H3.1d Mediterranean siliceous inland cliff

Summary

This habitat includes siliceous rock walls and cliffs from the lowlands to high mountains in the Mediterranean, formed chiefly of igneous or metamorphic origin which offer a diversity of niches for colonisation depending on the rock texture, schistosity, moisture content and chemistry. Typically they have cushion or rosulate vascular plants, some of them succulent, ferns and dwarf shrubs, with bryophytes, lichens, epi- and endolithic micro-organisms. Mediterranean siliceous inland cliffs are even less common than base-rich inland cliffs. Towards foothills and the lowlands, the habitat is more affected by human disturbances, especially in terms of species composition. High mountain cliffs are usually well preserved and feature a high degree of naturalness, with most of the localities occurring within nature reserves or protected areas. Most threats relate to securing cliffs over road and rail sides, sport and leisure activities, especially rock-climbing, and, at lower elevations, mining, quarrying and invasive/alien plants. Knowledge and scientifically-based management of this habitat type would be necessary in cases of strong disturbances on its structure as well as for its restoration.

Synthesis

The habitat qualifies for a Least Concern status (LC) since no reduction in quantity occurred over the last 50 years. Quality trends (past, historical and future) cannot be estimated due to the lacking of data/information.

Overall Category & Criteria			
EU 28		EU 28+	
Red List Category	Red List Criteria	Red List Category	Red List Criteria
Least Concern	-	Least Concern	-

Sub-habitat types that may require further examination

No sub-habitats have been distinguished for further assessment.

Habitat Type

Code and name

H3.1d Mediterranean siliceous inland cliff

Siliceous cliff with endemic *Saxifraga florulenta* in the Mercantour, France (Photo: John Janssen).

Siliceous cliffs in the higher mountains of Corsica (Photo: John Janssen).

Habitat description

Siliceous (rich in quartz and silicate minerals, such as feldspar or mica) rock walls and cliffs in the Mediterranean, with cliff-dwelling vascular plants (chasmophytes), bryophytes, lichens, epi- and endolithic micro-organisms. Siliceous cliffs chiefly consist of igneous rocks, such as granite, diorite and andesite, or of metamorphic rocks, such as gneiss, slate, schist and quartzite. The ability of plants to root in siliceous cliffs depends on the rock texture, schistosity, moisture content and chemistry. Perennial herbs prevail, many as cushion or rosulate plants, some are succulent. Other common chasmophytes are dwarf shrubs and small ferns. Well represented genera of vascular plants in siliceous inland cliffs all over the Mediterranean are *Asplenium*, *Hieracium* and *Saxifraga*.

Siliceous inland cliffs are less common in the Mediterranean than calcareous cliffs but also rich in rare and/or endemic plants. Plant communities are numerous and, like many of their species, frequently restricted to a single mountain range, larger islands or cliff systems. Overall variation in species composition follows chiefly phyto-geographical patterns and reflects evolutionary history. Local variations are typically due to the rock type, exposition, moisture and cliff height. Many species are poor dispersers and plant communities require long time to establish. Most of the characteristic species are not found in anthropogenic habitats, such as walls.

Mediterranean siliceous inland cliffs occur in the western, southern, central and eastern parts of the Iberian peninsula, southern France, Corsica, Sardinia, Sicily, southern Italy, Albania, Greece, a few Aegean islands (e.g. Samothraki), and Mediterranean Turkey. Included are all levels from the Mediterranean coastal areas to the high mountains.

Indicators of quality:

Mediterranean siliceous inland cliffs harbour many local and regional endemics. Populations of such species indicate high habitat quality. As there is much regional variation in chasmophytic vegetation and species richness the habitat quality of a local cliff or cliff system must be seen in relation to the regional chasmophytic species pool: the higher the proportion, the better the quality. Cliff habitats are naturally protected due to their poor accessibility but they may be destroyed through rock control structures and quarrying. Abandoned siliceous quarries are generally, even after decades, much poorer in species and lower habitat quality compared to the natural cliffs.

The following characteristics may be used as indicators of favourable quality:

• Occurrence of a representative set of rare species, in particular narrow or regional endemics

• Presence of different aspects of rock walls, different exposure, moisture and rock structures such as vertical rock faces, overhangs, cavities, rock shelters, and ledges

• Contact with natural habitats such as screes, boulder fields, rock shrubs and pioneer grasslands

• Absence of quarrying and control structures

• Absence of garbage dumping and nutrient input from above the cliff

• Absence of rock climbing facilities

Characteristic species:

Vascular plants: *Alchemilla (crenulata, saxatilis, serratisaxatilis), Allosorus (hispanicus, tinaei), Androsace vandellii, Aquilegia bernardii, Armeria leucocephala, Asarina procumbens, Antirrhinum grosii, Asplenium (adiantum-nigrum, x alternifolium, foreziense, obovatum subsp. billotii, septentrionale, trichomanes subsp. trichomanes), Bufonia macropetala, Campanula samothracica, Castroviejoa frigida, Centaurea avilae, Centranthus nevadensis subsp. nevadensis, Cystopteris fragilis subsp. dickieana, Dianthus sylvestris (subsp. longicaulis, subsp. siculus), Draba (dubia, loiseleurii), Dryopteris pallida, Erigeron paolii, Erodium*

rupicola, Festuca sardoa, Hieracium (carpetanum, schmidtii subsp. graniticum), Hypericum cuisinii, Jasione crispa subsp. mariana, Leucanthemum (corsicum, monspeliense), Linaria capraria, Minuartia recurva su bsp. condensata, Murbeckiella boryi, Narcissus rupicola subsp. rupicola, Phyteuma serratum, Polygonum icaricum, Potentilla crassinervia, Saxifraga (genesiana, nevadensis, pedemontana subsp. cervicornis, pentadactylis subsp. almanzorii, pentadactylis subsp. willkommiana, sibirica, vayredana), Scabiosa corsica, Sempervivum minutum, Silene (boryi, foetida, requienii).

Bryophytes: *Amphidium mougeotii, Bartramia pomiformis, Diplophyllum albicans, Grimmia (affinis, decipiens, donniana, hartmanii, laevigata, montana, ovalis, trichophylla), Hedwigia (ciliata, stellata), Isothecium alopecuroides, Metzgeria conjugata, Racomitrium (heterostichum, lanuginosum), Tritomaria quinquedentata.*

Lichens: *Acarospora (fuscata, gallica, macrospora, oligospora, nitrophila, umbilicata, versicolor), Aspicilia (cinerea, simoensis, recedens), Caloplaca (irrubescens, subpallida), Chrysothrix chlorina, Diploicia canescens, Diploschistes scruposus, Lecidea (speirodes, umbonata), Parmelia (mougeotii, verrucilifera), Pertusaria (excludens, flavicans), Rhizocarpon (distinctum, epipsilum, eupetraeum, geographicum, obscuratum, polycarpum), Rimularia insularis, Stereocaulon evolutum, Trapelia placodioides, Umbilicaria (grisea, polyrrhiza, subglabra).*

Classification

This habitat may be equivalent to, or broader than, or narrower than the habitats or ecosystems in the following typologies.

EUNIS:

H3.1 Acid siliceous inland cliffs

EuroVeg Checklist:

Asarinion procumbentis (Br.-Bl. in Meier et Br.-Bl. 1934) Br.-Bl. in Br.-Bl. et al. 1952

Asplenio billotii-Dianthion godroniani Rameau ex Mucina in Mucina et al. 2014

Cheilanthion hispanicae Rivas Goday 1956

Hieracion carpetani González-Albo 1941

Linarion caprariae Foggi et al. 2006

Pohlio crudae-Asplenion septentrionalis S. Brullo et Siracusa in S. Brullo et al. 2003

Polygonion icarici Horvat in Horvat, Glavač et Ellenberg ex Bergmeier et al. 2011

Polypodion serrati Br.-Bl. in Br.-Bl. et al. 1952

Potentillion crassinerviae Gamisans 1975

Saxifragion nevadensis Rivas Goday et Rivas-Mart. 1971

Annex 1:

8220 Siliceous rocky slopes with chasmophytic vegetation

Emerald:

H3.1 Acid siliceous inland cliffs

MAES-2:

Sparsely or unvegetated land

IUCN:

6 Rocky areas

Does the habitat type present an outstanding example of typical characteristics of one or more biogeographic regions?
Yes

Regions
Mediterranean

Justification
The habitat represents an outstanding example of the Mediterranean biogeographic region due to the occurrence of a pool of mostly endemic species, characterized by a high ecological specialization and a remarkable phytogeographical and evolutionary value.

Geographic occurrence and trends

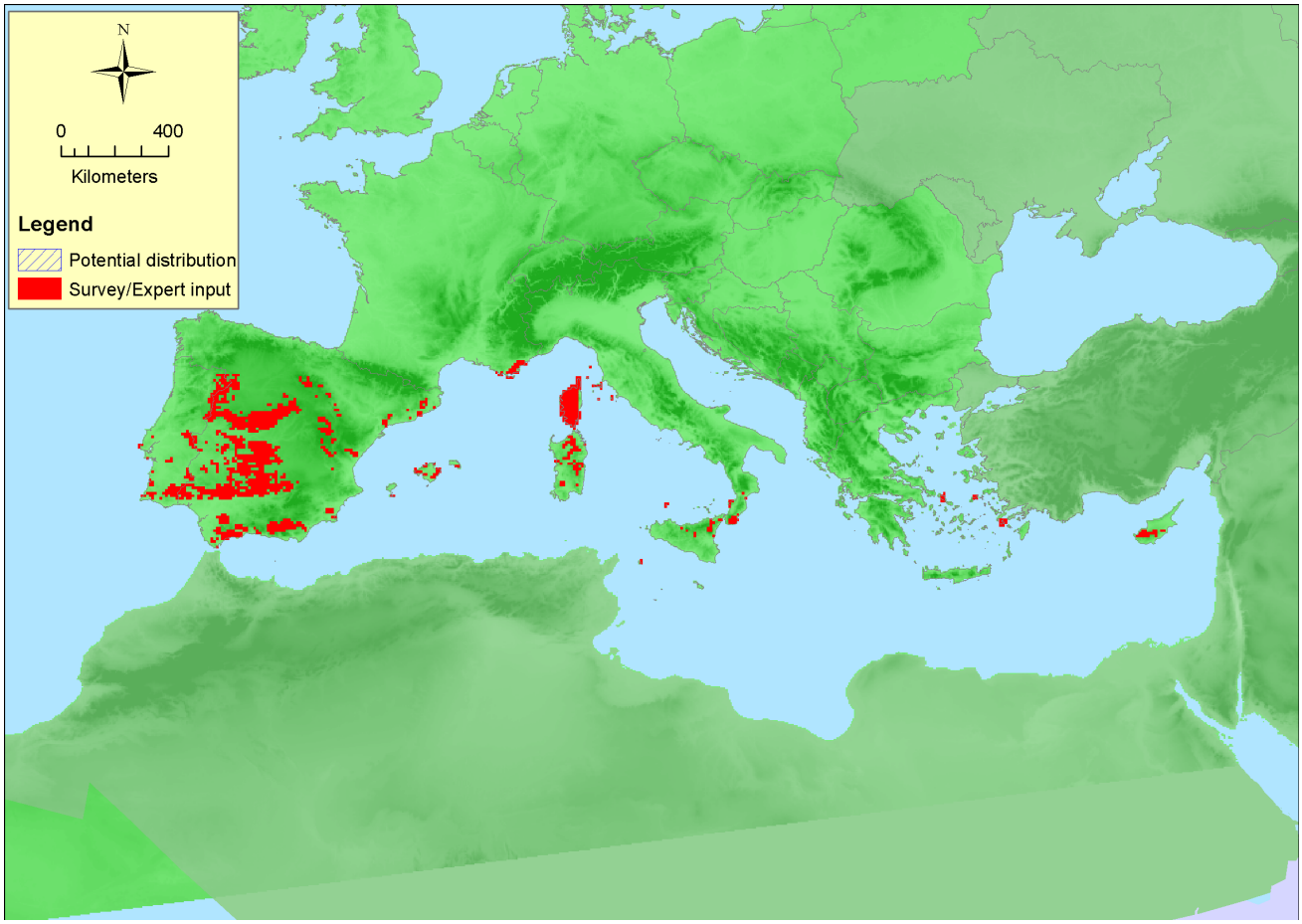
EU 28	Present or Presence Uncertain	Current area of habitat	Recent trend in quantity (last 50 yrs)	Recent trend in quality (last 50 yrs)
Cyprus	Uncertain	unknown Km^2	Unknown	Unknown
France	Corsica: Present France mainland: Present	25 Km^2	Stable	Unknown
Greece	East Aegean: Uncertain Greece (mainland and other islands): Present	3 Km^2	Unknown	Unknown
Italy	Italy mainland: Present Sardinia: Present Sicily: Present	unknown Km^2	Stable	Unknown
Portugal	Madeira: Uncertain Portugal Azores: Uncertain Portugal mainland: Present Savage Islands: Uncertain	35 Km^2	Increasing	Unknown
Spain	Balearic Islands: Present Canary Islands: Uncertain Spain mainland: Present	176 Km^2	Stable	Unknown

EU 28 +	Present or Presence Uncertain	Current area of habitat	Recent trend in quantity (last 50 yrs)	Recent trend in quality (last 50 yrs)
Albania	Uncertain	unknown Km^2	Unknown	Unknown

Extent of Occurrence, Area of Occupancy and habitat area

	Extent of Occurrence (EOO)	Area of Occupancy (AOO)	Current estimated Total Area	Comment
EU 28	1939100 Km^2	1264	239 Km^2	
EU 28+	1939100 Km^2	1264	239 Km^2	

Distribution map



The map is rather complete, except possibly for rare occurrences along the Eastern Adriatic coast, the Greek mainland and the Aegean. Data sources: Art17.

How much of the current distribution of the habitat type lies within the EU 28?

90%

Trends in quantity

Based on the provided data, the habitat is slightly increased (extent) over the last 50 years (EU28: +1,7%; EU28+: +1,7%). Thus, it can be considered stable. Although no figure or estimation is provided for the future trends, it can be realistically considered stable (extent).

- Average current trend in quantity (extent)
  EU 28: Stable
  EU 28+: Stable
- Does the habitat type have a small natural range following regression?
  No
  Justification
  No relevant variation occurred over the last 50 years.
- Does the habitat have a small natural range by reason of its intrinsically restricted area?
  Yes
  Justification
  This habitat cannot occur everywhere, since its establishment requires very specific climatic and geo-morphological features. Given that, the total area occupied is naturally very limited.

Trends in quality

Past, historical and future trends cannot be estimated due to the lacking of data/information. Extent of

degradation and severity of degradation are unknown.

- Average current trend in quality
  EU 28: Unknown
  EU 28+: Unknown

Pressures and threats

This habitat type is very weakly affected by human activities, especially on mountain stands or on inaccessible sites. Despite this, disturbances may be the result of sport and leisure activities (e.g. rock-climbing), mining and quarrying (at lower elevations), invasive/alien plants (at low altitudes), and cliff securing.

List of pressures and threats

Mining, extraction of materials and energy production

Mining and quarrying

Transportation and service corridors

Roads, paths and railroads
Tunnel

Human intrusions and disturbances

Outdoor sports and leisure activities, recreational activities
Mountaineering, rock climbing, speleology
Mountaineering & rock climbing
Recreational cave visits
Other human intrusions and disturbances
Fences, fencing

Invasive, other problematic species and genes

Invasive non-native species

Conservation and management

The best management action for this highly natural habitat is to leave it simply untouched, just avoiding any human interference with its natural processes. Luckily, cliffs are mostly falling within protected areas. Information about the biological value of this habitat to the potential “users”, e.g. climbers, should be extensively provided. Increase public awareness about the biological relevance of such apparently inhospitable environments is important in order to make more effective conservation efforts.

List of conservation and management needs

No measures

No measures needed for the conservation of the habitat/species

Measures related to spatial planning

Manage landscape features

Measures related to special resouce use

Regulating/Management exploitation of natural resources on land

Conservation status

Annex I:

8220: MED XX

When severely damaged, does the habitat retain the capacity to recover its typical character and functionality?

Unless physically destroyed, recovery of a cliff is possible provided that it is potentially connected with similar environments and that the natural geo-morphological processes are not hampered. As many plants of this habitat type are poor dispersers, the species composition is expected to remain impoverished even after initial recovery.

Effort required

10 years	200+ years
Unknown	Naturally

Red List Assessment

Criterion A: Reduction in quantity

Criterion A	A1	A2a	A2b	A3
EU 28	0 %	Unknown %	Unknown %	Unknown %
EU 28+	0 %	Unknown %	Unknown %	Unknown %

Based on the provided territorial data, no reduction occurred over the last 50 years.

Criterion B: Restricted geographic distribution

Criterion B	B1				B2				B3
	EOO	a	b	c	AOO	a	b	c	
EU 28	>50.000 Km^2	Unknown	Unknown	Unknown	>50	Unknown	Unknown	Unknown	Unknown
EU 28+	>50.000 Km^2	Unknown	Unknown	Unknown	>50	Unknown	Unknown	Unknown	Unknown

Both EOO and AOO are well above the thresholds.

Criterion C and D: Reduction in abiotic and/or biotic quality

Criteria C/D	C/D1		C/D2		C/D3	
	Extent affected	Relative severity	Extent affected	Relative severity	Extent affected	Relative severity
EU 28	Unknown %	Unknown %	Unknown %	Unknown %	Unknown %	Unknown %
EU 28+	Unknown %	Unknown %	Unknown %	Unknown %	Unknown %	Unknown %

Criterion C	C1		C2		C3	
	Extent affected	Relative severity	Extent affected	Relative severity	Extent affected	Relative severity
EU 28	Unknown %	Unknown %	Unknown %	Unknown %	Unknown %	Unknown %
EU 28+	Unknown %	Unknown %	Unknown %	Unknown %	Unknown %	Unknown %

Criterion D	D1		D2		D3	
	Extent affected	Relative severity	Extent affected	Relative severity	Extent affected	Relative severity
EU 28	Unknown %	Unknown%	Unknown %	Unknown%	Unknown %	Unknown%
EU 28+	Unknown %	Unknown%	Unknown %	Unknown%	Unknown %	Unknown%

Past, historical and future trends cannot be estimated due to the lacking of data/information. Extent of degradation and severity of degradation are not known. Despite the lacking of data, it can be realistically assumed that the quality of this habitat type is rather stable, similar to what has been observed for its total extent.

Criterion E: Quantitative analysis to evaluate risk of habitat collapse

Criterion E	Probability of collapse
EU 28	Unknown
EU 28+	Unknown

No data to evaluate risk of collapse is available.

Overall assessment "Balance sheet" for EU 28 and EU 28+

	A1	A2a	A2b	A3	B1	B2	B3	C/D1	C/D2	C/D3	C1	C2	C3	D1	D2	D3	E
EU28	LC	DD	DD	DD	LC	LC	LC	DD	DD	DD	DD	DD	DD	DD	DD	DD	DD
EU28+	LC	DD	DD	DD	LC	LC	LC	DD	DD	DD	DD	DD	DD	DD	DD	DD	DD

Overall Category & Criteria			
EU 28		EU 28+	
Red List Category	Red List Criteria	Red List Category	Red List Criteria
Least Concern	-	Least Concern	-

Confidence in the assessment
Medium (evenly split between quantitative data/literature and uncertain data sources and assured expert knowledge)

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References

Pérez-Alberti, A., and López-Bedoya, J. 2009. *8220 Laderas y salientes rocosos silíceos con vegetación casmofítica*. Ministerio de Medio Ambiente, y Medio Rural y Marino, Madrid, SPAIN