

Further data on the lichen genus *Bacidia* s. l. in the Canary Islands and Western Europe, with descriptions of two new species

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Abstract: *Bacidia paramedialis*, described as new from La Palma, is closely related to the widespread, probably pantropical *B. medialis*. Two species are recognized within *B. arnoldiana*: a saxicolous species which corresponds to the type, and a corticolous species named *B. sulphurella* Samp. A new species *B. sipmanii* is described and forms a species pair with *B. scopulicola*.

Key words: *Bacidina*, *Woessia*, endemic species, species pair, Los Tilos

Introduction

The delimitation of the lichen genus *Bacidia* De Not. has been problematic for quite a long time and the molecular phylogeny published by EKMAN (2001) shows it might be restricted to the highly supported *B. rosella* group. Well-circumscribed genera such as *Bilimbia* and *Mycobilimbia* are now widely accepted, but several others such as *Bacidina* and *Toninia* have yet to be investigated. The objective of this paper is not to introduce new data in the resolution of the phylogeny of these genera, as it is dedicated to species level and recognition of unknown species in different groups. When a decision as to the generic position of the species newly recognized here had to be taken, we chose to assign them to *Bacidia* s. l.

This study originated as a result of our revision of our material belonging to *Bacidia* s. l. collected in Madeira and the Canary Islands. All taxonomic problems studied in this paper therefore have a Macaronesian connection, but the publication of a revised checklist and key to all species found in Macaronesia is still a distant objective. Indeed, there are still many cryptic species to be discovered in Europe and Macaronesia, as demonstrated by the recent description of *Bacidia thyrrhenica* Llop (LLOP et al. 2007), mentioned from the Anaga range in Tenerife.

Material and Methods

This study is based on collections and observations made by the authors in Macaronesia, western Europe and several tropical regions, as well as the examination of herbarium material borrowed from institutions and colleagues. The material was examined in distilled water, in lactophenol cotton-blue (LCB; FLUKA Chemika 61335) or in Lugol's solution (IKI; Lugol solution SIGMA L-6146). The measurements always refer to water mounts.

The Species

***Bacidia paramedialis* M. Brand, Coppins, van den Boom & Sérus. sp. nov.**

A *Bacidia medialis* differt ascosporis minus angustis et excipulo cum cellulis exterioris incrassatis.

Type: CANARY ISLANDS, LA PALMA. Los Tilos, laurisilva forest, on narrow ridge, on trunk of *Laurus azorica*, c. 750 m, V. 1999, P.P.G. van den Boom 22241 [LG holotype; hb Van den Boom isotype].

(Fig. 1B, C, E)

Thallus green to dark green, or brownish-green, formed of isolated to contiguous, slightly convex areoles or, when well-developed, made of appressed, minute and thin (c. 100-150 μm thick) squamules that can become tuberculate on their margins, or even produce minute granules at their margins; prothallus absent or made of a pale grey film between the thallus granules. Photobiont belonging to the Chlorococcaceae.

Apothecia abundant, 0.3-0.5(-0.6) mm diam., disc at first slightly concave, soon becoming plane or slightly convex, pale pinkish orange, with a distinct, concolorous or slightly paler margin that becomes excluded in old apothecia. *Excipulum* made of radiating, branching and anastomosing thick-walled hyphae with narrow lumina, distinctly but irregularly inflated on the outer edge (up to 4–6 μm), c. 30 μm in lateral parts; brownish K– pigment in the outer cells walls, other hyaline. *Hypothecium* hyaline or very pale orange, c. 20 μm thick; *hymenium* hyaline, 65-75 μm thick; paraphyses simple or branched, rarely anastomosed, with their upper parts slightly inflated up to 2(-3) μm . *Ascospores* 8/ascus, bacilliform to slightly fusiform, with rounded ends, rarely slightly clavate or tapering towards the proximal end, usually straight, 5-7(-9)-septate, (19-)22-31(-34) $\mu\text{m} \times 4-5 \mu\text{m}$.

Pycnidia immersed in the thallus, 0.1 mm diam. *Conidia* filiform, curved, non-septate, 10-15 \times 1.0 μm .

Chemistry. No compounds detected by TLC. Pigment in excipulum and pycnidia wall belonging to the “rubella orange” (EKMAN 1996; included in “arceutina-yellow” by MEYER & PRINTZEN 2000), hardly changing with K, C and N.

Notes: Dr S. Ekman has suggested that the material dealt with here is close to *Bacidia medialis* (Tuck. ex Nyl.) de Lesd., a well-known species in the Neotropics and assumed to be pantropical (EKMAN 1996). Indeed, the thallus

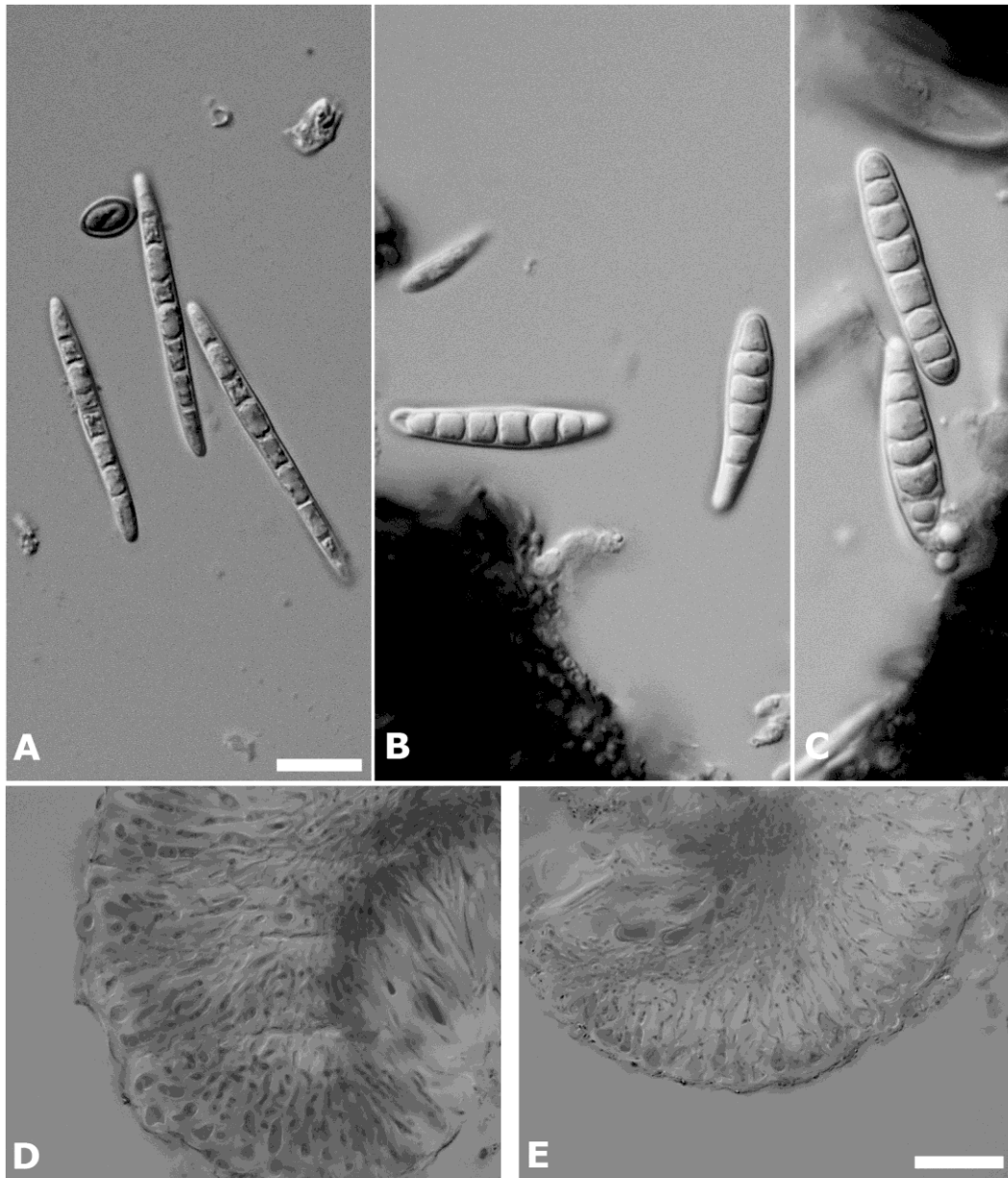


Fig. 1. A-E: *Bacidia medialis* and *B. paramedialis*. A, D: *B. medialis*, E. Sérusiaux 17356 [LG]. A: ascospores, D: section through excipulum. B, C, E: *B. paramedialis*, P.P.G. van den Boom 22241 [LG holotype]. Scales A-C = 10 μ m, D-E = 20 μ m.

structure and shape and colour of apothecia of that species and the population sampled in La Palma are identical. Much to our surprise, when comparing the excipulum and especially the ascospores of recently collected material of *B. medialis* in Central America and the West Indies, two diagnostic characters emerged: the width of ascospores (2.5-3 μ m in *B. medialis* and 4-5 μ m in *B. paramedialis*) and the occurrence of an outer row of enlarged cells in *B. paramedialis*, in contrast with the strongly gelatinized hyphae, without an outer row of enlarged cells in *B. medialis*. Ten apothecia of both species have been

carefully examined. We are thus convinced that the population examined in La Palma is closely related to the widespread *B. medialis*, but nevertheless forms an isolated taxon worthy of species recognition. As no validly published epithet could be found in the literature, it is described here as new.

Ecology and distribution: *Bacidia paramedialis* is known from a single but healthy population in La Palma, Canary Islands, in the well-preserved laurisilva of Los Tilos, where many other interesting Macaronesian endemic, or indeed strictly endemic, lichen species have also been discovered (e.g. *Byssoloma kalbii*, *Gyalectidium membranaceum*, *Porina ocoteae*).

Selected specimens of *Bacidia medialis* examined: **Guadeloupe.** Grande-Terre, Road of “Porte d’Enfer”, W of the lagoon, dry forest, on trees, 10 m, III. 1996, E. Sérusiaux 17214 & 17225 [LG]. **Ibid.**, Basse-Terre, “Grande Rivière des Vieux-Habitants”, near “La Gravelière”, isolated trees at the bottom of a cultivated valley, c. 230 m, III. 1996, E. Sérusiaux 17356 [LG]. **Guatemala.** Santa Rosa prov., Monterrico, near Tortugario Monterrico, small park in the village, on trees, 20 m, VIII. 2004, P. P. G. van den Boom 33574, 33587, 33589 & 33590 [hb van den Boom].

Recognition of two species within *Bacidia arnoldiana*: *B. arnoldiana* and *B. sulphurella*

(Fig. 2, A-C)

Bacidia arnoldiana Körb. s. l. is easily distinguished by several characters: finely granular thallus entirely made of goniocysts; rather large and flat apothecia [0.3–0.7(–1.3) mm in diam.], with a greyish-brown disc with a slight violet hue that makes them so characteristic, and a paler, orange-brown and raised margin, sometimes white pruinose, and a typically dark brown to red-brown hypothecium (and adjacent excipulum) reacting K⁺ dark brown (Arnoldiana-brown pigment; MEYER & PRINTZEN 2000).

Detailed studies of the material referred to *B. arnoldiana* in Western Europe and Macaronesia demonstrate that the two taxa can be recognized on the basis of the size and shape of pycnidia and more particularly on the shape of the conidia. We further discovered that these two pycnidia and conidia types correlate with the ecology of the specimens involved.

***Bacidia arnoldiana*:** pycnidia abundant or rare, sometimes absent, 0.1–0.2 mm diam.; conidia filiform, arched or curved, sometimes almost straight, without any hook at their apex, 0–3(–5)-septate, 25–40 × 1–1.5 µm (Fig. 2A); always on rocks, usually calcareous.

***Bacidia sulphurella*:** pycnidia nearly always present and usually abundant, 0.15–0.3 mm diam., sometimes lobate and seemingly multilocular; conidia filiform, curved or not, but always with at least one extremity strongly hooked (and thus looking like a walking stick) and slightly enlarged at one end, 0–3-septate, 25–40 × 1–1.5(–2) µm (Fig. 2B–C); on bark, sometimes invading corticolous mosses; present on twigs, needles and living leaves in a few localities with genuine foliicolous lichens in S Europe.

We believe such constant diagnostic features concerning the pycnidia and conidia deserve taxonomic status at species rank. The type collection of *Bacidia*

arnoldiana represents the saxicolous species, while two epithets are available at species level for the corticolous one: *Bacidia sulphurella* and *Woessia fusarioides*.

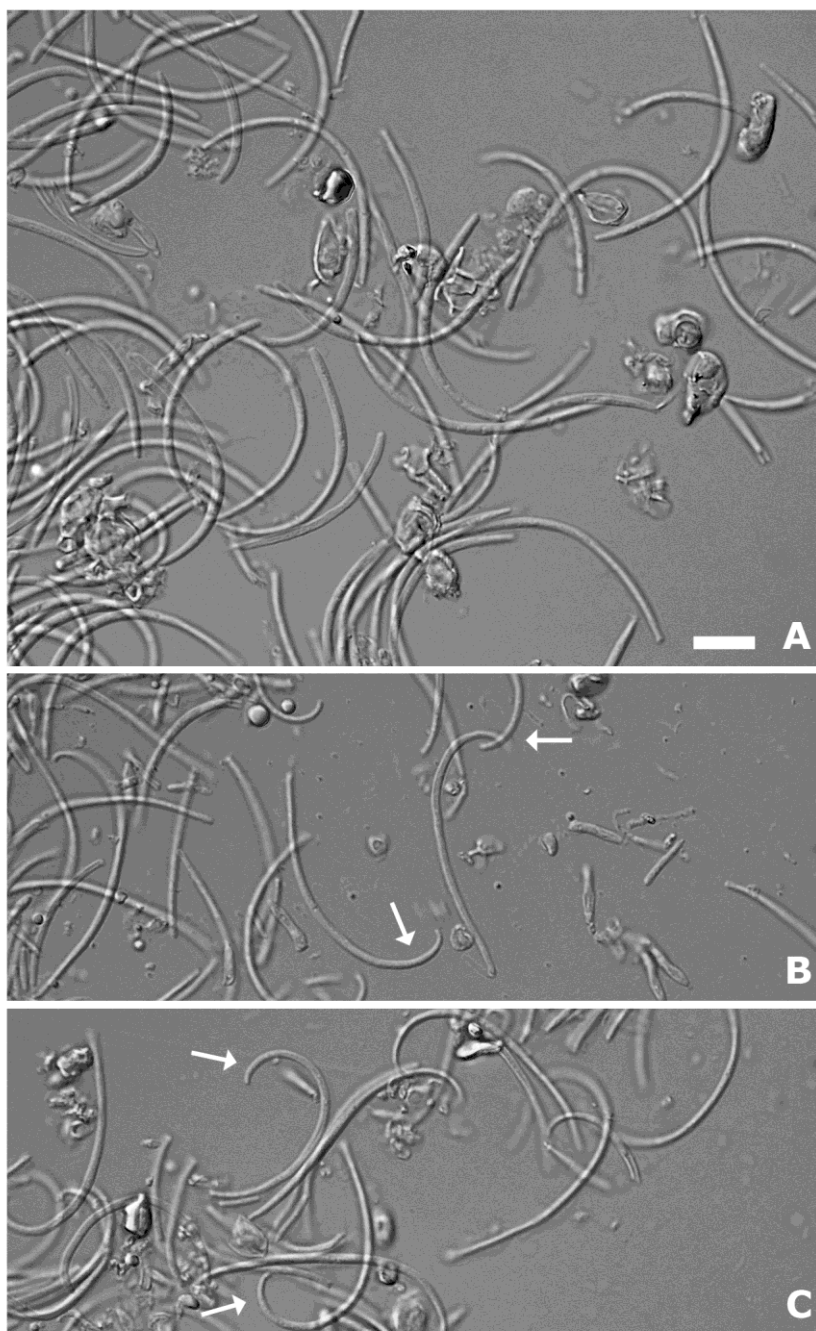


Fig. 2. A-C: *Bacidia arnoldiana* and *B. sulphurella*. A: *B. arnoldiana*, conidia, P. van den Boom 17867 (LG). B-C: *B. sulphurella*, conidia, P. van den Boom 15260 (LG). Scale: 10 μ m.

The type collection of *Bacidia sulphurella* could not be obtained on loan from PO (request of 8. XII. 2007), because of legitimate restriction regarding type collections. PAZ-BERMÚDEZ (2003) had examined the type specimen and

concluded that it represented *B. arnoldiana*. She could not find pycnidia and described the specimen as corticolous. We there have no reason to reject this validly published epithet for the corticolous species dealt with here.

The type collection of *Woessia fusarioides* actually represents that species (pycnidia and apothecia present!); the diagnostic conidia were properly illustrated in the original description, with their typical walking-stick appearance (see fig. 7D and 8D-E in HAWKSWORTH & POELT 1986).

Bacidia arnoldiana var. *corticola* Arnold (in ZWACKH, Flora 45: 495, 1862) represents the corticolous species, here recognized as *B. sulphurella*. This epithet has never been transferred to species level and thus has no priority over *sulphurella*.

Bacidia corticicola (Anzi) Dalla Torre & Sarnth. should not be confused with var. *corticola* Arnold. It is the corticolous form of *Scoliciosporum umbrinum* (Ach.) Arnold [var. *corticolum* (Anzi) Bagl. & Carestia], and is treated at species level by several authors, e.g. OLIVIER (Bull. Géogr. Botan. 21: 167, 1911). There is no doubt that this epithet does not apply to the species here named *B. sulphurella*.

The nomenclature and type collections of both species are thus as follows:

***Bacidia arnoldiana* Körb.**

Parerga Lich., fasc. 2: 134 (1860). *Bacidina arnoldiana* (Körb.) V. Wirth & Vězda, Stuttg. Beitr. Naturk. A, 517: 62 (1994). – Type: GERMANY. “Ad saxa umbrosa calcarea in sylvaticis vallis Rosenthal prope Eichstaedt Bavariae”, coll. Arnold, Arnold Lich. Sel. Germ. 131 [L lectotype!].

B. arnoldiana is probably widespread throughout Europe, but it is known only from La Palma in the Canary Islands (BERGER & ETAYO 1998; our own observations). It has been reported from a few localities in North America (EKMANN 1996), but all collections are corticolous and may represent *B. sulphurella*. The latter species is also probably widespread throughout Europe, but so far has not been found in the Canary Islands.

Selected specimens examined: Belgium. Mosan distr., Durbuy, left side of the river Ourthe, on calcareous natural outcrop at base of wooded slope, 140 m, 1998, E. Sérusiaux [LG]. 1 km SE of Hotton, limestone rock cave, IV. 1990, P. P. G. van den Boom 9533 [hb van den Boom, LG]. **Canary Islands. La Palma,** Los Tilos, laurisylve riche en *Hedera canariensis* et en fougères (e. a. *Woodwardia radicans*), sur rochers basaltiques ombragés, 800–850 m, VII. 1997, E. Sérusiaux (LG). **England.** North Somerset (VC 6), Cheddar Gorge, S side, between waterworks and Horseshoe Bend, 31/474.544, base of N-facing Carboniferous Limestone cliff, VII. 2001, B. J. & A. M. Coppins 20299 [E]. West Kent (VC 16), West Peckham, River Bourne, on shaded calcareous rock of vertical wall by old weir, 51/617.520, IV. 1969, B. J. Coppins & A. R. Pentecost, s.n. [E]. North-west Yorkshire (VC 65), Rokeby Park, by River Greta, on calcareous sandstone, 45/084.144, VII. 1970, B. J. Coppins s.n. [E]. **Scotland.** East Lothian (VC 82), Garleton, 36/50.75, N-facing side of crumbling wall, V. 1999, B. J. Coppins 18653 [E]. Clackmannan (VC 87), Dollar, Castle Campbell, 26/96.99, on rusty iron rail on the ground by fence, VII. 1982, B. J. Coppins [9012] & P. M. Jørgensen [E]. **Switzerland.** Valais, E of Sierre, 2.5 km E of Susten, at the entrance of gorges with steep calcareous, shaded and sheltered rocks, 650 m, VIII. 1996, P. P. G. van den Boom 17867 [hb van den Boom, LG].

***Bacidia sulphurella* Samp.**

Bol. Soc. Brot., ser. 2, 2: 174 (1924). – Type: PORTUGAL. Minho, “S. Gens, [Póvoa de Lanhoso: S. Gens in the protologue, according to Paz-Bermúdez, 2003], nas oliveiras (rara), 3. VII. 1923, G. Sampaio [PO 5595L holotype, not seen].

= *Woessia fusarioides* D. Hawksw., Poelt & Tscherm.-Woess, Pl. Syst. Evol. 154: 207 (1986). – Type: AUSTRIA. Burgenland, Bez. Oberwart, Quercus-Stumpf im Mischwald SW über Bad Tatzmannsdorf, nahe der Strasse nach Oberwart, ± 350 m, 1980, J. Poelt [GZU holotype!].

= *Bacidia arnoldiana* var. *corticola* Arnold apud Zwackh, Flora 45: 495 (1862). – Type: GERMANY. Heidelberg, “An Buchen des Königstuhles, 1859”, P. F. W. von Zwack-Holzhausen 332-A et 332-B [M syntypes!].

Selected specimens examined: **Belgium.** Camp. distr., 6 km SE of Turnhout, nature reserve Tikkebroeken, damp *Salix* and *Alnus* forest with fallen *Betula*, on *Salix*, II. 1994, P. P. G. van den Boom 15260 [hb van den Boom, LG]. **France.** Dépt. Vosges, SE de Gerardmer, Lac de Blanchemer, on *Acer pseudoplatanus*, VI. 1985, F. Rose & E. Sérusiaux (LG). Dépt. Pyrénées-Atlantiques, Gorges du Bitet (flanc gauche de la vallée d'Ossau), futaie de *Abies* et *Fagus*, avec sous-bois de *Buxus*, sur branchettes et feuilles de *Buxus*, 850-1000 m, VII. 1989, E. Sérusiaux [LG]. **England.** East Norfolk (VC 27), Cley Park, 63/06.40, on *Sambucus*, V. 1973, B. J. Coppins & P. W. Lambley s. n. (E). Hereford (VC 36), Croft Park, Fishpool Valley, on *Malus*, V. 1991, B. J. Coppins [14086] & A.M. O'Dare (E). Worcester (VC 37), Elmly Castle, 32/9.4, on *Salix* by pond, IV. 1974, B. J. Coppins, O. L. Gilbert & M. R. D. Seaward s. n. [E]. **Italy.** Calabria, Vibo Valentia, Serra San Bruno, bosco di Santa Maria, on twigs and needles of *Abies alba*, 840 m, IV. 1993, D. Puntillo 8529 [hb Puntillo, LG]. **Luxembourg.** Lorr. distr., entre Berdorf et Mullerthal, versant droit de l'Ernz Noire, Schnellert, sur *Carpinus*, V. 1998, P. Diederich 13596 [hb Diederich]. **The Netherlands.** Prov. N Brabant, Someren, Lieropse Heide Beuven (SE), damp *Salix* wood, on *Salix*, II. 1989, P. P. G. van den Boom 7712 [LG, hb van den Boom]. **Poland.** Góry Sowie, fortece w Srebrnej Górze, na *Acer pseudoplatanus*, IV. 2004, M. Kukwa 3114 [LG]. Białystok district, 2 km E from Czarna Białystocka, on *Carpinus*, IX. 1987, W. Fałtynowicz & J. Miądlukowska (E). **Scotland.** Fife (V.C. 85), Dunfermline, Crossford, 36/06.86, on old *Sambucus* in woodland, IV. 1977, B. J. Coppins 2822 [E]. East Perthshire (V.C. 89), Strathardle, Enochdhu, Kindrogan Field Centre, 37/054.629, 260 m, on bark at base of young *Fraxinus*, 2007, B. J. Coppins 22281 [E].

Recognition of two species within *Bacidia scopulicola*: *B. scopulicola* and *B. sipmanii* sp. nov.

(Fig. 3A-D)

Bacidia scopulicola (Nyl.) A.L. Sm. is a fairly well-known saxicolous species growing on siliceous, maritime rocks in the xeric-supralittoral zone, preferring crevices and underhangs, rarely soil or decaying *Armeria* tufts (COPPINS in PURVIS et al. 1992) and is the only sea-coast *Bacidia* species with acicular spores. The discovery of large populations that key out as that species inland and at rather high elevations in the Canary Islands lead us to carefully examine its variation. Indeed, it is clear from the British Flora (PURVIS et al. 1992) that an unusual variation in the thallus morphology is present: the comment after the species description states “Very variable in the thickness and texture of the thallus...”. Careful examination of the thallus variation, in the field and under the dissecting microscope, convinced us that two different species can be recognized, one of which requires a new name and is here described as *Bacidia sipmanii*.

Bacidia sipmanii differs from *B. scopulicola* by its rather thin and rimose rather than thick and isidioid thallus; otherwise, the apothecia and pycnidia are very similar. *B. sipmanii* is richly fertile, whereas in *B. scopulicola* the apothecia are usually absent, or at least not very abundant, and usually smaller. Both form a species pair in the original sense of Poelt (1970).

Detailed descriptions of both species are provided below.

***Bacidia scopulicola* (Nyl.) A. L. Sm.**

Monogr. Brit. Lich., 2: 156 (1911). – *Lecidea scopulicola* Nyl., Flora 57: 312 (1874). –

Type: ENGLAND (“Anglia”). Super scopulos marinos prope Penzance [Cornwall distr.], Curnow [H Nyl. 17956 holotype!].

(Fig. 3C–D)

Thallus pale greenish to brownish, rather shiny, rather thick (0.5–1 mm), almost entirely made of irregular, rounded, flattened or coralloid granules, appearing as poorly developed isidia, sometimes dissolving into soredioid granules (30–60 µm diam.), rarely thin and areolate, but then with an “upper” layer of soredioid/isidioid granules. Prothallus absent, or pale orange. Photobiont belonging to the *Chlorococcaceae*.

Apothecia rare or absent, 0.4–0.6(–0.8) mm diam., disc at first plane, soon becoming convex, pale to beige brown, rarely dark red, dark brown or blackish, with a distinct, usually darker margin. *Excipulum* strongly gelatinized, made of radiating, strongly conglutinated thick wall hyphae with narrow lumina, with outer cells widened to c. 5 µm, but nevertheless with thick walls; with a brownish K– pigment in the cells walls, especially near the upper surface, otherwise hyaline. *Hypothecium* hyaline; *hymenium* hyaline, 45–60 µm thick; paraphyses simple or branched in their upper parts, rather conglutinated, 1–1.5 µm thick and slightly swollen near the apex, up to 2 µm. *Ascospores* 8/ascus, bacilliform to acicular, 3–7-septate, 30–38 × 1.5–2(–2.5) µm.

Pycnidia immersed or semi-sessile, 0.1–0.2 mm wide, brown. *Conidia* filiform, strongly curved, non-septate, 21–29 × 0.8–1 µm.

Chemistry. No compounds detected by TLC. Pigment in excipulum and pycnidia wall belonging to the “rubella orange” (EKMAN 1996; included in “arceutina-yellow” by MEYER & PRINTZEN 2000), hardly changing with K, C and N.

Ecology and distribution: *Bacidia scopulicola* typically grows on siliceous, maritime rocks in the xeric-supralittoral zone in crevices and underhangs, rarely on soil or decaying *Armeria* tufts, and is not found inland. It is widespread along the Atlantic coast of Western Europe and is also known along the Baltic coast; we have not seen any material, nor literature reports from the Mediterranean area. It is absent from the Canary Islands; the report from La Palma (BERGER & ETAYO 1998) most probably refers to *B. sipmanii* described above. It is mentioned from the Azores by PURVIS et al. (1992), but no material has been seen by us from that archipelago.

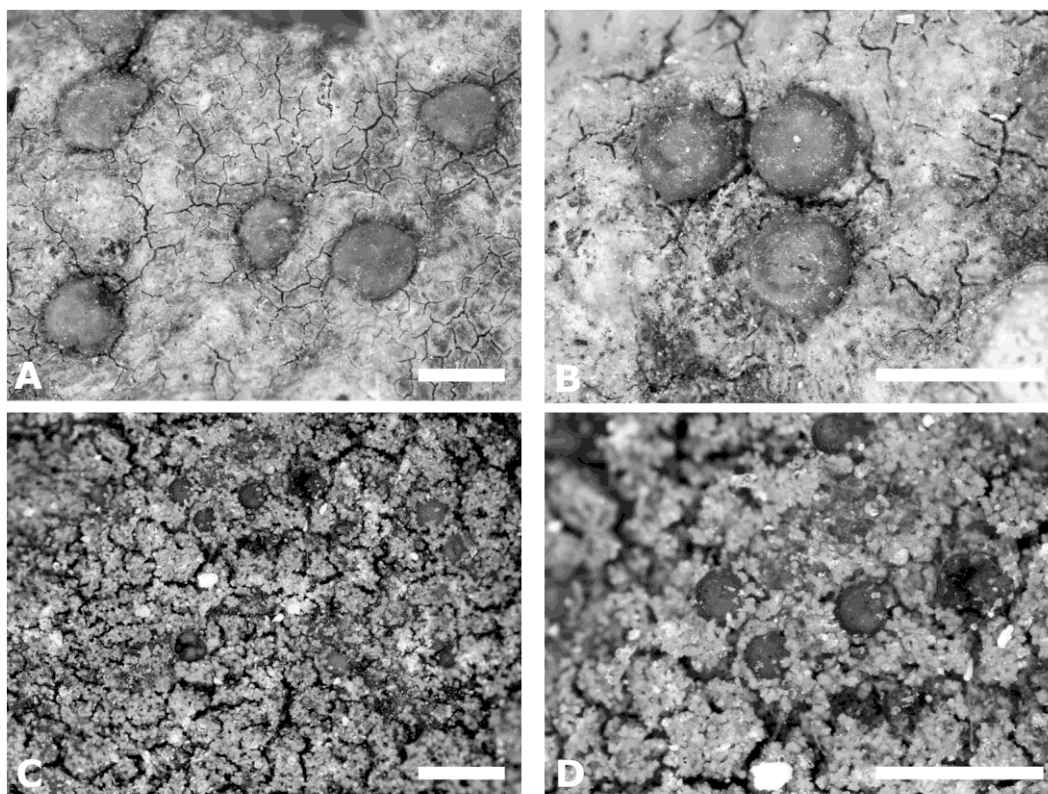


Fig. 3. A–D: *Bacidia sipmanii* and *B. scopulicola*. A–B: *B. sipmanii*, thallus and apothecia, P. van den Boom 22444 [LG holotype]. C–D: *B. scopulicola*, thallus and apothecia, M. Brand 21847 [hb Brand]. Scale: 1 mm.

Selected specimens examined: **Norway.** Rogaland, c. 21 km S of Sauda, Ropeid, shore of Saudafjord, overhang in sea cliffs, c. 2 m, VIII. 1988, A. M. Brand 21847 [hb Brand]. **France.** Finistère, N of Le Conquet, Kermor, fissures in granite of coastal rocks, rather sheltered and N exp., IV. 1996, A. M. Brand 34529 [hb Brand]. Manche, Cotentin, near Nez de Jobourg, between Baie Ecalgrain and Anse du Cul Rond, NW exposed supralittoral zone, on granite, 9 VII. 1997, A. M. Brand 36181 [hb Brand]. **Scotland.** Ayrshire (VC 75), Ailsa Craig, Swine Holes, 26/03.00, sheltered rocks in gully, 1977, B. J. Coppins 2849 [E]. **Spain.** Distr. Guipuzcoa, Fuentarrabia, in pede montis Kaizquibel, ad saxa arenacea maritima, IV. 1973, J. Vivant [LG, Vězda Lich. Sel. Exsicc. 1163].

***Bacidia sipmanii* M. Brand, Coppins, van den Boom & Sérus., sp. nov.**

A Bacidia scopulicola differt thallo tenui et rimoso.

Type: CANARY ISLANDS. La Palma, 8.5 km N of Santa Cruz, Barranco La Galga, laurisilva forest on a steep slope, on a vertical shaded volcanic outcrop, c. 500 m, V. 1999, P. P. G. van den Boom 22444 [LG holotype; hb. van den Boom isotype].

(Fig. 3A-B)

Thallus pale green-grey to brown, sometimes pale grey, thin (less than 0.3 mm thick), smooth or sometimes slightly rugose, typically rimose in well-developed specimens. Prothallus absent or whitish. Photobiont belonging to the Chlorococcaceae.

Apothecia always present, 0.4-1.3 mm diam., disc at first plane, becoming convex, pale brownish to brown, with a somewhat reddish hue, and a distinct, usually darker margin which can be partly covered by minute whitish crystals (like those found in *B. parathallasica*, *B. rosella* and *B. rubella*), which becomes excluded when the apothecia are fully developed. *Excipulum* strongly gelatinized, made of radiating, strongly conglutinated thick wall hyphae with narrow lumina, with outer cells widened to c. 5 µm, but nevertheless with thick walls; with a brownish K- pigment in the cells walls, especially near the upper surface, otherwise hyaline. *Hypothecium* hyaline; *hymenium* hyaline, 40-60 µm thick; paraphyses simple or branched in their upper parts, rather conglutinated, 1-1.5 µm thick and slightly swollen near the apex, up to 2.5 µm. *Ascospores* 8/ascus, bacilliform to acicular, slightly tapering towards the proximal end, (1-)3-7-septate, 26-40 × 1.5-2.5 µm.

Pycnidia immersed, 0.1–0.15 mm wide, pale orange-brown. *Conidia* filiform, strongly curved (to c. 180°), non-septate, (22-)23-25(-27) × 0.7-1.0 µm.

Chemistry. No compounds detected by TLC. Pigment in excipulum and pycnidia wall belonging to the “rubella orange” (EKMAN 1996; included in “arceutina-yellow” by MEYER & PRINTZEN 2000), hardly changing with K, C and N.

Ecology and distribution: Along the western coasts of Europe, *Bacidia sipmanii* grows in similar habitats as *B. scopulicola*: siliceous, maritime rocks in the xeric-supralittoral zone in crevices and underhangs. Both species can occur together and are then easily distinguished. We have not seen any specimens of *B. sipmanii* from the coasts of the Baltic Sea, but a single locality is known in the Mediterranean area, namely Liguria (Italy; see Giordani & Incerti 2008 for details on the climate and the lichen flora of that area). The species is also known from the Canary Islands (Tenerife and La Palma), where it does not occur on sea cliffs but on volcanic outcrops and large boulders inside the laurisilva at 500-1080 m. In these localities, *B. sipmanii* occurs in rather humid and sheltered habitats. Generally, the range of *B. sipmanii* is more southern than that its counterpart.

Selected specimens examined: England. West Cornwall (VC 1), Lizard, Gew Graze near Kynance Farm, c. 400 m from the coast, 10/67.14, on serpentine outcrop in a small valley, in a heathland, VII. 1996, A.M. Brand 35014 [hb Brand]; *ibid.*, Vellan Head, 10/66.14, sea-cliff, on serpentine in sheltered crevice, IV. 1986, O.L. Gilbert s.n. [E]. **Ireland.** South Kerry (VC H1), Waterville, Hogs Head, V/4.6, in crevice of stone wall by sea-shore, 5. X. 1977, P.B. Topham s.n. [E]. **France.** Finistere, N of Pointe du Raz, Pointe du Van, 0.1 km SW of chapelle de St-They, W exposed slope, on micaschist, 22 VII. 1997, A.M. Brand 36875 [hb Brand]. **Italy.** Liguria, 5.6 km ESE of Sestri Levante, 0.8 km E of P. Baffe, Valle Grande, sheltered valley of brook, near sea, on sandstone rock, 21. VII. 1993, A.M. Brand 30127 [hb Brand]. **Canary Islands. La Palma.** 6.8 km ESE of Garafia, Barranco Carmona, on basalt rock in narrow, wooded valley, 1080 m,

IV. 1986, A.M. Brand 13457 [hb Brand]. Los Tilos, laurisilva dominated by *Ocotea foetens*, on large basaltic boulders, 600-700 m, VII. 1997, E. Sérusiaux s.n. (LG). Barranco Gallegos, crossroad Barlovento-Roque Faro, laurisilva on steep slope, on basalt, 900 m, IV. 2004, E. Sérusiaux s.n. [LG]. **Tenerife**. Anaga, 1 km S of Draguillo, nearly vertical rock (exp. N) inside laurisilva, 650 m, IV. 1986, A.M. Brand 13901 [hb Brand].

Dedication: The authors are very happy to dedicate this paper to their most distinguished colleague and friend Dr Harrie J. M. Sipman on the occasion of his 64th birthday, in honour of his many important contributions to lichenology, especially in the Neotropics.

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