

C1.6b Mediterranean temporary waterbody

Summary

These shallow seasonal pools dependent on winter and early spring retention of rain-water in hollows on acidic or base-rich substrates, have a scattered occurrence through Mediterranean countries with greater abundance westwards. Characterised by pioneer ephemeral vegetation and semi-terrestrial geophytes and with a rich associated fauna, they are vulnerable to the transformation of the hydrological conditions, land exploitation, agricultural use such as overgrazing and urbanisation. Restoration is dependent on the recovery of natural hydrological values and maintainance of sustainable and traditional agricultural uses but may be feasible in the long term.

Synthesis

The habitat type is assessed as Vulnerable (VU) because of a strong decline in quality over the last 50 years (criterion C/D1) both at the EU28 and the EU28+ levels. In quantitative terms 54% of the extent of the habitat is negatively affected with a 50% of relative severity. Additionally, there is a strong decline in area (-21%), but not large enough to meet the threshold for Near Threatened.

Overall Category & Criteria			
EU 28		EU 28+	
Red List Category	Red List Criteria	Red List Category	Red List Criteria
Vulnerable	C/D1	Vulnerable	C/D1

Sub-habitat types that may require further examination

Mediterranean temporary waters with *Isoetes* can be considered as a sub-habitat type in which further examination might be required at a regional level.

Habitat Type

Code and name

C1.6b Mediterranean temporary waterbody



Temporary pond in Mantamados area, NE Lesvos, Greece (Photo: Ioannis Bazos).



Aquatic phase of *Eryngium corniculatum* in a temporary pond in Vila do Bispo, Algarve, Portugal (Photo: Carla Pinto-Cruz).

Habitat description

These are shallow to very shallow temporary pools, existing only in winter and early spring, and seasonally wet depressions, mostly oligotrophic, in the Mediterranean and warm Atlantic part of Europe, and in Northern Africa. They are colonised by pioneer ephemeral freshwater vegetation with above-ground

growth visible for only a short part of the year, just 1-3 months. The predominant life forms are annual amphiphytes (Mediterranean spring annuals/therophytes), germinating in the aquatic phase and reproducing in the terrestrial ecophase, such as species of *Juncus*, *Lythrum* and *Elatine* or semi-terrestrial geophytes such as species of *Isoetes* and *Serapias*. Ephemeral vegetation types constituted by these plant species occur on water-saturated or submerged acidic sands or calcium rich soils, which completely dry out in spring. In some cases ephemeral vegetation is also developed in the flush habitats on rock outcrops, where seasonal surface runoff creates temporarily wet conditions in the patches of rock debris. The communities are classified in the order Isoetalia, covering the alliances Isoetion, Cicendion, Lythron tribracteati, Preslion cervinae and Agrostion salmanticae. This habitat is very important for invertebrates (especially branchiopods and dragonflies) and amphibians (newt and frogs, like species of *Triturus*, *Bufo*, *Rana* and *Hyla*).

Indicators of quality:

- Distinct vegetation zonation related to the water level fluctuations
- Natural hydrological regime of the catchment with no significant hydrological impact by e.g. water extraction as indicated by pipes, dams, removal of soil/gravel and with conditions adequate for the survival and persistence of typical species
- High insolation of the habitat without excessive shading by scrub or forest vegetation
- Relative abundance of Mediterranean annual and geophytic species
- Substrate with no excessive disturbances (e.g. excessive trampling)
- Clear water with no eutrophication
- Absence of evidence(s) of primary or secondary succession (e.g. encroachment of shrubs, tall helophytes) and or floating species (pleuston)
- No garbage and waste dumping
- No impact of pesticides and pollutants
- Not significant presence of nitrophilous or ruderal species or invasive neophytes

Characteristic species:

Vascular plants: *Aira elegantissima*, *Agrostis pourretii*, *Baldellia ranunculoides*, *Bellis annua*, *Briza minor*, *Centaureum maritimum*, *C. spicatum*, *Chaetopogon fasciculatus*, *Callitriche brutia*, *C. truncata*, *Cicendia filiformis*, *Crassula tillaea*, *C. vaillantii*, *Crypsis aculeata*, *C. alopecuroides*, *Cyperus michelianus*, *Damasonium alisma*, *D. bourgaei*, *D. polyspermum*, *Elatine gussonei*, *E. macropoda*, *Eryngium corniculatum*, *Exaculum pusillum*, *Herniaria glabra*, *Illecebrum verticillatum*, *Isoetes duriei*, *I. heldreichii*, *I. azorica*, *I. histrix*, *I. setacea*, *I. velata*, *Isolepis setacea*, *Juncus bufonius*, *J. capitatus*, *J. foliosus*, *J. pygmaeus*, *J. tenageia*, *Lotus conimbricensis*, *L. angustissimum*, *L. parviflorus*, *Lythrum castellanum*, *L. flexuosum*, *Lythrum thymifolia*, *L. tribracteatum*, *Marsilea batardae*, *M. strigosa*, *Mentha cervina*, *M. pulegium*, *Nananthea perpusilla*, *Ophioglossum lusitanicum*, *Pilularia minuta*, *Ranunculus batrachioides*, *R. dichotomiflorus*, *R. lateriflorus*, *R. muricatus*, *R. revelieri*, *R. trilobus*, *Serapias cordigera*, *S. lingua*, *S. neglecta*, *S. vomeracea*, *Sisymbrella aspera*, *Solenopsis corsica*, *S. laurentia*, *S. minuta*.

Bryophytes: *Calliergon cuspidatum*, *Drepanocladus fluitans*, *Eurhynchium striatum*, *Riccia* spp.,

Fauna : Amphibians : *Salamandra* spp, *Triturus* spp, *Discoglossus* spp, *Alytes* spp., *Pelobaates* spp, *Pelodytes punctatus*, *Pelodytes ibericus*, *Bufo* spp, *Hylas* pp, *Rana perezi*, *Rana* kl. grafi. Branchiopods: *Branchypus* spp, *Chirocephalus* spp, *Lindieriella massiliensis*, *Streptocephalus* spp, *Tanymastigites* spp, *Lepidurus apus*, *Triops cancriformis*, *Cyzicus* spp, *Imnadia yeyetta*.

Classification

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

EUNIS:

C1.6 Temporary lakes, ponds and pools

Annex I:

3120 Oligotrophic waters containing very few minerals generally on sandy soils of the West Mediterranean, with *Isoetes* spp.

3170* Mediterranean temporary ponds

EuroVegChecklist alliances:

Isoetion Br.-Bl. 1935

Cicendion (Rivas Goday in Rivas Goday et Borja 1961) Br.-Bl. 1967

Lythron tribracteati Rivas Goday et Rivas-Mart. in Rivas Goday 1970

Preslion cervinae Br.-Bl. ex Moor 1936

Agrostion salmanticae Rivas Goday 1958

Emerald:

C3.4 Species-poor beds of low-growing water-fringing or amphibious vegetation

MAES:

Fresh water, Rivers and lakes

IUCN:

5. Wetlands (inland)

5.8. Seasonal/Intermittent Freshwater Marshes/Pools

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

Yes

Regions

Mediterranean

Justification

This habitat is dependent upon a Mediterranean climate so is confined to that region.

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>Croatia</i>	Present	0.2 Km ²	Stable	Stable
<i>Cyprus</i>	Present	0.3 Km ²	Stable	Unknown
<i>France</i>	Corsica: Present France mainland: Present	55 Km ²	Decreasing	Stable

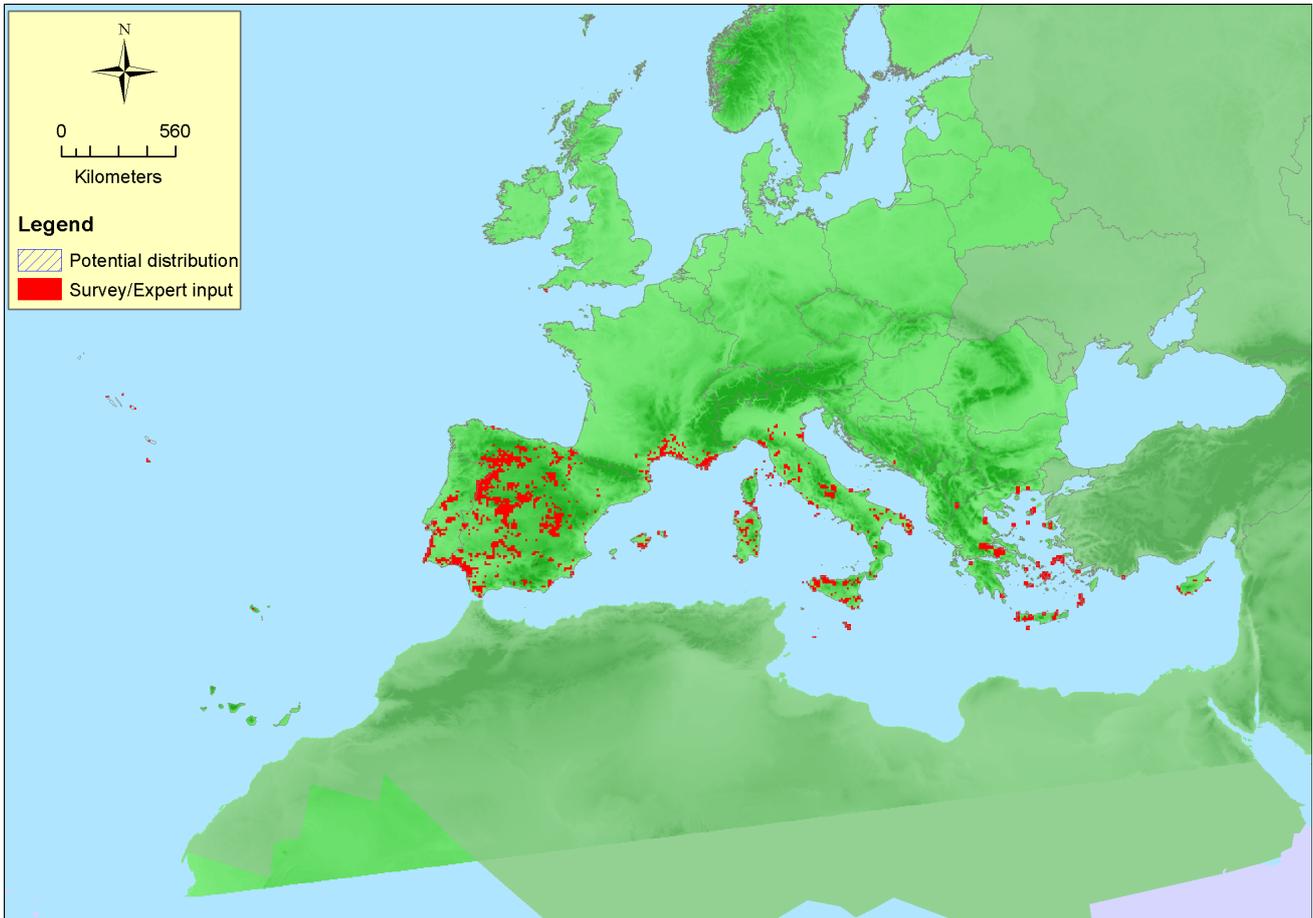
EU 28	Present or Presence Uncertain	Current area of habitat	Recent trend in quantity (last 50 yrs)	Recent trend in quality (last 50 yrs)
<i>Greece</i>	Crete: Present East Aegean: Present Greece (mainland and other islands): Present	2 Km ²	Stable	Unknown
<i>Italy</i>	Italy mainland: Present Sardinia: Present Sicily: Present	23 Km ²	Decreasing	Decreasing
<i>Malta</i>	Uncertain	Km ²	-	-
<i>Portugal</i>	Portugal Azores: Present Portugal mainland: Present	9.8 Km ²	Decreasing	Unknown
<i>Spain</i>	Balearic Islands: Present Spain mainland: Present	130 Km ²	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>Bosnia and Herzegovina</i>	Present	3 Km ²	Decreasing	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>	5780900 Km ²	1735	221 Km ²	Territorial data also show 108km ² for Portugal transferred from C1.6b
<i>EU 28+</i>	5780900 Km ²	1737	224 Km ²	

Distribution map



The map is rather complete for EU28, but data gaps outside EU28 in Croatia, Montenegro and Albania. Data sources: Art17, NAT.

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

About 50%, since this habitat type is known from the south side of the Mediterranean Basin (Morocco, Algeria, Tunisia) and it is probably also present in the Near East.

Trends in quantity

Present past trend in quantity (over the past 50 yrs) is estimated >21 % for both EU28 and EU28+. Long historical trend in quantity is fundamentally unknown. The future trend is decreasing in most of the countries where it is reported.

- 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?

Yes

Justification

The habitat occurs in relatively small spots across a wide range.

Trends in quality

The present trends in quality shows an important extent (54%) and severity (50%) of degradation for the

six countries which provided information (Croatia, Cyprus, France, Italy and Spain). The historical trend is unknown but it can be estimated as decreasing as consequence of water quality degradation, decreasing phytoceonotic diversity and altered hydrological functioning in the last centuries. A future decline in quality can be reasonably predicted as consequence of a increase of soil and water nutrients.

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

Pressures and threats

The human induced changes in hydraulic conditions is the most significant threat affecting this habitat. Other significant threats are related to water pollution, intensive grazing, roads construction, and urbanisation. A continuing declining of habitat quality is expected where anthropogenic influences are significant. Climate change is also a threatening factor for this habitat.

List of pressures and threats

Agriculture

- Cultivation
- Grazing
 - Intensive grazing

Transportation and service corridors

- Roads, paths and railroads

Urbanisation, residential and commercial development

- Urbanised areas, human habitation

Pollution

- Pollution to surface waters (limnic, terrestrial, marine & brackish)
- Pollution to groundwater (point sources and diffuse sources)

Natural System modifications

- Human induced changes in hydraulic conditions
 - Modification of hydrographic functioning, general

Climate change

- Changes in abiotic conditions
 - Droughts and less precipitations

Conservation and management

The main measures for the conservation of this habitat type include maintaining the natural hydrological regime of the catchment avoiding water pollution and eutrophication. It is also very important to maintain sustainable agricultural uses in order to avert the encroachment by shrubs and overgrazing of the habitat. Legal protection of habitats and species, urban and industrial water waste management, and planning of urbanisation and transportation and service corridors are essential in order to preserve this habitat.

List of conservation and management needs

Measures related to agriculture and open habitats

Maintaining grasslands and other open habitats

Measures related to wetland, freshwater and coastal habitats

Restoring/Improving water quality
Restoring/Improving the hydrological regime

Measures related to special resource use

Regulating/Management exploitation of natural resources on land

Conservation status

Annex 1

3120: ATL U2, MED U1

3170: ATL U1, CON U2, MAC U1, MED U1

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

Restoration is possible only with the reconstruction of the necessary hydrological and soil conditions.

Effort required

10 years	50+ years
Through intervention	Naturally

Red List Assessment

Criterion A: Reduction in quantity

Criterion A	A1	A2a	A2b	A3
EU 28	-21 %	unknown %	unknown %	unknown %
EU 28+	-21 %	unknown %	unknown %	unknown %

Values for A1 were calculated from quantitative territorial data sheets of six EU28 and one EU28+ countries. Overall an average trends of -21% from EU28 countries and -21% from EU28+ countries over about 50 years were calculated. A long historical trend is unknown for almost all the countries. Quantitative estimation trends in future are decreasing for Spain, France and Italy, the countries with the highest contributions to habitat surface in Europe.

Criterion B: Restricted geographic distribution

Criterion B	B1			B2			B3	
	EOO	a	b	c	AOO	a		b
EU 28	50000 Km ²	-	-		50	-	-	
EU 28+	50000 Km ²	-	-		50	-	-	

The EOO, AOO and number of locations are far beyond the thresholds for criteria under B, and therefore other subcriteria for B have not been assessed.

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	54 %	50 %	unknown %	unknown %	unknown %	unknown %
EU 28+	54 %	50 %	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%

The overall extent and severity are the weighted average calculated from reported data from France, Greece, Italy, Spain, Croatia and Cyprus. The involved countries could not provide any information on long historical or future trends in quality (CD2, CD3, C2, C3, and D2). The changes in quality includes both abiotic and biotic indicators, so C/D1 has not been split into C1 and D1. On average there is a decrease in quality affecting 54% of the surface with an average severity of 50%.

Criterion E: Quantitative analysis to evaluate risk of habitat collapse

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

There is no quantitative analysis available that estimates 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	VU	DD	DD	DD	DD	DD	DD	DD	DD	DD
EU28+	LC	DD	DD	DD	LC	LC	LC	VU	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
Vulnerable	C/D1	Vulnerable	C/D1

Confidence in the assessment

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

Assessors

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References

Bagella S., Gascón S., Caria M.C., Sala J., Mariani M.A., Boix D. (2010) Identifying key environmental factors related to plant and crustacean assemblages in Mediterranean temporary ponds. *Biodiversity and Conservation* 19: 1749-1768.

Bergmeier, E. (2001): Seasonal pools in the vegetation of Gavdos (Greece) - in situ conservation required. *Bocconea* 13: 511-516.

Deil, U. (2005). A review on habitats, plant traits and vegetation of ephemeral wetlands - a global perspective. *Phytocoenologia* 35 (2-3): 533-705.

Grillas, P., Gauthier, P., Yavercovski, N. & Perennou, C. (2004). Mediterranean Temporary Pools; Volume 1 - Issues relating to conservation, functioning and management. Station Biologique de la Tour du Valat.

Pinto-Cruz C., Molina J.A., Barbour M., Silva V. & M.D.(2009) Espírito-Santo. Plant communities as a tool in temporary ponds conservation in SW Portugal. *Hydrobiologia* 634: 11-24.