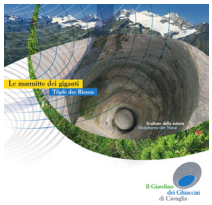

The Cavaglia Glacier Garden

Complete documentation of the website: www.ghiacciai.info

Flora

Naturalistic description of the flora

The attractiveness of the Cavaglia Glacier garden is not only due to the giants' pots themselves but also to its typical alpine vegetation, enhanced by the presence of a biotope developed after the retreat of the glacier about 10'000 years ago.

The flora of the Glacier Garden is very particular and includes several rare species.

Antonio Giuliani, a keen Poschiavo botanist, has carried out research on the subject which includes a description of the flora and many beautiful pictures.

Mountain ash: to survive it must grow horizontally in order to find light and heat and bring to maturity a few meagre fruits

The presence and development of flora, especially at high altitudes as in this case, must be considered, at least insofar as its gradual territorial spread is concerned, as the result of an adaptation process lasting hundreds of thousands of years. This adaptation involves both external and, most importantly, internal factors, such as for example the acquisition of a suitable resistance to cold temperatures. All this happened, and goes on happening, through many small steps resulting in modifications of the conditions required for survival (translated and adapted from Reisigl & Keller, 1987).

The flora that grows on stones and rock cracks is commonly known as pioneering flora: like a pioneer, it prepares the terrain for other flora. Typically, pioneering flora forms small cushions such as those of «Silene acaulis» or «Silene exscapa».

Mountain houseleek

Smooth rocks, however, offer no possibility to cling to them or fill a crack. In addition, for the botanic species able to survive at this altitude (1752 meters above sea level) it is practically impossible to have deep roots.

Nature, however, provides some species with winning strategies even in these situations.

This is the case for the cobweb houseleek (Sempervivum arachnoideum). Its succulent leaves and a thick white cobweb on the rosettes allow it to collect, retain and store rainwater and to survive on smooth rocks even in dry conditions. Every now and again a rosette falls off and the wind rolls it away to a new position where another colony is then formed.

Cobweb houseleek

On balance, therefore, vegetation in this area is forced to lead a very harsh and difficult life. The fight for survival is hard and the more demanding species have no chance to prosper.

It is not easy to colonize rocks smoothed by ice, which offer few opportunities to cling to them, have very few water holes and almost no earth filled cracks, while being exposed to frost and drought (plants don't die because of the cold but as a result of the lack of humidity) and trying to draw water from the potholes. This underlines the importance of letting the potholes fill with water in late autumn.

Emblematic of the Glacier Garden are the roots of the local mountain pine, able to withstand harsh frost in winter and hot sunlight in summer in order to reach places where abundant water can be found, such as a pothole or a small spring in the rocks. In other words, they become open air roots and achieve this even if they have not been predisposed for this by their heritage (mountain pines usually have underground roots).

Mountain pine roots

Where does the terrain which allowed botanic species to develop on the Moti da Cavagliola come from? It is assumed that dendritic material together with earth mixed with large stones was pushed, and then left here, by the glacier. In addition, significant quantities of earth were carried by the strong winds that lash the Cavaglia basin.

Wind can in many cases be harmful to vegetation but sometimes can also be useful. Large quantities of dust, needles, fine earth, small stones and branches, leaves and seeds fill up cracks and holes. It is estimated that wind deposits between 800 and 1'800 grams per square metre of this «debris», which is extremely useful for the nourishment, development and propagation of many botanic species.

Mountain pine colony: the small pines, after having taken maximum advantage of the limited amount of earth available, have to stop their propagation upon reaching a smooth rock

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The presence of «Trientalis europea» (starflower) is a very special case, as this is an extremely rare species in Switzerland (it can be found only in two locations other than Cavagliola). It may well be that this splendid example of the primrose family is a left over from the glaciation period. Before the last glaciation it was probably far more widespread in this region. Today it survives only thanks to the presence of climatic conditions which have remained similar to those prevailing at that time. It is not clear, however, for how long it will be able to survive and be admired on the Moti da Cavagliola. For this rare specimen the comings and goings of Glacier Garden visitors could indeed be harmful.

Trientalis europea (starflower)

During the summer season, and particularly in the month of June, the Glacier Garden biotope is covered by a spectacular white cloak created by the spherical flowers of white cottongrass (Eriophorum scheuchzerl), an arctic and alpine species that grows close to small lakes and marshy pools.

Looking carefully, common cottongrass (Eriophorum angustifolium), a little less showy but still very attractive with its nice bunches of white tufts, can also be found. It is quite interesting to note that these two species have come all the way up here from the boggy and marshy Cavagliola plain.

The biotope with its festive white cottongrass. Specimens of common cottongrass can also be seen in the lower right hand side

List of botanical species

Plants Shrubs Herbs	Italian	Pusc'ciavin dialect	Latin	English
P	Pino montano	Müff	Pinus mugo	Mountain pine
P	Sorbo degli uccellatori	Timilin	Sorbus aucuparia	Mountain ash
S	Rododendro rosso o rosa delle alpi	Rumpé	Rhododendron ferrugineum	Alpenrose
S	Lampone	Mampomuli	Rubes idaeus	Raspberry
S	Caprifoglio turchino	Sbegulè?	Lonicera caerulea	Blue-berried honeysuckle
H	Valeriana trifogliata	Valeriana	Valeriana tripteris	Three-leaved valerian
S	Ginepro	Giünear, giüpp	Juniperus communis	Common juniper
P	Larice comune	Làras	Larix decidua	Larix
P	Peccia, abete rosso	Pésc	Picea abies	Norway spruce
H	Primula irsuta	Primula	Primula hirsuta	Villous primrose
S	Mirtillo nero	Glasciòn, glasciuné	Vaccinium myrtillus	Bilberry
P	Òntano verde o ontanella	Malanza	Alnus viridis	Green alder
H	Festuca varia	Erba plata	Festuca varia	Variable fescue
H	Felce maschio	Félas	Dryopteris filix mas	Male fern
H	Semprevivo ragnateloso	Semprevivo	Sempervivum arachnoideum	Cobweb houseleek
H	Semprevivo montano Guardacasa	Semprevivo	Sempervivum montanum	Mountain houseleek
S	Mirtillo rosso	Gaiüda	Vaccinium vitis ídaea	Cowberry
S	Lauro alessandrino		Stréptopus amplexifolius	Steptopus

Plant Shrubs Herbs	Italian	Pusc'ciavin dialect	Latin	English
H	Erba di S. Antonio Garofanino maggiore		Epilobium angustifolium	Rosebay willowherb
H	Erioforo pendulo e pennacchio	(cresce solo nel biotopo)	Eriophorum angustifolium	Common cottongrass
H	Pennacchio di Scheuchzer	(cresce solo nel biotopo)	Eriophorum scheùzerl	White cottongrass
H	Tricoforo minore	(cresce solo nel biotopo)	Trichòphorum pùmilum	Deergrass
H	Politrico esagonale	Müsclu	Polytricum sexangulare	Polytricum moss
H	Trientale europea		Trientalis europaea	Chickenweed wintergreen
H	Polipolio comune	Ravis dulza	Polypodium vulgare	Polypody
S	Brugo Brughiera		Calluna vulgàris	Heather
H	Silene con fiori sessili		Silene excapa	Moss campion
H	Gipsofila strisciante		Gypsophila repens	Alpine gypsophilia
H	Silene delle rupi		Siléne rupéstris	Rock campion
H	Verga d'oro		Solidago virgáuréa	Golden rod
H	Raponzolo rupestre		Phyteuma hedraianthifolium	Rhaetian rampion
H	Camomilla comune	Camamèla	Matricária recutita	Camomile
H	Bupleuro stellato		Bupleurum stellatum	Hare's-ear
P	Pino cembro o cirmolo	Gembru	Pinus cembra	Arolla pine
H	Genziana punteggiata	Ravis da genzana	Gentiàna punctàta	Spotted gentian
H	Viola montana gialla	Viola gialda	Viola biflòra	Yellow wood violet

(Source: «Flora Helvetica», Konrad Lauber & Gerhart Wagner, Paul-Haupt Verlag ; dialectal version by Antonio Giuliani. Completed June 10, 2007)

(Main source for the English translation: The Alpine Flowers of Britain and Europe, Christopher Grey-Wilson, William Collins & Co, London 1979)