G3.Da Pinus mire woodland

Summary

This habitat comprises various *Pinus* woodlands growing on shallow to deep peats and peaty mineral soils sustained by high ground water in gentle depressions on plains, on river terraces and at the margins of treeless mires throughout the boreal and more locally in the nemoral zones, though more scattered further south and west. An uneven age structure among the trees is characteristic of natural sites but tree cover can be sparse with low-growing individuals when the associated flora is very similar to the open mire surface, while under more closed canopies, shade-tolerant species prevail. The field layer has dwarf shrubs, peat-forming *Sphagna w*ith big pleurocarpous mosses on drier hummocks. Trickles of moving water can sustain a more minerotrophic flora. Drainage of peatlands for forestry, forest cuttings, peat extraction, eutrophication due to pollution and climate change will continue to be the most important pressures in the future. Establishing protected areas, controlling hydrology and improving forestry are conservation needs.

Synthesis

The habitat is assessed as Vulnerable under criterion A1 in the EU 28, as there has been a 35% reduction in quantity over the past 50 years. However, the area of the habitat is currently stable, since drainage of new peatland sites for forestry is not practiced any more in Northern Europe. The habitat quality continues to decline in most EU 28 countries. Trend data on reduction in quantity were missing from Austria, Latvia, Norway and Serbia. Trend data on reduction in quality was missing from Austria, Estonia, Italy, Latvia, Norway, Serbia and Slovakia. Six of the countries (including Norway) reported their data of this type combined with the type G3.Db Picea mire woodland. This habitat type is assessed as Data Deficient in the EU 28+ region since a relatively large part of its area may lie within Norway but precise values are unknown due to the combination of this habitat type with type G3. Db Picea mire woodland.

Overall Category & Criteria			
EU 28		EU 28+	
Red List Category	Red List Criteria	Red List Category	Red List Criteria
Vulnerable	A1	Data Deficient	-

Sub-habitat types that may require further examination

No sub-habitats have been distinguished for further analysis.

Habitat Type

Code and name

G3.Da Pinus mire woodland

Pinus sylvestris mire woodland with *Pinus sylvestris* and *Sphagnum fuscum* at Shiroka Polyana, Bulgaria (Photo: Petra Hájková).

Mire woodland with *Pinus sylvestris*, *Sphagnum fuscum* and *Sphagnum magellanicum* at the quaking mire Matysa, Latvia (Photo: Petra Hájková).

Habitat description

These are coniferous woodlands of shallow to deep peats and peaty mineral soils sustained by high ground water in gentle depressions on plains, on river terraces and at the margins of treeless mires throughout the boreal and more locally in the nemoral zones. The Pinus mire woodland can develop on a clearly ombrotrophic active bog surface on deep peat, but it can also be minerotrophic, located on shallower peaty soils at mire margins, though it could be more extensive on the mire surface. Tree cover can be sparse with low-growing individuals when the associated flora is very similar to the open mire surface, while under more closed canopies, shade-tolerant species prevail. An uneven age structure among the trees is characteristic of natural sites. *Pinus* species are the canopy dominant, mostly *Pinus sylvestris* but there are distinct subtypes with *Pinus mugo s.l.* (including *Pinus uncinata* ssp. *uliginosa = P. rotundata, Pinus x rhaetica, Pinus mugo s.str., Pinus x ascendens*). *Pinus* growth forms vary from upright tree form to more compact low-growth forms. *Picea abies* ssp. *abies* and ssp. *obovata*, *Betula pubescens* and *Salix* spp. are common associates. The field layer has such dwarf shrubs as *Vaccinium myrtillus, V. uliginosum, V. oxycoccos, V. vitis-idaea, Ledum palustre, Chamaedaphne calyculata, Rubus chamaemorus* with *Eriophorum vaginatum, Carex globularis* and peat-forming *Sphagna* like *S. angustifolium, S. fuscum* and *S. magellanicum* with big pleurocarpous mosses on drier hummocks. Trickles of moving water can sustain more minerotrophic species such as *Menyanthes trifoliata, Equisetum fluviatile, E. palustre* and *Comarum palustre*.

Indicators of quality:

- No forest exploitation.
- Intact natural mire hydrology.
- Natural composition of canopy with dominant *Pinus* species.

• Structural diversity/complexity with (semi)natural age structure or completeness of layers.

• Presence of old trees and a variety of dead wood (lying or standing) and the associated flora, fauna and fungi.

• Long historical continuity (ancient woodland) with high species diversity.

• Absence of non-native species in all layers (flora and fauna).

• No signs of eutrophication or pollution

Characteristic species:

Tree canopy: *Pinus sylvestris, Pinus mugo, P. x rhaetica, P. x ascendens s.l., Pinus uncinata* ssp. *uliginosa, Betula pubescens, Frangula alnus.*

Field layer: *Vaccinium uliginosum, V. oxycoccos, Ledum palustre, Chamaedaphne calyculata, Calluna vulgaris, Empetrum nigrum, Eriophorum vaginatum, E. angustifolium, Carex globularis, Molinia caerulea, Andromeda polifolia, Drosera rotundifolia*.

Bryophytes: *Sphagnum russowii, S. fallax, S. flexuosum, S. fuscum, S.m capillifolium, S.magellanicum, Dicranum bergeri, Polytrichum commune, P. strictum, Mylia anomala, Aulacomnium palustre.*

Classification

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

EUNIS:

G3.D Boreal bog conifer woodland

G3.E Temperate bog conifer woodland

EuroVegChecklist alliances:

Eriophoro-Pinion sylvestris Passarge 1968

Vaccinio uliginosi-Pinion sylvestris Passarge 1968

Annex I:

91D0 Bog woodland

Emerald:

G3.D Boreal bog conifer woodland

G3.E Nemoral bog conifer woodland

MAES-2:

Woodland and forest

IUCN:

1.1 Boreal Forest

1.4 Temperate Forest

EFT:

11.1 Conifer dominated or mixed mire forests

VME:

Boreal and hemiboreal pine forests

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

Justification
This is an azonal habitat type, which occurs in several biogeographic regions.

Geographic occurrence and trends

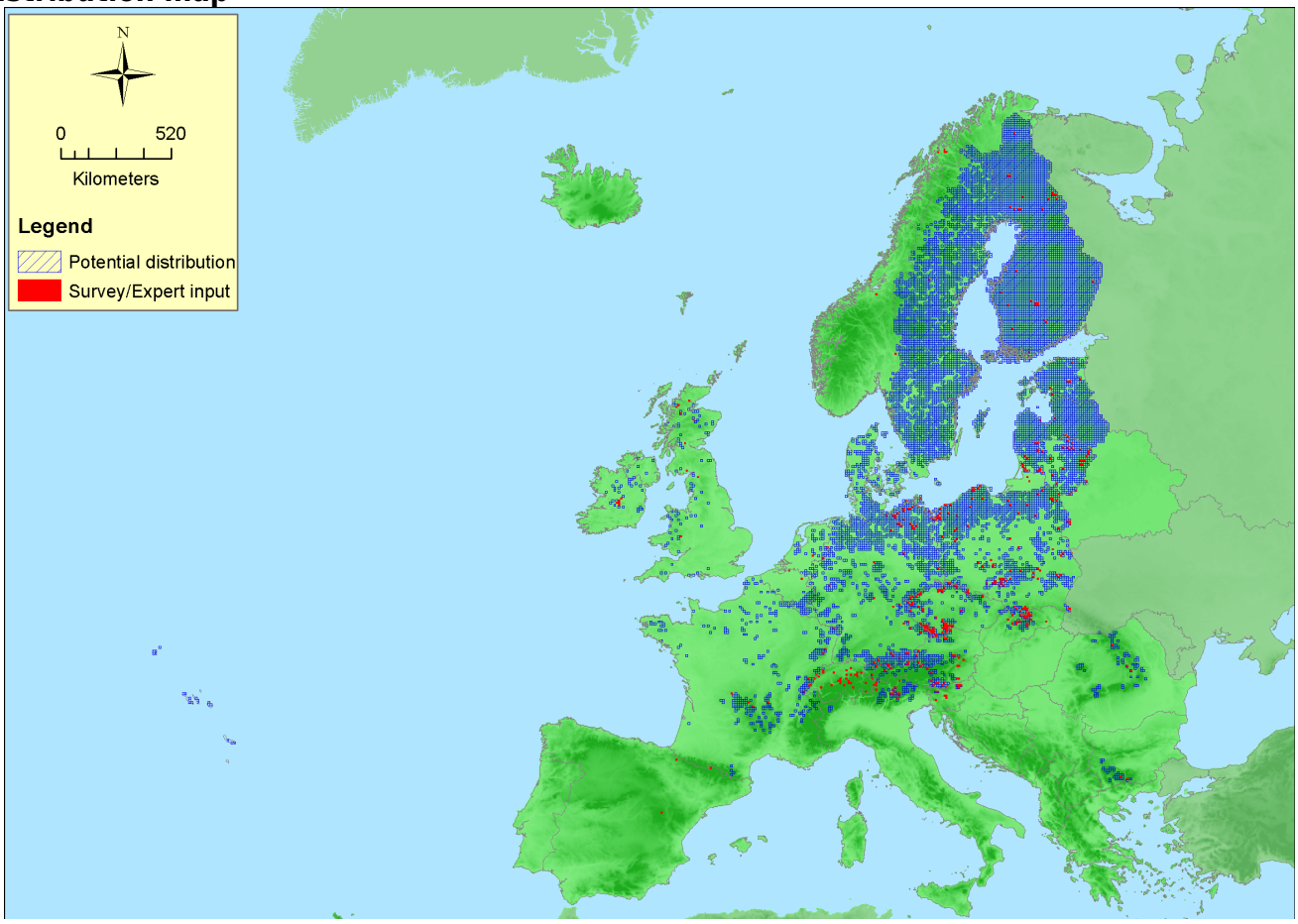
EU 28	Present or Presence Uncertain	Current area of habitat	Recent trend in quantity (last 50 yrs)	Recent trend in quality (last 50 yrs)
Austria	Present	0-10 Km^2	Unknown	Decreasing
Bulgaria	Present	0.7 Km^2	Decreasing	Decreasing
Czech Republic	Present	55 Km^2	Decreasing	Decreasing
Estonia	Present	434 Km^2	Decreasing	Unknown
Finland	Aland Islands: Present Finland mainland: Present	17,100 Km^2	Decreasing	Decreasing
France	Corsica: Uncertain France mainland: Present	0-80 Km^2	Increasing	Decreasing
Germany	Present	110 Km^2	Decreasing	Decreasing
Italy	Italy mainland: Present Sardinia: Uncertain Sicily: Uncertain	10-16 Km^2	Stable	Decreasing
Latvia	Present	39 Km^2	Decreasing	Decreasing
Lithuania	Present	465-470 Km^2	Increasing	Decreasing
Poland	Present	250 Km^2	Decreasing	Decreasing
Romania	Present	0-50 Km^2	Decreasing	Decreasing
Slovakia	Present	0-30 Km^2	Decreasing	Unknown
Slovenia	Present	0-11 Km^2	Stable	Decreasing
Sweden	Present	16,379 Km^2	Increasing	Decreasing
UK	United Kingdom: Present	10 Km^2	Stable	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)
Bosnia and Herzegovina	Present	0.2 Km^2	Stable	Decreasing
Norway	Norway Mainland: Present	0-2,670 Km^2	Decreasing	Unknown
Serbia	Present	Unknown Km^2	Unknown	Unknown
Switzerland	Present	17 Km^2	Decreasing	Decreasing

Extent of Occurrence, Area of Occupancy and habitat area

	Extent of Occurrence (EOO)	Area of Occupancy (AOO)	Current estimated Total Area	Comment
EU 28	>50,000 Km^2	>50	> 34,859 Km^2	The area is without countries which gave data for G3.D/E only
EU 28+	>50,000 Km^2	>50	> 34,876 Km^2	The area is without Norway and other countries which gave data for G3.D/E only

Distribution map



The map is very incomplete, but potential distribution is given (based on Annex I type 91D0) for the EU. Data sources: EVA, Art17.

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

Less than 50% of the current distribution of the habitat type lies within the EU28. There are large areas of this habitat in Russia and in Norway, and some area also in other countries outside EU 28.

Trends in quantity

There is a 35% decrease in the EU 28 region, calculated with trend data based on all countries except Austria and Latvia. Calculating trends in quantity for the EU 28+ region was not possible, since trend data were missing from Norway. The greatest decrease (55%) occurred in Finland, which also has the largest area of this habitat. The most important reason for the decline has been by far the drainage of peatlands for forestry. The area of the habitat is currently more or less stable. In the future the habitat will decrease in the nemoral and boreonemoral zones as the threats continue to persist and will remain stable in the boreal zone, where drainage of new peatland sites for forestry is not practiced any more.

Austria, Romania, Slovenia, Norway, Slovakia and France have reported this type and G3.Db Picea mire woodland together. In these cases areas above are given in the form 0-total, i.e. assuming that the area could be anything from 0 km^2 to the total reported by the country. Trend calculations for EU 28 were made using both 0 km^2 and the total reported. The result did not differ much, since all of these countries, except Norway, had a very small area of this type.

In the territorial data of some countries it is unclear whether drained mires are included in the reported area or not. For instance, in the territorial data of Sweden the area of the habitat has increased 13.5% in the past 50 years, even though it is known that some drainage has occurred during that time. On the other hand, the territorial data of Finland reports area of undrained mires only, which explains the drastic decline.

- Average current trend in quantity (extent)
  EU 28: Stable
  EU 28+: Unknown
- Does the habitat type have a small natural range following regression?
  No
  Justification
  The habitat has a very large area and a wide distribution in Europe.
- Does the habitat have a small natural range by reason of its intrinsically restricted area?
  No
  Justification
  The habitat has a very large area and a wide distribution in Europe.

Trends in quality

There has been a slight decline (30%) in the quality of this habitat, affecting 28% of its extent, calculated based on trend data from all countries except Austria, Slovakia, Italy, Estonia and Latvia. Calculating a trend in quality for the EU 28+ region was not possible, since quality data from Norway were missing. The degradation of this habitat has been both abiotic and biotic. The most important reasons for the decline in quality are drainage of peatlands for forestry and forest cuttings. The current trend is decreasing in almost all countries, and it is possible that in the future climate change will also have negative effects on the quality of this habitat type.

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

Pressures and threats

Drainage of peatlands for forestry, forest cuttings, peat extraction, eutrophication due to pollution (especially on ombrotrophic and oligotrophic sites), and climate change are the main threats to this habitat. In many countries, drainage of new peatland sites is not practiced any more. There is not much scientific knowledge available on development of bog ecosystems with developing secondary stands after clear-cutting. The influence of climate change is likely to increase in the future.

List of pressures and threats

Sylviculture, forestry

- Forestry clearance
- Removal of dead and dying trees
- Use of fertilizers (forestry)
- Forestry activities not referred to above

Mining, extraction of materials and energy production

- Peat extraction

Pollution

- Nitrogen-input

Natural System modifications

- Human induced changes in hydraulic conditions
  - Other human induced changes in hydraulic conditions

Climate change

- Temperature changes (e.g. rise of temperature & extremes)
- Habitat shifting and alteration

Conservation and management

The most common approaches currently involve establishing protected areas/sites, establishing wilderness areas, restoring/improving habitats, usually by restoring hydrological conditions and adapting forest management. Some of the additional actions needed include further optimizing the use of funds for conservation (what kind of areas are chosen for conservation and where), further improving methods for conservation/nature management in managed forests (e.g. regarding deadwood), adptation of spatial planning (roads, etc.), and bringing climate change under control.

List of conservation and management needs

Measures related to forests and wooded habitats

- Restoring/Improving forest habitats
- Adapt forest management

Measures related to wetland, freshwater and coastal habitats

- Restoring/Improving the hydrological regime

Measures related to spatial planning

- Establish protected areas/sites
- Establishing wilderness areas/allowing succession

Conservation status

91D0: ALP FV, ATL U2, BOR U1, CON U1, MAC U1, PAN U1

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

The habitat has a potential to recover, but recovery will be very slow. It always requires restoration of hydrological conditions.

Effort required

50+ years	200+ years
Through intervention	Naturally

Red List Assessment

Criterion A: Reduction in quantity

Criterion A	A1	A2a	A2b	A3
EU 28	35 %	Unknown %	Unknown %	Unknown %
EU 28+	Unknown %	Unknown %	Unknown %	Unknown %

During the past 50 years there has been a 35% reduction in the quantity of this habitat in the EU 28, based on territorial data, and the habitat is therefore assessed as Vulnerable under criterion A1. Data on quantitative trends in Austria, Latvia, Norway and Serbia are missing. A relatively large area of this habitat type may lie within Norway, and, due to the lack of quantitative data, the habitat is assessed as Data Deficient under criterion A in the EU 28+. There is no information on future or historic reductions for this habitat type.

Criterion B: Restricted geographic distribution

Criterion B	B1				B2				B3
	EOO	a	b	c	AOO	a	b	c	
EU 28	>50,000 Km^2	Yes	Yes	Unknown	>50	Yes	Yes	Unknown	No
EU 28+	>50,000 Km^2	Unknown	Unknown	Unknown	>50	Unknown	Unknown	Unknown	No

This habitat is very widely distributed and occupies a very large area. Its extent of occurrence (EOO) is larger than 50,000 km^2 and its area of occupancy (AOO) is larger than 50. It is therefore assessed as Least Concern under 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	28 %	30 %	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%

In the past 50 years, 28% of the habitat area in the EU 28 was affected by a slight reduction in quality (30% relative severity), and this habitat is therefore assessed as Least Concern under criteria C/D1. The type of quality degradation was usually both abiotic and biotic. A majority of the area with reduced quality was affected with mild severity. Trend data of qualitative degradation were missing in Austria, Estonia, Italy, Latvia, Norway, Serbia, and Slovakia. A relatively large part of the area of this type may lie within Norway, and this habitat is, therefore, assessed as Data Deficient under Criterion C/D in the EU 28+.

Criterion E: Quantitative analysis to evaluate risk of habitat collapse

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

There is no analysis available on the probability of collapse of this habitat, which is therefore assessed as Data Deficient under criterion E.

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	VU	DD	DD	DD	LC	LC	LC	LC	DD	DD	DD	DD	DD	DD	DD	DD	DD
EU28+	DD	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
Vulnerable	A1	Data Deficient	-

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

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