

New Record of the Existence of *Sarcographa tricos*a (Lichenized Ascomycota, Graphidaceae) in Korea

Yogesh Joshi¹, You Mi Lee², Xin Yu Wang¹, Young Jin Koh¹ and Jae-Seoun Hur^{1*}

¹Korean Lichen Research Institute, Suncheon National University, Suncheon 540-742, Korea

²Division of Specimen and Genetic Resources, Korea National Arboretum 487-821, Korea

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Lichen genus *Sarcographa* Fee, a stromatoid Graphidacean taxa, was newly found in Geomun Island, Jeonnam province. The lichen grew on the bark of *Camellia japonica* and *Eurya emarginata* along the coastal line of the island. It was identified as *Sarcographa tricos*a (Ach.) Müll. Arg. for the first time in Korea.

KEYWORDS : Coastal region, Graphidaceae, Korea, New record, *Sarcographa tricos*a

The Graphidaceae are commonly understood to consist of eight genera. Because there has been no phylogenetic approach to delimit the genera in this group, these genera are conveniently, if artificially, defined on the basis of spore morphology and the development of stromatic tissue (differentiated, loosely woven tissue within which ascospores are immersed). A genus has been erected for each combination of hyaline or brown, transversely-septate or muriform-spored, non-stromatic groups (*Graphis*, *Phaeographis*, *Graphina*, *Phaeographina*) and stromatic groups (*Glyphis*, *Sarcographa*, *Meduselina*, *Sarcographina*).

There has been no critical appraisal of the family Graphidaceae in Korea. The only information available is "A Checklist of Korean Lichens" that was reported by Hur *et al.* (2005). In this study, the authors reported the presence of only one genus *Graphis* from this country. Up to now, 9 species of *Graphis* have been reported in Korea. In 2009, there was the opportunity for us to study Graphidacean lichens of South Korea, and in these studies we identified the presence of another lichen genus *Sarcographa* (*S. tricos*a) belonging to this family, which was new to South Korea. A detailed description of *S. tricos*a along with line diagrams, habitat, ecology and remarks was provided based on the Korean specimen.

The present study is based on lichen specimens housed at the herbarium in the Lichen & Allied Bioresource Center, Korean Lichen Research Institute (KoLRI), Suncheon National University, Korea. The morphological characters were examined on dry material under a dissecting microscope ($\times 40$). Thallus and ascospores were examined with a compound microscope ($\times 1000$, in oil immersion). The sections for anatomical analysis were mounted in water.

All measurements were made in water, but the paraphyses were studied after replacing water with 25% KOH (Wetmore, 1994). The chemicals used during identification were 10% KOH (K), calcium hypochlorite (C), *para*-phenylenediamine (P), concentrated nitric acid (N) and Lugol's iodine (I). Secondary metabolites were identified by TLC as described by Walker and James (1980). The chromatograms were developed in solvent systems A (toluene: 1, 4-dioxane: acetic acid) and B (hexane: di-ethyl ether: formic acid). Terminology for tissues generally follows that of Staiger (2002).

*Sarcographa tricos*a (Ach.) Müll. Arg.

J. - Mém. Soc. Phys. et Hist. Nat. Genève 29(8): 63 (1887).

\equiv *Graphis tricos*a Ach.; *Lichenographia universalis*: 674 (1810).

= *Sarcographa cascarillae* Fée; *Essai sur les cryptogams des écorces exotiques officinales*: 58 (1825).

Description. Thallus epiphyloeodal, thin, effuse, smooth, glossy to matt, yellowish to greenish-grey or greyish-brown, ecorticate; medulla containing many oxalate crystals (Fig. 1B, C & D). Stroma whitish to cream coloured, farinose to granular, roundish to elliptical, often confluent, up to 3 mm in diameter, 0.2–0.3 mm thick, bordered by a white prothallus. Apothecia (lirellae) black, slightly immersed in the stroma, irregularly branched or radiate, forming a network, branches 0.15 mm wide, the ends of branches somewhat acute; disc concave; exciple black, closed, divergent; hypothecium carbonised; hymenium 40–85 μ m high, interspersed with oil globules; ascospores 8 per ascus, pale brown to brown, transversely 3 septate, 4-locular, 15–25 \times 5–7 μ m, old spores with a darker membrane.

*Corresponding author <E-mail : jshur1@suncheon.ac.kr>

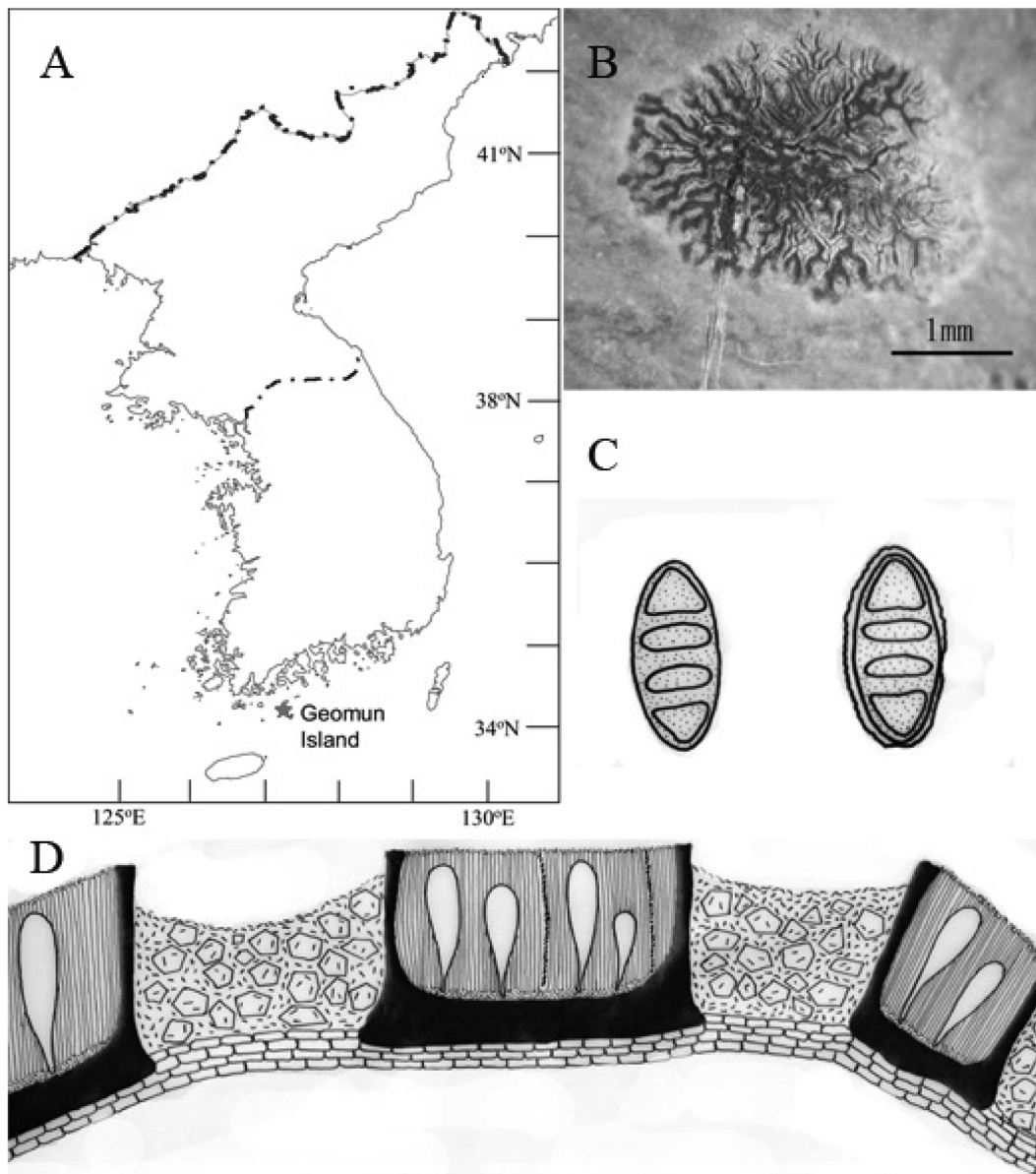


Fig. 1. A, Distribution map of *Sarcographa tricos*a; B, Habitats of *S. tricos*a (Scale bar = 1 mm) on the bark of *Camellia japonica* (Hur 070132); C, Ascospores of *S. tricos*a (not according to scale); D, Vertical and longitudinal section of an apothecium (not according to scale).

Chemistry. Spores I+ brownish-red. TLC: No chemicals.

Ecology and distribution. The species growing on the bark of *Camellia japonica* and *Eurya emarginata* along the coastal line of Geomun Island is a new record for Korean lichen flora (Fig. 1A). This is the first time that this genus was reported to exist in South Korea. Outside South Korea, this species has been found in Japan (Nakanishi, 1966), Sri Lanka (Awasthi, 1991; Nakanishi, 1966) and South America (Staiger, 2002).

Remarks. The species is characterised by a whitish stroma that is surrounded by a whitish prothallus and

pale brown 4-locular spores. It is often confused with *S. medusulina* (Nyl.) Müll. Arg. in external morphology, but the latter differs in having 4–6 locular spores and carbonisation of the exciple, which spreads to the adjacent parts of the stroma. While *S. tricos*a strictly has 4-locular spores and only the exciples of the lirellae are carbonised; adjacent parts of the stroma are not carbonised.

Specimens examined. South Korea, Geomun Island, Yeosu, Jeonnam Prov., N34°00'35.5" E127°19'12.1", alt. 52 m, on bark (*Camellia japonica*), Hur 070136, 24.03.2007; on bark (*Eurya emarginata*), Hur 070137;

on bark, Hur 070139; Geomun Island, N34°00'35.9" E127°19'12.2", alt. 46 m, on bark, 24.03.2007, Hur 070132.

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