly some excipular material. Often, just below this fringe is a pellucid swelling that appears to be part of the stipe but which, upon wetting, becomes gelatinous. This gelatinous material consists of a mass of spores and possibly also some paraphyses. No traces of asci can be detected at this stage.

The systematic position of the genus Gomphillus is uncertain. Generally it has been aligned with Baeomyces in the Cladoniaceae (Duby, 1830; Nylander, 1860; Zahlbruckner, 1905; Pursch, 1984) although Nylander (1855) in his original description of the genus, placed it in the tribe Lecidiniae. Its supposed relationship to Baeomyces was based largely on the stipitate appearance of the apothecia. As recently demonstrated by Jahns (1970), however, the apothecia of G. calicioides are not truly stipitate but simply appear so because they are slightly taller than they are broad and because the base is narrower and often paler than the upper part. Mature apothecia of G. americanus are similarly pseudostipitate but become truly stipitate in the postmature stage. Recently several authors (Poelt, 1973; Henssen & Jahns, 1974) have followed Nylander's original proposal to place Gomphillus in the Lecideaceae. While this disposition for the genus is certainly more satisfactory than in the Cladoniaceae, the extreme heterogeneity of the Lecideaceae is only magnified by such a move. Although superficially similar to certain species of Bacidia, Gomphillus has no close relatives in the Lecideaceae and should probably eventually be placed in a family of its own.

Although it is doubtless not a common lichen, G. americanus
Figures 1 and 2. *Gomphillus americanus*. Fig. 1: Thallus and apothecia on the natural substrate. Fig. 2: Various mature and post-mature apothecia. In both figures the arrow is pointing to a remnant apothecial fringe at the top of a stipe. × 14.
will probably be found to have a distribution considerably broader than that indicated by the few collections cited here. It is a very inconspicuous and easily overlooked lichen, often appearing like little more than discolored patches on the substrate moss. The apothecia are virtually invisible without the use of a hand-lens and even with one their nature is not immediately clear. Considering the rather broad distribution of _G. calciotoides_ through much of southern Europe, it would not be surprising to find this new species in scattered localities throughout much of the southeastern deciduous forest.

The following specimens of _G. calciotoides_ from Europe were examined:


**ITALY:** Quercia al Montello, Beltramini, 26.III.1856 (US).

**PORTUGAL.** Estremadura: Serra de Sintra, Cruz Alta, ad muscos et supra cortices Cupressorum cultarum, circ. 480 m.s.m., Tavares, 1946, in Tavares, Lich. Lusitaniae Sel. Exs. 11 (US).

**LITERATURE CITED**


