C5.1a Tall-helophyte bed

Summary

This habitat of tall helophytes characteristically occupies a zone from shallow to moderately deep mesotrophic to eutrophic fresh or slightly brackish waters along the banks of rivers and lakes and rivers, in artificial water bodies and in nutrient-rich terrestrial sites on waterlogged ground. It is very widespread, but naturally fragmented habitat, throughout the European lowlands. The main determinants for dominant species are substratum, water depth, duration of flooding, herbivory and human influence, some of the plants being cut for fodder or thatching. Because of the competitive ability and clonal growth of tall helophytes, the stands are usually species-poor and often dominated by one or a few co-dominants. The habitat is vulnerable to drainage and pollution, land reclamation for agricultural and urban development, and the decline of marshland exploitation for renewable crops.

Synthesis

The habitat qualifies as Least Concern (LC) in both the EU28 and EU28+, based on calculations of trend in quality and quantity, using data of many countries. The conclusions are dominated largely by a positive trend in Finland. Some countries report very large historic reductions in quantity (50-95%), but it is not known whether these values are representative for Europe.

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

Several sub-habitats may be distinguished, of which some are probably more threatened than the broader defined habitat type. First of all, coastal reed bed (a.o. on the shores of the Baltic Sea) is likely not threatened, as it is expanding. More threatened are "water reed beds" in permanent flooded sites, the optimal biotope for some characteristic warbler species. Another variety to be examined is *Bolboschoenus* bed in freshwater tidal areas, associated with habitat C2.4, and likely to be more threatened than the broader habitat. Finally for estuaries (like the Danube Delta) a different subtype may be distinguished. All these subtypes differ in terms of functioning, species composition and quantity/quality trends.

Habitat Type

Code and name

C5.1a Tall-helophyte bed

Temporary marsh with *Bolboschoenus maritimus* in the Camargue, France (Photo: Olivier Pineau).

Reedbed at a eutrophic site in Finland (Photo: Heikki Toivonen).

Habitat description

Habitat description Communities of tall helophytes characteristically occupy a zone from shallow water to upper parts of the geolittoral belt along lakes and rivers. Further they are found in nutrient-rich terrestrial sites on waterlogged ground. In marshes and large lakes tall helophytes, such as *Phragmites australis* or *Typha angustifolia*, together with other emergent herbs (e.g. *Thelypteris palustris*) can overgrow accumulations of plant residues and form with their rhizomes and roots floating carpets and islets on the water surface. This habitat often represents the shore component of the habitat types C1.1a, C1.1b, C1.2a, C1.2b and C1.4 and therefore is in contact with them. The habitat includes wide and dense stands along eutrophic water bodies, as well as tall-helophyte stands occurring as wide belts along larger oligo- and mesotrophic lakes. These communities have poor water exchange with the open water area, and show clear accumulation of organic material. Tall helophytes include grasses (*Phragmites australis*, *Glyceria maxima*, *Scholochloa festucacea*), bulrushes (*Schoenoplectus* spp., *Bolboschoenus* spp.), cattails (*Typha* spp.), horsetail (*Equisetum fluviatile*), often accompanied by some broad-leaved emergent herbs (*Rumex hydrolapathum*, *Cicuta virosa*, etc.).

Reed bed vegetation belongs to the most productive European plant communities in terms of annual production of biomass. Shoot height is often 2-3 m, sometimes much higher. Because of competitive ability of tall helophytes, their stands are species-poor and often dominated by one species or by a few co-dominants. Main determinants for dominant species are substratum, water depth, duration of flooding anoxic periods, herbivory and human influence. Dominants grow in vigorous clones, and chance may play an important role in the arrival and establishment of potential dominants. Cover and composition of understorey vary according to the trophic state, substratum, succession stage, and disturbance (grazing, mowing, water level fluctuations, eutrophication, in the north also ice erosion). Grasses and herbs dominate in understorey, aquatic plants and shore mosses can occur, but are usually not abundant. An exception form initial phases towards mire succession, in which mosses may have a high cover.

Besides growing in the littoral zone of natural standing waters, reed beds grow also in anthropogenic standing water, like canals, stagnant dykes and reservoirs. Further, they are abundant alongside running waters in wetter parts of flood plains, and in rivers and streams. Both organic and mineral soils are colonized. In the northern boreal region helophyte stands are sparse and low due to the harsh climate and frozen soil, in arctic in alpine area they are lacking.

Also reed bed stands along brackish to freshwater coastal waters are included in this habitat, like those on the shores of the Baltic Sea and Black Sea or reed beds in the freshwater influenced parts of estuaries along the Atlantic and Mediterranean coasts. As their functioning and species composition may somewhat differ from more inland stands, these coastal examples may be considered as a separate subtype of habitat C5.1a.

Reed bed vegetation has been influenced strongly by human activities. Earlier helophyte stands were largely grazed and mowed, resulting in lower vegetation. Eutrophication and cessation of shore grazing has led in many places to increase of reed beds and their density but with a higher abundance of nitrophilous species. Excessive nitrogen and prolonged anoxic condition of the sediments have in some cases caused dying of reed beds. Reed beds are also impacted by regulation of water levels, construction activities, clearing of agricultural land, boating and other recreational activities. Losses of reed beds are locally caused by herbivory (coypu, muskrats).

Indicators of good quality:

- Reed beds with natural hydrology and water and substrate chemistry
- Typical structure of vegetation and natural species pool (species poor stands)
- Anthropogenic impacts low in terms of construction activities, eutrophication, drainage etc.
- Natural density of helophyte stands, not enhanced biomass or density due to eutrophication
- Absence of invasive alien species (also Glyceria maxima in the northern part of its range)
- No or low abundance of ruderal and nitrophilus (tall-herb) species (Urtica dioica, Calystegia sepium, Bidens spp., Chenopodium spp., Amaranthus spp.)
- No or low abundance of shrubs and climbing plants (e.g. Salix spp., Populus spp., Sambucus nigra, Vitis vinifera, Humulus lupulus)
- Low cover of tall species from drier habitats (e.g. Cirsium spp., Galega officinalis, Eupatorium cannabinum, Sambucus ebulus)
- Presence of characteristic breeding birds
- Presence of characteristic insect fauna

Characteristic species:

Flora, Vascular plants: *Acorus calamus, Alisma plantago-aquatica, Bolboschoenus laticarpus, B. maritimus, Butomus umbellata, C. rostrata, Calystegia sepium, Carex pseudocyperus,Cicuta virosa, Eleocharis palustris, Equisetum fluviatile, Eupatorium cannabinum, G. spicata, Glyceria fluitans, Glyceria maxima, Iris pseudacorus, Lythrum salicaria, Oenanthe aquatica, Phalaris arundinacea, Phragmites australis, Rumex hydrolapathum, Sagittaria sagittifolia, Schoenoplectus corymbosus, S. lacustris, S. tabernaemontani, Scolochloa festucacea, Solanum dulcamara, Sparganium erectum, S. neglectum, Typha angustifolia,T. domingensis, T. latifolia, T. laxmannii, T. minima, T. shuttleworthii*

Frequently accompanying species are also *Lycopus europaeus, Lysimachia vulgaris, Lythrum salicaria, Mentha aquatica, Rumex hydrolapatum, Sium latifolium, Thelypteris palustris, Cicuta virosa. Mosses: Drepanocladus spp., Campylium* spp*., Calliergon* spp., in paludified stands also *Sphagnum* spp.

Fauna, Birds: *Acrocephalus arundinaceus, A. scirpaceus, A. melanopogon, A. schoenobaneus , Alcedo atthis, Ardea cinerea, Aythya nyroca, Botaurus stellaris, Circus aeruginosus, Egretta garzetta, Fulica atra, Gallinula chloropus, Panurus biarmicus, Podiceps cristatus*.

Classification

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

EUNIS

C3.2 Water-fringing reedbeds and tall helophytes other than canes

D5.1 Reedbeds normally without free-standing water

EuroVegChecklist (alliances)

Phragmition communis Koch 1926

Typhion laxmannii Nedelcu 1968

Carici-Rumicion hydrolapathi Passarge 1964 (only those associations dominated by tall helophytes)

Scirpion maritimi Dahl et Hadac 1941 (not those associations of brackish and saline water)

Annex I:

-

Emerald:

-

MAES-2:

Wetlands - mires, bogs, fens (inland marshes)

IUCN:

5.7. Permanent Freshwater Marshes/Pools [under 8 ha]

Does the habitat type present an outstanding example of typical characteristics of one or more biogeographic regions?
No

Justification
A dominant species of this habitat is *Phragmites australis* which is probably the flowering plant having the widest distribution on earth. However, only in Europe and Asia large reed stands (several thousands of hectares) having a specific bird fauna (eg *Acrocephalus* warblers) are found.

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)
Austria	Present	5-20 Km^2	Decreasing	Stable
Belgium	Present	30-80 Km^2	Stable	Stable
Bulgaria	Present	Unknown Km^2	Increasing	Stable
Croatia	Present	15 Km^2	Decreasing	Decreasing
Cyprus	Uncertain	Unknown Km^2	Unknown	Unknown
Czech Republic	Present	127 Km^2	Decreasing	Decreasing
Denmark	Present	Unknown Km^2	Unknown	Unknown
Estonia	Uncertain	Unknown Km^2	Unknown	Unknown
Finland	Finland mainland: Present	800 Km^2	Increasing	Stable
France	Corsica: Present France mainland: Present	499 Km^2	Decreasing	Decreasing
Germany	Present	Unknown Km^2	Decreasing	Stable
Greece	Greece (mainland and other islands): Present	330 Km^2	Unknown	Unknown
Hungary	Present	50 Km^2	Decreasing	Decreasing
Ireland	Uncertain	Unknown Km^2	Decreasing	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)
Italy	Italy mainland: Present Sardinia: Present Sicily: Present	345 Km^2	Decreasing	Decreasing
Latvia	Uncertain	Unknown Km^2	Unknown	Unknown
Lithuania	Present	Unknown Km^2	Increasing	Stable
Luxembourg	Uncertain	Unknown Km^2	Unknown	Unknown
Malta	Uncertain	Unknown Km^2	Unknown	Unknown
Netherlands	Present	45 Km^2	Decreasing	Decreasing
Poland	Present	Unknown Km^2	Unknown	Unknown
Portugal	Madeira: Uncertain Portugal Azores: Uncertain Portugal mainland: Present Savage Islands: Uncertain	Unknown Km^2	Unknown	Unknown
Romania	Present	5 Km^2	Decreasing	Decreasing
Slovakia	Present	2 Km^2	Increasing	Stable
Slovenia	Present	13 Km^2	Decreasing	Decreasing
Spain	Balearic Islands: Present Canary Islands: Uncertain Spain mainland: Present	Unknown Km^2	Decreasing	Decreasing
Sweden	Present	Unknown Km^2	Unknown	Unknown
UK	United Kingdom: Present	17 Km^2	Decreasing	Unknown

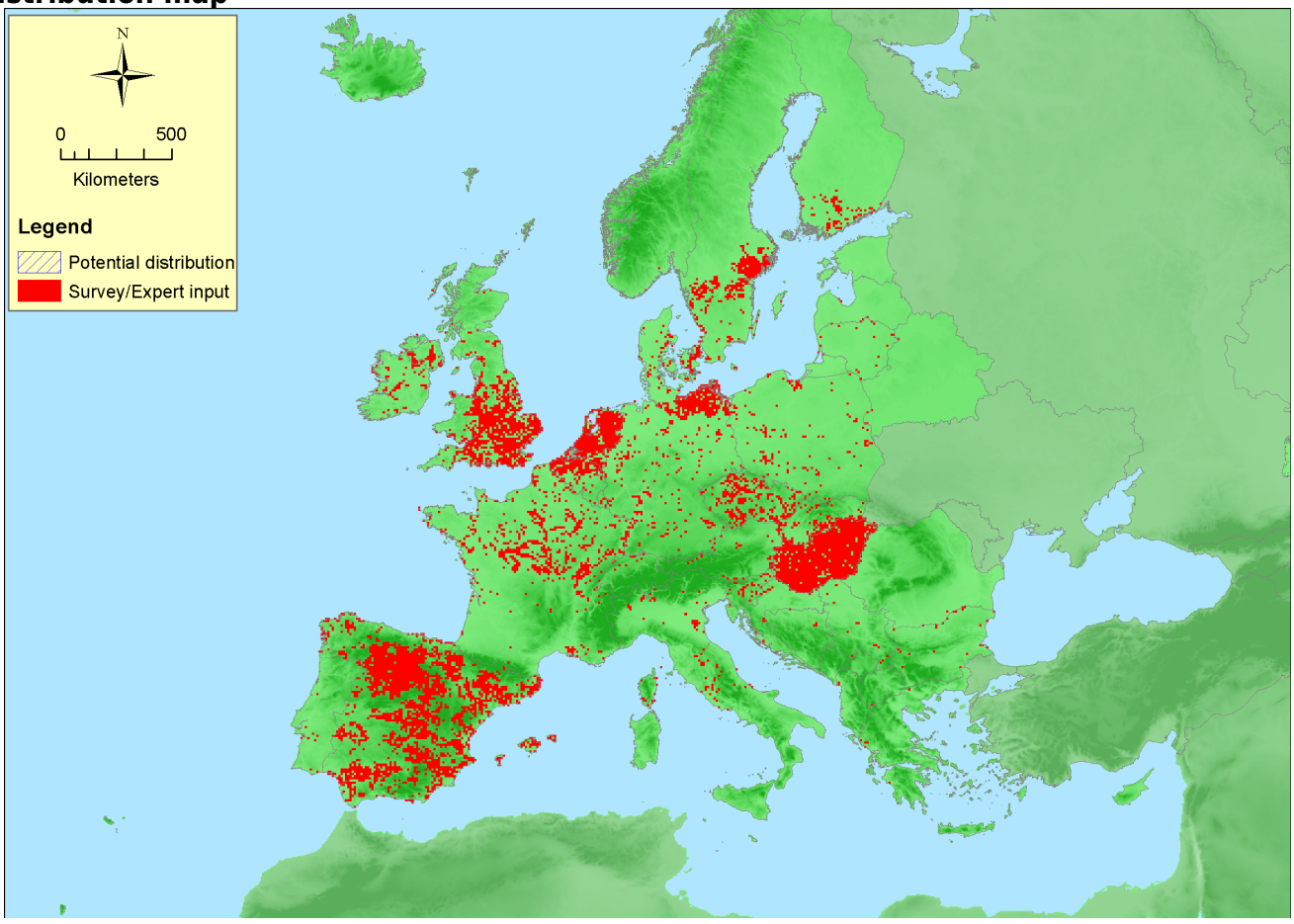
EU 28 +	Present or Presence Uncertain	Current area of habitat	Recent trend in quantity (last 50 yrs)	Recent trend in quality (last 50 yrs)
Albania	Uncertain	Unknown Km^2	Unknown	Unknown
Andorra	Uncertain	Unknown Km^2	Unknown	Unknown
Bosnia and Herzegovina	Present	8 Km^2	Decreasing	Decreasing
Faroe Islands	Uncertain	Unknown Km^2	Unknown	Unknown
Former Yugoslavian Republic of Macedonia (FYROM)	Uncertain	Unknown Km^2	Unknown	Unknown
Guernsey	Uncertain	Unknown Km^2	Unknown	Unknown
Iceland	Uncertain	Unknown Km^2	Unknown	Unknown
Isle of Man	Uncertain	Unknown Km^2	Unknown	Unknown
Jersey	Uncertain	Unknown Km^2	Unknown	Unknown
Kaliningrad	Uncertain	Unknown Km^2	Unknown	Unknown
Kosovo	Uncertain	Unknown Km^2	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)
Monaco	Uncertain	Unknown Km^2	Unknown	Unknown
Montenegro	Uncertain	Unknown Km^2	Unknown	Unknown
Norway	Norway Mainland: Present	109 Km^2	Unknown	Unknown
San Marino	Uncertain	Unknown Km^2	Unknown	Unknown
Serbia	Uncertain	Unknown Km^2	Unknown	Unknown
Switzerland	Present	15 Km^2	Decreasing	Increasing
Vatican City	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	7108900 Km^2	6494	2339 Km^2	estimates provided for 15 countries only
EU 28+	7108900 Km^2	6539	2362 Km^2	estimates provided for 17 countries only

Distribution map



Map has many data gaps, depending on availability of data in EVA and GBIF. Data sources: EVA, GBIF, NAT.

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

This is a widely distributed habitat worldwide. Because large stands of Phragmites australis are more

characteristic of Europe than of other continents, the EU 28 (3% of the land on earth) probably holds 4-8% of this habitat worldwide.

Trends in quantity

Recent trends (past 30-55 years) suggest a -22% decline in EU28 (14 countries) and a -29% decline in EU28+ (16 countries). Historical trends estimated for 4 EU28 and 5 EU28+ countries are -89% over a 90-250 yr period. Future trends are expected to be decreasing in 4 countries (estimated at -20% for 2 countries) and stable in 5 countries.

- 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
  This habitat has a worldwide distribution.
- Does the habitat have a small natural range by reason of its intrinsically restricted area?
  Yes
  Justification
  Like weltands in general, tall helophyte vegetation is a naturally fragmented habitat typically restricted to the shallow edge of freshwater bodies.

Trends in quality

The current extent of degradation is estimated at 51% with a severity of 24% in based on 11 EU28 and 13 EU28+ countries. km). Severity of quality decline, however, increases to 42% when Finland (when large reed stands are expanding) is excluded. Experts provided little opinion about past (3 countries) and future (2 countries) trends in quality, but tendency is decreasing quality in the past and expected stability in the future.

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

Pressures and threats

Land reclamation for expansion of agricultural and urban areas has been responsible for most of the historic decline in tall helophyte vegetation in Europe. Main current threats are natural succession processes not compensated by colonisation of new areas, stabilisation and rising of water levels translating into eutrophic and anoxic conditions, water shortage due to modification of catchment area (embankments, dams), decreased water quality (nutrient inputs from agriculture), as well as increased salinity associated with sea level rise in coastal areas. Wave action caused by motorized nautical sports and grazing by invasive mammals can be responsible for significant reedbed delcine in localised areas.

List of pressures and threats

Pollution

Nutrient enrichment (N, P, organic matter)

Natural System modifications

Landfill, land reclamation and drying out, general

Flooding modifications
Modification of hydrographic functioning, general

Natural biotic and abiotic processes (without catastrophes)

Biocenotic evolution, succession
Accumulation of organic material

Conservation and management

Improving water quality: by reducing nitrate/phosphate inputs

Improving water level variation or water flow: In relatively small, confined water bodies (eg. marsh) the best water management for tall helophytes and their fauna is shallow water level in spring-summer (10-15 cm), with drawdown in late summer at least every five years. In large lake or estuaries where water level are typically higher (30cm), a good water flow is required to avoid anoxic/eutrophic conditions.

Vegetation management: Winter cutting of dry reed in mosaic (eg 25% each year) is a good way to slow down biomass accumulation and litter build up, providing a vegetation heterogeneity that benefits to the fauna.

Vegetation diversity: Maintaining gradual slopes will increase diversity of tall helophytes species and increase their area coverage.

List of conservation and management needs

Measures related to wetland, freshwater and coastal habitats

Restoring/Improving water quality
Restoring/Improving the hydrological regime

Measures related to hunting, taking and fishing and species management

Regulation/Management of fishery in limnic systems

Conservation status

There is no Annex 1-type habitat associated with Tall helophytes dominated by freshwater vegetation. However, this habitat forms the main biotope of several species from the Bird Directive.

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

Litter build up with scrub encroachment is rather irreversible, requiring soil scaping that cannot be conducted over large areas. Degradation caused by problems related to hydrological functioning (eg embankment, dams) can be compensated by adequate water control where applicable. Degradation caused by eutrophication can be most easily solved by drying out the water body in summer time or by insuring a regular water flow (input of oxygen-rich waters). Accelerated eutrophication caused by nutrient inputs from agriculture could be slow down by reducing fertilisant use.

Effort required

10 years
Through intervention

Red List Assessment

Criterion A: Reduction in quantity

Criterion A	A1	A2a	A2b	A3
EU 28	-22.2 %	unknown %	unknown %	unknown %
EU 28+	-22.4 %	unknown %	unknown %	unknown %

The A1 criteria has been estimated based on 14 EU28 and 16 EU28+ countries over a 30-55 yr period, including two EU28 countries where the habitat is considered as increasing. Historic data based on three EU28 and 5 EU28+ countries show a decline of 89%, but these data have been considered as insufficient for assessing EU28 or EU28+ trends. Future trends are expected to be decreasing (4 countries) or stable (5 countries).

Criterion B: Restricted geographic distribution

Criterion B	B1				B2				B3
	EOO	a	b	c	AOO	a	b	c	
EU 28	> 50000 Km^2	Yes	Yes	No	> 50	Yes	Yes	No	No
EU 28+	> 50000 Km^2	Yes	Yes	No	> 50	Yes	Yes	No	No

This cosmopolitan habitat is still widely distributed in spite of its declines. The large EOO, AOO and number of locations lead to a Least Concern assessment 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	24 %	51 %	unknown %	unknown %	unknown %	unknown %
EU 28+	24 %	51 %	unknown %	unknown %	unknown %	unknown %

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

Estimates on quality trends are provided by 11 EU28 and 13 EU28+ countries, for an approximate area of 1914 and 1937 sq km, respectively. The decline is mainly caused by both abiotic factors (changes in hydraulic conditions, water pollution), but also to the natural sucession processes. No quality increase has been reported for any country. Experts provided little opinion about past and future trends in quality degradation.

Criterion E: Quantitative analysis to evaluate risk of habitat collapse

Criterion E	Probability of collapse
EU 28	unknown

Criterion E	Probability of collapse
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	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)

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