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Gyalidea fruticola, a new corticolous lichen from Europe

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Abstract: The diminutive species *Gyalidea fruticola* is described from Central Sweden and northern Italy. It is typically found on decaying bark, on semi-shaded *Lonicera* spp. in deciduous, mixed deciduous/coniferous or coniferous forests. The species is characterized by its small and pale apothecia, its submuriform ascospores and its habitat preference.

Key words: Italy, *Lonicera*, new species, *Solorinellaceae*, Sweden

Introduction

The genus *Gyalidea* (*Solorinellaceae*) includes small and long overlooked species. Several species are known only from the type material or very limited collections (e.g. Vězda & Poelt 1991; Vězda 1996) and the ecology of most species is poorly known. Nine species are known from Fennoscandia (Sweden, Norway, Finland) and of these, seven are found in Sweden (Santesson *et al.* 2004). In 2006 a further *Gyalidea* species was collected in Sweden and Italy and is described here for the first time.

Material and Methods

All light microscopy measurements used for statistical calculations were made on material mounted in water using an oil-immersion lens, with a precision of 1 µm. Spore measurements are given as (the minimum value recorded–) (mean value − standard deviation)–(mean value+standard deviation) (–the maximum value recorded). The calculated values are rounded to the nearest whole number. The mean value ($\bar{x}$), the standard deviation (SD), and the total sample size (n) is given in parentheses. Only typical spores lying outside the asci were measured, obviously abnormal ascospores being excluded. The iodine reaction (Lugol's solution; iodine concentration 0·25%) was studied both with and without pretreatment with K, indicated as K/I and I, respectively.

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The Species

Gyalidea fruticola M. Svensson & G. Thor sp. nov.

Thallus crustaceus, corticola. Apothecia multa, 0·1–0·3 mm diametro, pallide fuscolutea. Sporae octonae, ellipsoideae, incoloratae, submurales, (15–)17–23 (–29) × (5–)5–7(–9) µm, septis transversalibus (5–)7 (–9), longitudinalibus (1–)3(–6).

Typus: Sweden, Uppland, Häggeby parish, 3 km NW of Häggeby church, along the road between Skadevi and Eknäs, broadleaved deciduous forest, on *Lonicera xylosteum*, 59°40′58·0″N, 17°31′22·2″E, alt. 20 m, 15 January 2006, *M. Svensson* 616 (UPS—holotypus; S—isotypus).

(Figs 1 & 2)

Thallus crustose, up to *c.* 10 mm diam., forming small patches, corticolous, uneven to immersed, pale greenish grey, up to *c.* 0·2 mm thick; hyphae up to 2 µm wide. Soralia and isidia not seen. *Photobiont Cystococcus*/*Leptosira*-like, cells unicellular, 6–13 µm diam.

Apothecia round, common, almost immersed to sessile, scattered, 0·1–0·3 mm diam. and up to 0·2 mm high, widening towards the base, whitish grey to light yellowish brown (Fig. 1); disc concave to almost flat, when wet often with a brownish tinge. True exciple well developed and almost enclosing the disc on small apothecia, up to 80 µm thick laterally, composed of richly branched, colourless hyphae 1–2·5 µm wide. *Hymenium* colourless, 65–110 µm tall, I+

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FIG. 1. *Gyalidea fruticola* (*Svensson* 632, UPS). Scale = 1·5 mm.

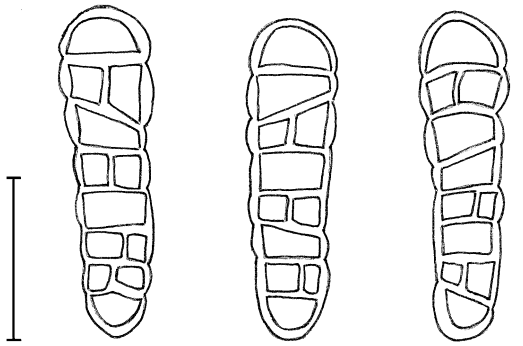


FIG. 2. *Gyalidea fruticola*, spores (holotype). Scale = 10 µm.

pale red-brown, K −, K/I+ pale red-brown. *Hypothecium* colourless; *epithecium* colourless; *paraphyses* rarely branched, septate, easily separated, 1–1·5 µm wide, apices not thickened and colourless. *Asci* 8-spored, thin-walled, apically thickened, 65–105 × 10–15 µm. *Ascospores* ellipsoid, colourless, without a distinct perispore, submuriform (Fig. 2) with (5–)7(–9) ($\bar{x}$ = 7·0, *n* = 25) transverse septa and (1–)3(–6) ($\bar{x}$ = 3·0, *n* = 25) longitudinal septa, 1–2 of the transverse septa sometimes oblique, usually slightly constricted at the septa, (15–)17–23(–29) × (5–)5–7(–9) µm (length: $\bar{x}$ = 20·0 µm, SD = 2·7 µm, *n* = 73; width: $\bar{x}$ = 6·3 µm, SD = 0·80 µm, *n* = 73).

Pycnidia not seen.

Chemistry. Neither thallus nor apothecia tested by TLC.

Etymology. *Gyalidea fruticola* is so named as it has been found only on shrubs (*Lonicera* spp.).

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Distribution and habitat. In Sweden *Gyalidea fruticola* was looked for in about 25 localities during 2006 and was found in 13 of these in the provinces Södermanland, Uppland and Västmanland. This indicates that it might be a rather common species and that it might indeed prove to be one of the most common *Gyalidea* species in Sweden. In Italy, it was found at one of two localities visited where *Lonicera* was present. Given that *Lonicera* spp. are common in Europe, the species might be expected to be widespread.

A typical locality in Sweden for *G. fruticola* is deciduous forest or a mixed deciduous/coniferous forest, often near a lake or ditch, indicating a high and stable humidity. A few red-listed species such as *Sclerophora farinacea* (Chevall.) Chevall. and *S. peronella* (Ach.) Tibell are sometimes present, but the localities are not exceptionally rich in lichen species.

In Sweden, *Gyalidea fruticola* has so far been found only on old *Lonicera xylosteum* shrubs in semi-shaded or shaded positions in the forests. The shrubs are usually large (old), with dead or dying, partly mossy stems where the bark has started to decay. The lichen often grows just above the mossy parts of arching stems that are bent towards the ground. It may also be found on dead twigs on such stems. This habitat, characterized by loose bark just about to fall off, is probably rather short-lived. Twigs and stems which have been dead for a long time often lose their bark and are invaded by various saprotrophic fungi. *Gyalidea fruticola* is mostly not intermixed with any other species, although sometimes it grows close to dying thalli and apothecia of *Lecania cyrtella* (Ach.) Th. Fr. Once (*Svensson* 866), it was found growing among the thallus granules of *Bacidia rubella* (Hoffm.) A. Massal. Other species often growing on the same shrubs as *G. fruticola* include *Bacidia arceutina* (Ach.) Arnold and *Ramonia interjecta* Coppins. More rarely *Bacidia subincompta* (Nyl.) Arnold, *Bacidina chloroticula* (Nyl.) Vězda & Poelt, *Caloplaca cerina* (Ehrh. ex Hedw.) Th. Fr., *Catillaria nigroclavata* (Nyl.) Schuler, *Catinaria atropurpurea* (Schaer.) Vězda & Poelt, *Gyalecta truncigena* (Ach.) Hepp and *Physconia enteroxantha* (Nyl.) Poelt have been found on *Lonicera xylosteum*. These species indicate that *L. xylosteum* can be a species rich habitat, and one often overlooked by lichenologists. In Italy the species was found in a semi-open, old-growth coniferous forest with *Larix decidua*, *Picea abies* and *Pinus cembra*. Here, *G. fruticola* was found on a thin, dead twig of *Lonicera alpigena*, growing right beside a thallus of *Lecania cyrtella*. Also found on the same twig were *Caloplaca cerina* and *Lecidella euphorea* (Flörke) Hertel.

Notes. *Gyalidea fruticola* is characterized by its small and pale apothecia, its submuriform ascospores and its habitat preference. Owing to its very small size, the species is easily overlooked, even under the dissecting microscope. Since the apothecia often have a flat disc, it can easily be mistaken for a poorly developed or depauperate *Lecania* or *Lecanora* sp. When wet, the hymenium swells considerably (more than the thallus), and becomes brownish in tinge. When dry, the thallus and apothecia often have the same colour as the bark of *Lonicera xylosteum*, which makes them hardly discernible. In the field it is very difficult to spot, even if known to be present at a locality. It is best detected if seemingly appropriate *Lonicera* stems are collected and then examined later under the dissecting microscope in the laboratory. It is the only *Gyalidea* species known to occur in this habitat. The only other corticolous *Gyalidea* species in Europe is *Gyalidea minuta* van den Boom & Vězda (Boom & Vězda 1995), which also has submuriform ascospores, but the apothecia are clearly constricted at the base and the ascospores are shorter (12–17 μm). Outside Europe, only one corticolous *Gyalidea* is reported, *G. parvula* Kalb & Vězda, which has 3–4-septate spores that are broader (16–22 × 8–12 μm). Among non-corticolous *Gyalidea* species reported from Europe it is somewhat similar to *G. subscutellaris* (Vězda) Vězda and *G. psammoica* (Nyl.) Lettau ex Vězda, but both these species have darker apothecia. *Gyalidea subscutellaris* also

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has more muriform, wider ascospores (8–12 µm) and grows on bryophytes, while *G. psammoica* has shorter ascospores (14–18 µm) and grows on sandy soil. Among non-corticolous species from outside Europe, it is somewhat similar to *G. portoricensis* Vězda, which has shorter ascospores (14–18 µm) and grows on soil in Puerto Rico (Vězda 1996). *Gyalecta derivata* (Nyl.) H. Olivier might also become somewhat similar but differs in having *Trentepohlia* as photobiont and ascospores that are mostly 11–13-septate, with longitudinal septa occurring only occasionally.

Additional specimens examined. **Italy:** *Trentino Alto Aldige*: Trento Prov., Stelvio National Park, Val de la Mare, 400 m SE of Malga Prabon, Bosco di Celvestrè, coniferous forest, alt. 1780 m, 46°24′321″N, 10°41′330″E, 2006, *M. Svensson* 853 (UPS).— **Sweden:** *Södermanland*: Aspö parish, 150 m NW of Aspö church, deciduous forest, alt. 5 m, 59°29′329″N, 17°23′937″E, 2006, *M. Svensson* 632 (UPS); Björkvik parish, 5·5 km SE of Strångsjö, 150 m S of Järnbolsstugan, mixed coniferous forest, alt. 60 m, 58°52′250″N, 16°16′251″E, 2006, *M. Svensson* 790 (LD); Sköldinge parish, N of Lake Silingen, by the ruins of the ancient fortress Tjugesta skans, broadleaved deciduous forest, alt. 55 m, 59°01′199″N, 16°16′251″E, 2006, *M. Svensson* 931 (UPS). *Uppland*: Alsike parish, 300 m N of Dragontorpet, just W of road 255, broadleaved deciduous forest, alt. 20 m, 59°45′126″N, 17°39′175″E, 2006, *M. Svensson* 609 (UPS); Alsike parish, 300 m N of Grönvreten, just E of road 255, near ditch, edge of mixed coniferous forest, alt. 20 m, 59°46′144″N, 17°39′164″E, 2006, *M. Svensson* 868 (UPS); Estuna parish, 3 km ENE of Estuna church, 300 m W of Svinninge, deciduous forest, alt. 10 m, 59°49′193″N, 18°42′116″E, 2006, *M. Svensson* 917 (LD); Gryta parish, 3·2 km N the village Örsundsbro, just W of gravel road, near ditch, coniferous forest, alt. 40 m, 59°45′843″N, 17°18′347″E, 2006, *G. Thor* 20100 (UPS); Knivsta parish, 1·7 km W of Valloxsäby, *c.* 400 m N of lake Valloxen, broadleaved deciduous forest, alt. 25 m, 59°44′385″N, 17°50′108″E, 2006, *M. Svensson* 623 (UPS); Skokloster parish, 350 m S of Skokloster Castle, Malmbacken, broadleaved deciduous forest, alt. 45 m, 59°42′155″N, 17°37′102″E, 2006, *M. Svensson* 866 (UPS); Sånga parish, 1·5 km SE of Sånga church, S of Svartsjö djurgård, E of the road, deciduous forest, alt. 10 m, 59°20′526″N, 17°43′252″E, 2006, *M. Svensson* 628 (UPS); Söderby-Karl parish, 5 km SW of Söderby-Karl church, along the road between Koludden and N. Järsö, Svartbäcksviken, broadleaved deciduous forest, alt. 15 m, 59°51′378″N, 18°37′359″E, 2006, *M. Svensson* 624 (UPS). *Västmanland*: Vittinge parish, 700 m SE of Månsbo, N shore of Lake Ekholmssjön, deciduous forest, alt. 70 m, 59°51′924″N, 17°02′522″E, 2007, *M. Svensson* 947 (UPS).

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