

## C3.5e Unvegetated or sparsely vegetated shore with mobile sediments in the Mediterranean region

### Summary

This habitat includes silt, sandy and gravel banks and shores of flowing and standing water bodies of the Mediterranean region where there is summer exposure of sediments and often a resorting of material in winter floods. Where vegetation develops it thus includes plants tolerant of either extreme dry or very wet conditions but the particular species also depend on the physical and chemical character of the debris. Early pioneers and nitrophilous annuals and perennials are characteristic and the habitat also provides an important feeding ground for migrating birds. Extraction of sand and gravel, anthropogenic changes in hydrology and invasion of non-native plants are the main pressures. Restoration measures include restoring the hydrology and the water quality and managing the sediment extractions.

### Synthesis

This habitat reaches the qualification of Least Concern (LC) because it is widespread in Europe and has undergone minor reductions in quantity and quality since the last 50 years.

| 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 analysis.

### Habitat Type

#### Code and name

C3.5e Unvegetated or sparsely vegetated shore with mobile sediments in the Mediterranean region



Vegetation of the association *Andryaetum ragusinae* at the Ebro river, Navarre, Spain (Photo: Itziar García-Mijangos).



The river D'Agro near Mita on Sicily (Italy) with vegetation of the association *Loto-Helichrysetum italici* (Photo: Saverio Sciandrello).

#### Habitat description

This habitat includes silt, sandy and gravel banks and shores of flowing and standing water bodies of the Mediterranean areas. The rivers can be intermittently flowing (completely dry during the summer or left

with some pools) or constantly flowing but with abundant exposed sandy or gravel sediments exposed during the summer. This category includes Mediterranean lake-bottoms or edges with mobile sediments (silt, sand or gravel) temporarily exposed by fluctuations of the water level, wind or wave action.

In the Mediterranean region, the climatic conditions are characterized by annual precipitation patterns that are high during autumn and winter but low during summer. Thus, many streams have developed spatial and temporal discontinuities of flow regime. Flow is interrupted during the summer dry period, but even energetic flow is observed during the wet season from late autumn to early spring. During the wet season, high precipitation lead to floods and consequent disturbances, such as sediment disturbances or even changes in the morphology of the stream channel. These seasonal differences in hydrological condition imply the need for specially adapted taxa to persist in this habitat. At the same time this habitat can host many plant species that require different moisture conditions (from humid to very dry). The high evaporation rate on certain geological substrates during summer can cause the accumulation of salts and oxides, therefore also species tolerant to brackish soil can occur. In some cases the geological substrate is very rich in salt and salt crusts are formed with the drying of the riverbed. In this specific case the dominant vegetation is tolerant to high salt concentrations and the habitat belong to the types C1.5 (Permanent inland saline and brackish waters) and C3.5c (Periodically exposed saline shores with pioneer and ephemeral vegetation). Despite the similarities with temporary running waters in temperate regions, there are differences in the timing and dynamics of nutrient inputs.

The grain size of sediments depends by the water regime and the history of water bodies both in flowing and standing waters and influence the plant species composition of the communities occupying this habitat type. These areas could be either completely unvegetated or occupied by vascular plant communities including pioneer vegetation and subsequent early stages of colonization. Often these areas are neighbouring with riverine forests and scrub of *Salix* spp., *Populus* spp., *Tamarix* spp., *Nerium oleander* and *Vitex agnus-castus*.

Indicators of quality:

- Natural hydrology
- Suitable geological substrate (easily erodible)
- Pioneer vegetation with absence or sporadic abundance of nitrophilous species
- No communities of exotic invasive species
- No negative anthropogenic influence (sediment extraction, regulation of the water regime, construction of artificial banks)

Characteristic species:

Vascular plants: *Andryala integrifolia*, *A. ragusina*, *Arenaria montana* subsp. *intricata*, *Artemisia campestris*, *A. alba*, *Asperula purpurea*, *Astragalus onobrychis*, *Bothriochloa ischaemon*, *Centranthus ruber*, *Chenopodium botrys*, *Chondrilla juncea*, *Cynodon dactylon*, *Cyperus fuscus*, *Dittrichia viscosa*, *Dorycnium hirsutum*, *Elymus repens*, *Epilobium dodonei*, *Erucastrum nasturtiifolium*, *Euphorbia rigida*, *Festuca duriotagana*, *Forsskaolea tenacissima*, *Galium corrudifolium*, *Glaucium flavum*, *Helichrysum* spp. *Latua viminea*, *Lotus tenuis*, *L. creticus*, *Melilotus albus*, *Micromeria graeca*, *Mercurialis tomentosa*, *Oenothera* spp., *Ononis ramosissima*, *Paspalum distichum* (alien species in most Europe), *P. vaginatum*, *Plantago sempervirens*, *Reseda valentina*, *Santolina* spp. (including endemic species such as *Santolina etrusca*, *S. insularis*, etc.), *Saponaria officinalis*, *Satureja montana*, *Scrophularia canina*, *Seseli tortuosum*, *Silene inaperta*, *Teucrium flavum*, *Thalictrum foetidum*.

Invertebrates: Very few groups of invertebrate occupy this habitat type and usually only those that have a short life cycle and that can leave the water body before the level of the water become critic. Among insects *Heteroptera* and *Coleoptera*.

Vertebrates: These habitats are usually not populated by fish or other characteristic vertebrates however

several species of small mammals, amphibians, reptiles and birds can seasonally frequent this habitat using it for food and water resource or during the reproductive season. Often these areas are important feeding grounds for migrating water birds.

*Note:* Most species that occur in this habitat type are not exclusive of it, they normally occur on every habitat characterized by mobile sediments (pebbles, gravel and sand) of the Mediterranean areas. However species assemblages (vegetation communities) may be characteristic of this habitat type.

### Classification

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

EUNIS:

C3.55 Sparsely vegetated river gravel banks

C3.6 Unvegetated or sparsely vegetated shores with soft or mobile sediments

EuroVegChecklist:

*Euphorbion rigidae* S. Brullo et Spampinato 1990

*Festucion duriotaganae* Capelo et al. 1998

*Glaucion flavi* Br.-Bl. ex Tchou 1948

Annex 1:

3250 Constantly flowing Mediterranean rivers with *Glaucium flavum*

Emerald:

C3.55 Sparsely vegetated river gravel banks

C3.62 Unvegetated river gravel banks

MAES-2:

Freshwater, Rivers and lakes, Inland surface waters (freshwater ecosystems)

IUCN:

5.1 Permanent Rivers, Streams, Creeks [includes waterfalls]

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

Yes

Regions

Mediterranean

Justification

The habitat is defined as an habitat from Mediterranean areas. Its occurrence is strictly related to the Mediterranean climate.

### 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) |
|-----------------|-------------------------------|-------------------------|--|---------------------------------------|
| <i>Bulgaria</i> | Present                       | Unknown Km <sup>2</sup> | Unknown                                | Decreasing                            |
| <i>Croatia</i>  | Uncertain                     | Unknown Km <sup>2</sup> | Unknown                                | Unknown                               |

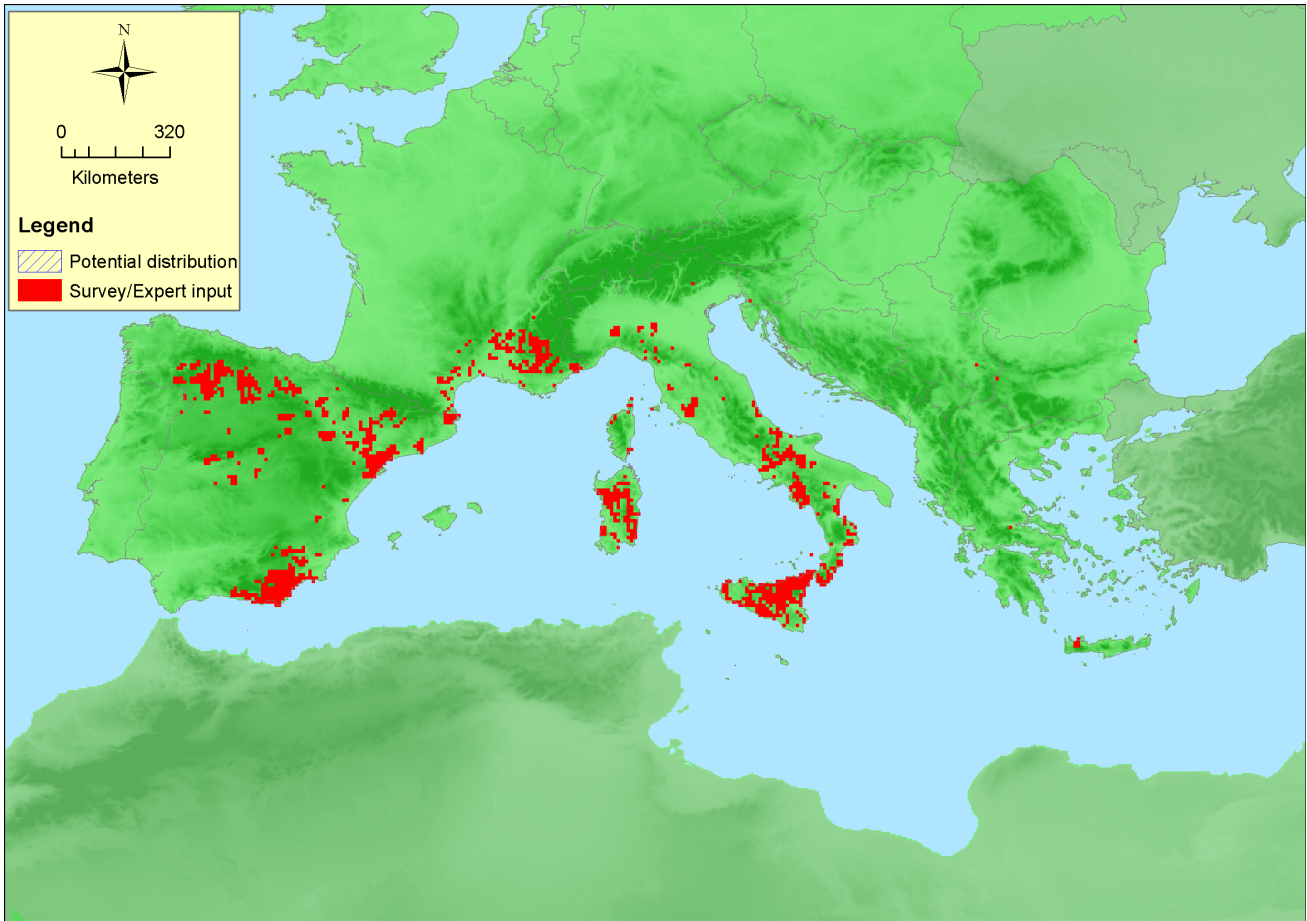
| EU 28           | Present or Presence Uncertain  | Current area of habitat | Recent trend in quantity (last 50 yrs) | Recent trend in quality (last 50 yrs) |
|-----------------|--|-------------------------|--|---------------------------------------|
| <i>Cyprus</i>   | Uncertain  | Unknown Km <sup>2</sup> | Unknown                                | Unknown                               |
| <i>France</i>   | Corsica: Present<br>France mainland: Present   | 58 Km <sup>2</sup>      | Unknown                                | Decreasing                            |
| <i>Greece</i>   | Crete: Present<br>East Aegean: Uncertain<br>Greece (mainland and other islands): Present | 0,09 Km <sup>2</sup>    | Unknown                                | Stable                                |
| <i>Italy</i>    | Italy mainland: Present<br>Sardinia: Present<br>Sicily: Present                          | 168,18 Km <sup>2</sup>  | Decreasing                             | Decreasing                            |
| <i>Portugal</i> | Portugal mainland: Present   | 12 Km <sup>2</sup>      | Stable                                 | Unknown                               |
| <i>Slovenia</i> | Uncertain  | Km <sup>2</sup>         | -                                      | -                                     |
| <i>Spain</i>    | Balearic Islands: Uncertain<br>Spain mainland: Present                                   | 46,74 Km <sup>2</sup>   | Decreasing                             | Decreasing                            |

| EU 28 +   | Present or Presence Uncertain | Current area of habitat | Recent trend in quantity (last 50 yrs) | Recent trend in quality (last 50 yrs) |
|---|-------------------------------|-------------------------|--|---------------------------------------|
| <i>Albania</i>  | Present                       | Unknown Km <sup>2</sup> | Unknown                                | Unknown                               |
| <i>Bosnia and Herzegovina</i>                           | Present                       | 2 Km <sup>2</sup>       | Decreasing                             | Decreasing                            |
| <i>Former Yugoslavian Republic of Macedonia (FYROM)</i> | Uncertain                     | Unknown Km <sup>2</sup> | Unknown                                | Unknown                               |
| <i>Kosovo</i>   | Uncertain                     | Unknown Km <sup>2</sup> | Unknown                                | Unknown                               |
| <i>Montenegro</i>                                       | Uncertain                     | Unknown Km <sup>2</sup> | Unknown                                | Unknown                               |
| <i>Serbia</i>   | Uncertain                     | Unknown Km <sup>2</sup> | Unknown                                | Unknown                               |

### Extent of Occurrence, Area of Occupancy and habitat area

|               | Extent of Occurrence (EOO) | Area of Occupancy (AOO) | Current estimated Total Area | Comment |
|---------------|----------------------------|-------------------------|------------------------------|---------|
| <i>EU 28</i>  | 2468950 Km <sup>2</sup>    | 1181                    | 238 Km <sup>2</sup>          |         |
| <i>EU 28+</i> | 2468950 Km <sup>2</sup>    | 1182                    | 240 Km <sup>2</sup>          |         |

### Distribution map



Map is rather complete for EU 28, but incomplete for EU 28+ (Balkan). Data sources: Art17, EVA.

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

It is estimated that a 50% of the current distribution of this habitat type lies within the EU 28, the rest is in EU 28+.

### Trends in quantity

Present past trend in quantity (over the past 50 years) is estimated in about 6% from both EU 28 and EU 28+ countries. The data are based on three EU 28 countries (Italy, Portugal and Spain) and one EU 28+ country (Bosnia and Herzegovina). The future trend is estimated as decreasing in three countries (Italy, Spain and Bosnia and Herzegovina). Long historical trend in quantity is mostly unknown.

- Average current trend in quantity (extent)  
 EU 28: Decreasing  
 EU 28+: Decreasing
- Does the habitat type have a small natural range following regression?  
 No  
*Justification*  
 The habitat occur through the Mediterranean basin.
- Does the habitat have a small natural range by reason of its intrinsically restricted area?  
 No  
*Justification*  
 The habitat may occur localized in segments but it can also form larger stretches along streams or rivers.

### Trends in quality

Complete data are available only for two countries (Italy, and Bosnia and Herzegovina) that reported in

total an extent of degradation of 8% affected with a severity of 38% for EU 28 and 39 for EU 28+. The two countries that estimated the future trend (France, and Bosnia and Herzegovina) reported a decreasing trend due to the lack of implementation of right policies and the occurrence of invasive plants. The historic trend is mostly unknown but when provided it is reported as decreasing mostly because of the transformation of rivers and streams.

- Average current trend in quality

EU 28: Decreasing

EU 28+: Decreasing

## **Pressures and threats**

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This habitat is mostly threatened by extractions of sand and gravel as well as by human induced changes in hydraulic conditions such as the regulation of watercourses. Pollution to surface waters related to urban and industrial pollution has been also reported as a frequent pressure. Other threats are the occurrence of invasive plants and the renewable energy use. It is expected a continuing decline of the habitat quality where anthropogenic influences are significant.

### **List of pressures and threats**

#### **Mining, extraction of materials and energy production**

Mining and quarrying

Sand and gravel extraction

#### **Pollution**

Pollution to surface waters (limnic, terrestrial, marine & brackish)

Soil pollution and solid waste (excluding discharges)

Garbage and solid waste

#### **Invasive, other problematic species and genes**

Invasive non-native species

#### **Natural System modifications**

Human induced changes in hydraulic conditions

Modification of hydrographic functioning, general

## **Conservation and management**

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The conservation and management of this habitat type must preserve the natural hydrology avoiding the sediment extraction, the regulation of the water regime and the construction of artificial banks. Control of water quality is also required in order to promote natural pioneer vegetation and to avoid nitrophilous and exotic invasive species.

### **List of conservation and management needs**

#### **Measures related to wetland, freshwater and coastal habitats**

Restoring/Improving water quality

Restoring/Improving the hydrological regime

Managing water abstraction

#### **Measures related to spatial planning**

Manage landscape features

## Measures related to urban areas, industry, energy and transport

Urban and industrial waste management

### Conservation status

3250: MED U1.

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

Estimations for such recovery are a period of 10 years through human intervention and of 20 years naturally.

### Effort required

| 10 years             | 20 years  |
|----------------------|-----------|
| Through intervention | Naturally |

## Red List Assessment

### Criterion A: Reduction in quantity

| Criterion A | A1     | A2a       | A2b       | A3        |
|-------------|--------|-----------|-----------|-----------|
| EU 28       | -6.6 % | unknown % | unknown % | unknown % |
| EU 28+      | -6.7 % | unknown % | unknown % | unknown % |

Overall a reduction in the present past quantity of 6.6% from EU 28 countries and 6.7% from EU 28+ countries is estimated. Information is based on 4 countries (Italy, Spain, Portugal, and Bosnia and Herzegovina), which represent the 50% of those in which the habitat is expected to occur. The habitat shows the highest decreasing trend in central Mediterranean basin. Historical trend is largely unknown in Europe. Estimation in future trend is decreasing from most of the countries that provided these data. However the lack of quantitative data did not allow the calculation of the future trend.

### Criterion B: Restricted geographic distribution

| Criterion B | B1                    |     |     |    | B2  |     |     |    | B3 |
|-------------|-----------------------|-----|-----|----|-----|-----|-----|----|----|
|             | EOO                   | a   | b   | c  | AOO | a   | b   | c  |    |
| EU 28       | 50000 Km <sup>2</sup> | Yes | Yes | No | 50  | Yes | Yes | No | No |
| EU 28+      | 50000 Km <sup>2</sup> | Yes | Yes | No | 50  | Yes | Yes | No | No |

The EOO, AOO and number of locations are far beyond the thresholds for criterion B.

### 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        | 8 %             | 40 %              | unknown %       | unknown %         | unknown %       | unknown %         |
| EU 28+       | 8 %             | 41 %              | 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 %         |

| 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 %         |

| 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%          |

The extent and severity are calculated using reported data from only two countries, Italy for EU 28 and Bosnia and Herzegovina for EU 28+. There is a decrease in quality affecting 8% of the surface with an average severity of 40% (from EU 28) and 41 % (from EU 28+). Information on long historical or future trends in quality (CD2, CD3, C2, C3, and D2) is mostly unknown for the involved countries. The changes in quality are both abiotic (waste, trampling) and biotic (invasive species, changes in species composition), so C/D1 has not been split into C1 and D1.

### Criterion E: Quantitative analysis to evaluate risk of habitat collapse

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

There are no quantitative data available to estimate the probability of collapse of this habitat type.

### 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 | LC   | DD   | DD   | DD | DD | DD | DD | DD | DD | DD |
| EU28+ | LC | DD  | DD  | DD | LC | LC | LC | LC   | 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

Low (mainly based on uncertain or indirect information, inferred and suspected data values, and/or limited expert knowledge)

### Assessors

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**References**

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Angiolini, C., Scoppola, A. and De Dominicis, V. 1998. Influence of environmental factors on the chamaephytic vegetation of pebbly alluvium of southern Tuscan river beds (central Italy). *Acta Botanica Neerlandica* 47: 313-324.

Bolòs, O. 1967. Comunidades vegetales de las comarcas próximas al litoral situados entre los ríos Llobregat y Segura. *Memorias de la Real Academia de Ciencias de Barcelona*, 38: 3-281.

Brullo, S. and Spampinato, G. 1990. La vegetazione dei corsi d'acqua della Sicilia. *Accademia Gioenia di Scienze Naturali in Catania* 23 (336): 119-252.

Molina, J. A., Pertíñez A. Díez, C. and Casermeiro, M.A. 2004. Vegetation composition and zonation of a Mediterranean braided river floodplain. *Belgian Journal of Botany* 137: 140-154.