

A SITE WITH FOLIICOLOUS LICHENS IN BELGIUM

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SUMMARY. — A locality with foliicolous lichens (growing on living leaves of *Buxus sempervirens*) has been found in the Belgian “Haute-Meuse” valley. Although none of the species present (*Arthonia muscigena*, *Bacidia arnoldiana*, *B. chlorotricula*, *Fellhanera bouteillei*, *F. subtilis*, *Fellhaneropsis myrtillicola*, *Porina aenea* and *P. leptalea*) belongs to the “true” foliicolous ecological group, their discovery is of high ecogeographical interest. The site vegetation belongs to a *Buxus*-rich variant of the *Primulo-Carpinetum*. The occurrence in Belgium of *Arthonia elegans* is confirmed and *Lecania cyrtellina* is reported for the first time from the country.

RÉSUMÉ. — Une station de lichens foliicoles en Belgique. — Une station de lichens foliicoles (croissant sur les feuilles vivantes de *Buxus sempervirens*) a été découverte dans la vallée de la Haute-Meuse belge. Bien qu’aucune des espèces présentes (*Arthonia muscigena*, *Bacidia arnoldiana*, *B. chlorotricula*, *Fellhanera bouteillei*, *F. subtilis*, *Fellhaneropsis myrtillicola*, *Porina aenea* et *P. leptalea*) n’appartienne au groupe écologique des «eu-foliicoles», cette découverte est d’un grand intérêt écogéographique. La végétation du site relève d’une variante riche en *Buxus* du *Primulo-Carpinetum*. La présence en Belgique de *Arthonia elegans* est confirmée et *Lecania cyrtellina* est mentionné pour la première fois de ce pays.

SAMENVATTING. — Een groeiplaats van foliicole lichenen in België. — In de Belgische vallei van de „Haute-Meuse” is een lokatie gevonden met foliicole lichenen (groeïend op de levende bladeren van *Buxus sempervirens*). Ofschoon geen van de aangetroffen soorten (*Arthonia muscigena*, *Bacidia arnoldiana*, *B. chlorotricula*, *Fellhanera bouteillei*, *F. subtilis*, *Fellhaneropsis myrtillicola*, *Porina aenea* en *P. leptalea*) behoort tot de „obligaat” foliicole ecologische groep, is deze ontdekking van grote ecogeografische betekenis. De vegetatie van de genoemde lokatie behoort tot het *Primulo-Carpinetum* met *Buxus*. Het voorkomen van *Arthonia elegans* in België wordt hier bevestigd en *Lecania cyrtellina* is voor het eerst gevonden in België.

I. INTRODUCTION

The discovery of a site with foliicolous lichens (growing on the living leaves of *Buxus sempervirens*) in Belgium is an unexpected event, which is due to the careful investigation of the lichen flora of the "Haute-Meuse" valley by one of us (P.v.d.B.). Although none of the species found on living leaves in this locality belong to the "true" foliicolous lichen group (i.e. species strictly restricted to living leaves of phanerogams and ferns throughout their range), its discovery is of major ecogeographical interest: it is the most northern locality with such a flora in western Europe and it once again demonstrates the interest of the box (*Buxus sempervirens*) bushes in NW Europe (PARENT 1980).

The site where this foliicolous flora is developed has a very limited surface (several hundred m² only) and therefore could be easily destroyed by over-collecting. Thus we have decided not to give details about its exact location; we are convinced that fellow botanists will understand our cautiousness. Indeed, we have too often seen interesting lichen localities in Belgium being severely depleted by people who absolutely want to have their own collections of rare but well-known species, even if they are aware of their rarity (for example *Lobarion* species in old woods of southern Belgium or species associated with iron-rich rocks in the Ardennes).

The site was first visited by the first author in April 1993, and then thoroughly explored by the second author in May 1994 and again by both of us, together with Dr. P. Diederich, in June 1994. Representative specimens of the species found are preserved in LG and in the private herbaria of P. van den Boom and P. Diederich.

II. DESCRIPTION OF THE SITE

The site where foliicolous lichens were found is located in the upper part of the Meuse valley (Belgian "Haute-Meuse"), at c. 120 m elev., S of Dinant (prov. Namur, Mosan district). It is a small wooded valley, with an intermittent flow of water at its bottom. The wood has a very dense understory of *Buxus sempervirens* bushes,

which are present down to the bottom, and the foliicolous flora is mainly restricted to the bushes near it. Tree boles are rather young (less than a hundred years old), except for a few ones, and mainly belong to *Quercus robur* and rarely to *Acer campestre* and to *Fagus sylvatica*. The understory, which is heavily coppiced, is made of *Buxus sempervirens*, *Corylus avellana*, *Cornus sanguinea*, *Carpinus betulus*, *Crataegus laevigata*, *Acer campestre*, *Fraxinus excelsior* and *Sambucus nigra*. The herbaceous layer is scarce and rather poor in species; the following have been recorded: *Ajuga reptans*, *Anemone nemorosa*, *Arum maculatum*, *Athyrium filix-femina*, *Brachypodium sylvaticum*, *Circaea lutetiana*, *Fragaria vesca*, *Glechoma hederacea*, *Lamium galeobdolon* subsp. *montanum*, *Mercurialis perennis*, *Poa nemoralis*, *Ranunculus ficaria* subsp. *bulbilifer*, *Sanicula europaea*, and *Viola riviniana*. Two orchids are present: *Neottia nidus-avis* and *Orchis mascula*. Bryophytes are rather common on the ground or on calcareous stones at ground level; they include *Ctenidium molluscum*, *Eurhynchium striatum* and *Plagiomnium undulatum*.

Although both *Quercus robur* and *Buxus sempervirens* are dominant species here, this type of wood does not belong to the *Querceto-Buxetum septentrionale* s. str. as described by VANDEN BERGHEN (1955: 41-52) and which is well-represented in the "Haute-Meuse" valley, South of Dinant. In the classification of the Belgian forests proposed by NOIRFALISE (1984), this syntaxon is named *Quercu-Buxetum* (p. 171-172). Indeed, all the characteristic thermophilic shrubs and herbaceous species like *Viburnum lantana*, *Ligustrum vulgare*, *Cornus mas*, *Vincetoxicum hirundinaria*, *Viola hirta* and *Primula veris* are lacking in the site with foliicolous lichens. The *Quercu-Buxetum* is best developed on very superficial soils in thermophytic and xerophytic conditions and is usually found on the upper parts of the slopes and on cliffs.

The herbaceous layer of the wood where foliicolous lichens have been found is much more characteristic of the *Primulo-Carpinetum* (NOIRFALISE 1984: 102-111) and we suggest to refer this locality to that syntaxon. *Buxus sempervirens* is usually absent from it. However its ecological

requirements are so diverse in the "Haute-Meuse" that we accept it as being a locally dominant feature of one of the most common forest types in the area.

We suggest that the forest type we see in this site (a *Buxus*-rich variant of the *Primulo-Carpinetum*) was formerly more widespread and better developed near the main river (the Meuse), on dry gravels and at the bottom of the slopes. All such sites have been heavily transformed by human activities and nowhere in the area can *Buxus*-rich woods be observed near the Meuse itself. We are convinced that they would still appear in a natural environment, untouched by human activities. It is possible that foliicolous lichens which require a high and rather constant level of air humidity were abundant in the understory of such forests. The observations of one of us (E.S.) in southern France do suggest that several foliicolous lichen species appreciate such an ecological niche.

III. ANNOTATED LIST OF THE "FOLIICOLOUS" SPECIES PRESENT

The foliicolous species grow only on living leaves of *Buxus sempervirens*, which is the only evergreen phorophyte available in this site (*Hedera helix* could also have its own foliicolous lichen flora but, quite surprisingly, rarely has any in western Europe). As indicated in the following list, none of the species found are "true" foliicolous species; such species are very few and rather rare in continental western Europe and are represented either by pantropical species, like *Porina leptosperma* Müll. Arg., *Strigula nitidula* Mont. and *S. smaragdula* Fr., or by very restricted endemic taxa like *Bacidia colchica* Vězda (Sérusiaux, unpubl. results). Their nearest locality is in the Aveyron dept. in southern France.

It is also interesting to note that, in spite of careful exploration of other "potential" localities in the Belgian "Haute-Meuse", no other site with a foliicolous lichen flora was found.

Arthonia muscigena Th. Fr. was found in small quantities, overgrowing the thalli of *Bacidia chlorotricula*; it is a ubiquitous species, growing all

over western Europe in diverse artificial habitats, as an epiphyte as well as saxicolous. It has been found on foliicolous thalli belonging to the *Bacidia chlorotricula*-group in many localities in western Europe. It has already been mentioned for Belgium and G. D. Luxembourg by DIEDERICH *et al.* (1991 : 9-10, sub *A. leucodontis* (Poelt & Döbb.) Coppins, which is a synonym). In the site studied in this paper, it has not been found on any other substrate.

Bacidia arnoldiana Körber is mainly detected by the masses of goniocysts it forms at leaves nodes and on twig irregularities; it seldom grows on the leaf surface itself. Most specimens are sterile but typical ones with pycnidia and apothecia have been found. This species is best developed on shaded, damp calcareous rocks and on bark in moist and shaded localities, but was not found on these substrates in the site studied here. It occasionally grows on living leaves, especially in the Pyrenees. It has been reported from Belgium and G. D. Luxembourg by DIEDERICH *et al.* (1991 : 13).

Bacidia chlorotricula (Nyl.) A. L. Sm. is a tiny, widespread and ubiquitous species, although it is easily overlooked. It can be found on almost any substratum, including very artificial ones like macadam. Its presence on living leaves is therefore not a surprise. It is abundant at the site studied here and has also been found in the same ecological niche elsewhere in the "Haute-Meuse" valley, including thermophytic localities with a typical *Quercu-Buxetum* (sensu NOIRFALISE 1984 : 171-172). It is already known from Belgium (SÉRUSIAUX *et al.* 1983 : 6, under *Bacidia neglecta* Vězda, which is a synonym).

Fellhanera bouteillei (Desm.) Vězda is one of the best-known foliicolous lichens as it is common on all four continents. It is a very ubiquitous species but a poor competitor and the foliicolous niche is only one of those it favors. It is rather abundant at the site studied in this paper but is confined to leaves and twigs of *Buxus*. Elsewhere in Belgium, it is very rare, being known from a few sites only (on *Picea* or *Abies* twigs in plantations or on twigs of *Calluna* at the edge of old meadows in forest environments; SÉRUSIAUX 1990 : 143).

Fellhanera subtilis (Vězda) Sérus. & Diederich is a widespread species in the Ardennes, where it colonizes the twigs of *Picea* or small shrubs (*Erica*, *Vaccinium*, etc.) in humid conditions (SÉRUSIAUX *et al.* 1985 : 26-27; see DIEDERICH 1990 : 21 for its distribution in G. D. Luxembourg). It is also known from a single locality in West-Flanders (HOFFMANN 1993 : 130-131). In the site studied here, it is rare on leaves of *Buxus* and has not been found on any other substrate.

Fellhaneropsis myrtillicola (Erichsen) Sérus. & Coppins was found in abundance on leaves and twigs of *Buxus* and was not found on any other substrate. This puzzling species has two types of pycnidia, one of which being transformed apothecia and producing long and filiform conidia; it is the type of the recently described genus *Fellhaneropsis* Sérus. & Coppins (SÉRUSIAUX 1996).

Its habitats are diverse : acid rocks in shaded and humid environments (in W England and N Germany), *Vaccinium* twigs in dense thickets in S Sweden, the Netherlands and Belgium (see below), *Abies* twigs in Germany, Austria and in Calabria (Italy), *Buxus* leaves in Belgium (this site), S France and in the Pyrenees in Spain; it is also present on living leaves in the laurisilva of Madeira, of Tenerife and Gomera (Canary Islands) where it develops only small and ill-looking thalli.

Besides its occurrence as foliicolous in the site studied here, it is also known in Belgium from the Anlier forest (rivulet Fond du Gris Bofet, thickets of *Vaccinium* and *Calluna* by a disused meadow, 10.1988, Sérusiaux 10246-a7, LG).

Porina aenea (Wallr.) Zahlbr. mainly grows on young and smooth bark of *Corylus*, *Carpinus* and *Fraxinus*. In the site studied in this paper, it can also colonize the *Buxus* twigs and eventually the living leaves. It is abundant everywhere in southern Belgium (LAMBINON 1969 : 98, under *P. chlorotica* (Ach.) Müll. Arg. var. *carpinea* (Pers. ex Ach.) Keissler, which is a synonym).

Porina leptalea (Durieu & Mont.) A. L. Sm. is also a species typical of smooth bark, best developed in very shaded localities. In the site studied here, it can also colonize the twigs and

living leaves of *Buxus*. It has already been reported from Belgium (SÉRUSIAUX *et al.* 1985 : 33).

OTHER INTERESTING SPECIES PRESENT

Several other interesting species have been detected in the site, although the complete list of the species present remains to be prepared. It is however clear that its total epiphytic flora is not very rich as the wood is severely disturbed by coppicing and as old boles of *Quercus* or other suitable phorophytes are lacking.

Species characteristic of smooth bark (like coppices of *Corylus avellana*) in shaded and moist conditions include *Arthonia spadicea* Leighton, *Graphis scripta* (L.) Ach. with its parasite *Arthopyrenia microspila* Körber, *Opegrapha varia* Pers. and *O. vulgata* (Ach.) Ach. Both species that are so typical of the bark of *Sambucus* occur in large amounts : *Anisomeridium nyssaegenum* (Ellis & Everh.) R. C. Harris and *Psoroglaena stigonemoides* (A. Orange) Henssen; *Acer campestre*, which has several old specimens in the site, shelters its usual species : *Bacidia arceutina* (Ach.) Arnold, *B. phacodes* Körber, *B. rubella* (Hoffm.) Massal. and *Opegrapha vermicellifera* (Kunze) Laundon; and the overlooked *Scoliciosporum gallurae* Vězda & Poelt occurs on *Salix* branches, in a heavily disturbed place at the entrance of the valley. Limited outcrops of limestone in shaded conditions yielded *Acrocordia conoidea* (Fr.) Körber, *Caloplaca cirrochroa* (Ach.) Th. Fr., *Lepraria lesdainii* (Hue) R. C. Harris, *L. lobificans* Nyl. and *Leproplaca xantholyta* (Nyl.) Harm.

Arthonia elegans (Ach.) Almq. has been reported once from the Belgian coast (Ypres) by DE WILDEMAN (1898 : 456), on the basis of a single collection by Westendorp, which has not been found in BR. It occurs in the site studied here on *Buxus* twigs, and is thus confirmed for Belgium.

Lecania cyrtellina (Nyl.) Sandst. was found on the trunk of *Acer campestre* and is here reported for the first time from Belgium.

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