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LICHEN COLONIZATION ON STONEWORKS: EXAMPLES FROM PIEDMONT AND AOSTA VALLEY

R. PIERVITTORI and S. SAMPÒ

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Abstract. Data on lichen presence on some monuments from Piedmont and Aosta Valley are reported. Sampling techniques, chosen on the basis of lithological characteristics of the substrata are described, and the ecological significance of the identified species is discussed. Preliminary data indicate that the majority of the species are neutro-basiphytic and rather nitrophytic, xerophytic and photophytic. Finally, most species appear to belong to the *Caloplacion decipientis* alliance.

Introduction

The systematic-ecological study of the organisms responsbile for the degradation of stoneworks is an important preliminary step for an appropriate restoration.

In the case of lichens, this kind of analysis may contribute to a better understanding of the effects of their presence. Lichens could represent a successful defence against atmospheric and/or polluting agents, especially on little consolidated materials, or, on the contrary, they could be a serious threat to the stability of the substrata because of the physical - chemical alterations they could cause.

Furthermore, when lichen species are identified and their physiological characteristics, i.e. their growth rates, are known, this information may be used to date undocumented restorations.

Data and Methods

A systematic and ecological investigation was started on the lichens of some stone artifacts in Piedmont and Aosta Valley. The monuments were: the facade of the Vezzolano Abbey (XXI century, 415 m, Asti) (Piervittori, Sampò, 1987-88), the columns in front of Nostra Signora delle Nevi (XVI century) and the House of the Memorial Stones (XVII century) in Bousson (1419 m, Torino), the Buon Consiglio Church in Rocchetta Palaces (XIX century, 430 m, Asti), The Cly Castle (XII century, 786 m, Aosta).

SUBSTRATA	SPECIES	life form	pH	ECOLOGY (Wirth, 1980) nitro-phytism	xero-phytism	photo-phytism	PHYTOSOCIOLOGY
prasinite 5	*Rhizocarpon geographicum* (L.) DC.	H crust	3.4-5.6	+	/	/	*Rhizocarpetea geographici*
brick 1	*Lecania erysibe* (Ach.) Mudd	H crust	3.7-7	++	+++	+++	*Caloplacion decipientis*
sandstone 1,2; plaster 4; brick 1; cement mortar 2	*Lecanora albescens* (Hoffm.) Florke	H crust	5.7-7	+++	+++	-	*Caloplacion decipientis*
sandstone 1; brick 1	*Lecanora dispersa* (Pers.) Sommerf.	H crust	5.7-7	++	++	-	*Caloplacion decipientis*
sandstone 1; plaster 4; brick 1; prasinite 5; granite 5	*Lecanora muralis* (Schreber) Rabenh.	H crust	5.7-7	+++	++	+	*Aspicilion calcareae*
sandstone 1; brick 1	*Candelariella aurella* (Hoffm). Zahlbr.	H crust	7.1-8	++	+++	++	*Caloplacion decipientis*
sandstone 1; brick 1	*Candelariella medians* (Nyl.) A.L. Sm.	H crust	7	++	++	++	*Caloplacion decipientis*
prasinite 5	*Candelariella vitellina* (Ehrht.) Müll. Arg.	H. crust	4.9-7	+	+++	++	*Rhizocarpetea geographici*
plaster 4	*Caloplaca heppiana* (Müll. Arg.) Zahlbr.	H crust	7.1-8	++	++	++	*Caloplacion decipientis*
plaster 4	*Caloplaca teicholyta* (Ach.) Steiner	H crust	5.7-5	++	+++	++	*Caloplacion decipientis*
sandstone 3; plaster 4; prasinite 5	*Xanthoria elegans* (Link.) Th. Fr.	H fol	4.9-7	++	+++	++	*Caloplacion decipientis*
sandstone 2	*Phaeophyscia orbicularis* (Neck.) Moberg	H fol	4.9-8	+++	++	++	*Caloplacion decipientis*
sandstone 1	*Physconia grisea* (Lam.) Poelt	H fol	5.7-7	+++	++	++	*Xanthorion parietinae*
prasinite 5	*Acarospora sinopica* (Wahlenb.) Korb.	H crust	3.4-4.8	-	+	++	*Acarosporion sinopicae*
sandstone 1,2; cavernous limestone 5; concrete 5	*Collema auriculatum* Hoffm.	H fol	7-8	-	-	+	*Aspicilion calcareae*
sandstone 1,2; plaster 4	*Verrucaria macrostoma* Dufour & DC. s.l.	H crust	7	++	-	-	*Caloplacion decipientis*
limestone 5	*Verrucaria muralis* Ach.	H crust	5.7-7.5	+	+	++	*Aspicilion calcareae*
plaster 4	*Dirina stenhammari* (Fr. ex Stenh.)	H crust	7.1-8	+	+	-	*Caloplacion decipientis*

1. facade of the Vezzolano Abbey; 2. columns in front of Nostra Signora delle Nevi Church; 3. the House of the Memorial Stones; 4. Buon Consiglio Church; 5, Cly Castle.
-, +, ++, +++ = not, little, rather, very.

Given the artistic interest of these monuments sampling methods tried to avoid any form of damage.

Bistouries were used to collect the material and often pre-moistening was required in order to facilitate the removal of lichens from very compact substrata. Crustaceous species were removed using adhesive tape to preserve their whole morphology.

Results

Preliminary data are shown in Tab. 1 (ecological and phytosciological characters are from Ellenberg, 1967; Seaward, 1977; Wirth, 1980).

Generally, sandstones and mortars are the building materials with the densest lichen cover whereas bricks support lichens only when used for flat lying surfaces.

The most common species are *Lecanora muralis* and *Xanthoria elegans* which do not seem particularly affected neither by the type of substrata nor by climatic factors.

The *Candelariellae,* generally have the tendency to colonize edges and contact zones between different surfaces.

The apparently anomalous presence of *Collema auriculatum*, a notoriously hygrophytic species, in a xeric locality such as Bousson can be accounted for by water leaking from nearby buildings.

Most of the species are crustose.

Neutro-basiphytic, xerophytic, photophytic, nitrophytic species prevail. The majority of nitrophytic species are ornitocoprophytic such as *Candelariella aurella, Lecanora albescens, Xanthoria elegans.* Most of the species can be attributed to the *Caloplacion decipientis* Klem. 50, a vegetation common on artificial substrata.

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Rosanna Piervittori e Simonetta Sampò
Dipartimento di Biologia Vegetale
dell'Università di Torino
Viale Mattioli 25,
10125 Torino, Italia