Ramsar Information Sheet

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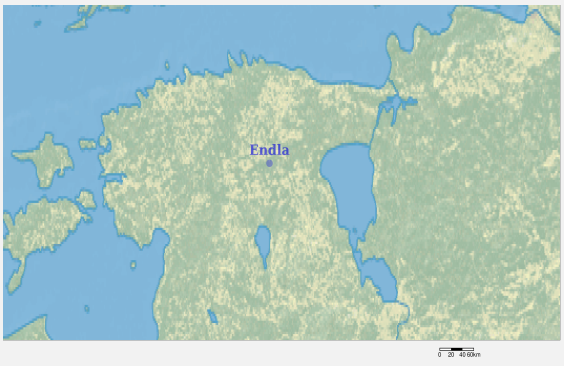
Estonia

Endla



Designation date	5 June 1997
Site number	907
Coordinates	58°52'20"N 26°08'31"E
Area	10 110,00 ha

Color codes

Fields back-shaded in light blue relate to data and information required only for RIS updates.

Note that some fields concerning aspects of Part 3, the Ecological Character Description of the RIS (tinted in purple), are not expected to be completed as part of a standard RIS, but are included for completeness so as to provide the requested consistency between the RIS and the format of a 'full' Ecological Character Description, as adopted in Resolution X.15 (2008). If a Contracting Party does have information available that is relevant to these fields (for example from a national format Ecological Character Description) it may, if it wishes to, include information in these additional fields.

1 - Summary

Summary

The site (nationally protected as Endla nature reserve) is the best preserved central part of the large Endla mire system on the southern slope of Pandivere Upland in Central Estonia. Important and varied freshwater system represents a complex of karst springs, rivers, freshwater lakes, mires and swamp forests supporting rich diversity of species. The mires are the result of postglacial paludification of large and flat Endla Hollow. The forests are marshy satiated by the excessive groundwater flow down the upland slopes. Rivers, strips of forests and Lake Endla separate eight bog massifs - Linnusaare, Toodiksaare, Kanamatsi, Kaasikjärve, Männikjärve, Teosaare, Rummallika, Punaraba.
The site is an important area for scientific studies. Research on paludification processes, contributing factors and principles in Estonia was first launched in the Männikjärve Bog in the eastern part of the Endla reserve in 1910.

2 - Data & location

2.1 - Formal data

2.1.1 - Name and address of the compiler of this RIS

Compiler 1

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2.1.2 - Period of collection of data and information used to compile the RIS

From year	2012
To year	2019

2.1.3 - Name of the Ramsar Site

Official name (in English, French or Spanish)	Endla

2.1.4 - Changes to the boundaries and area of the Site since its designation or earlier update

(Update) A. Changes to Site boundary	Yes ◉ No ○
(Update) The boundary has been delineated more accurately	☑
(Update) The boundary has been extended	☐
(Update) The boundary has been restricted	☐
(Update) B. Changes to Site area	the area has increased
(Update) The Site area has been calculated more accurately	☐
(Update) The Site has been delineated more accurately	☑
(Update) The Site area has increased because of a boundary extension	☐
(Update) The Site area has decreased because of a boundary restriction	☐

2.1.5 - Changes to the ecological character of the Site

(Update) 6b i. Has the ecological character of the Ramsar Site (including applicable Criteria) changed since the previous RIS?	No

(Update) Optional text box to provide further information

No principal change but due to restoration projects carried out in 2013-2019 hydrological conditions and quality of habitats of several bog massifs (Toodiksaare, Linnusaare, Kaasikjärve) is improving.

2.2 - Site location

2.2.1 - Defining the Site boundaries

b) Digital map/image

<1 file(s) uploaded>

Former maps	0

Boundaries description

The boundary is the same as an existing protected area (Endla Nature Reserve)

2.2.2 - General location

a) In which large administrative region does the site lie? Jõgeva,Järva,Lääne-Viru Counties

b) What is the nearest town or population centre? Jõgeva; Tartu

2.2.3 - For wetlands on national boundaries only

a) Does the wetland extend onto the territory of one or more other countries? Yes ○ No ◉

b) Is the site adjacent to another designated Ramsar Site on the territory of another Contracting Party? Yes ○ No ◉

2.2.4 - Area of the Site

Official area, in hectares (ha): 10110

Area, in hectares (ha) as calculated from GIS boundaries: 10162.29

2.2.5 - Biogeography

Biogeographic regions

Regionalisation scheme(s)	Biogeographic region
EU biogeographic regionalization	1. Boreal
Freshwater Ecoregions of the World (FEOW)	2. terrestrial area Sarmatic mixed forests freshwater area Southern Baltic Lowlands temperate floodplain rivers and wetlands

Other biogeographic regionalisation scheme

1. EEA, European Environment Agency, http://www.eea.europa.eu/publications/report_2002_0524_154909

2. Olson, D. M, E. Dinerstein, E.D. Wikramanayake, N.D. Burgess, G.V.N. Powell, E.C. Underwood, J.A. D'amico, I. Itoua, H.E. Strand, J.C. Morrison, C.J. Loucks, T.F. Allnutt, T.H. Ricketts, Y. Kura, J.F. Lamoreux, W.W.Wettengel, P. Hedao, & K.R. Kassem. 2001. Terrestrial Ecoregions of the World: A New Map of Life on Earth. - BioScience 51:933-938.
Abell, R., Thieme, M. L., Revenga, C., Bryer, M., Kottelat, M., Bogutskaya, N., Coad, B., Mandrak, N., Contreras Balderas, S., Bussing, W., Stiassny, M., Skelton, P., Allen, G., Unmack, P., Naseka, A., Ng, R., Sindorf, N., Robertson, J., Armijo, E., Higgins, J., Heibel, T.J., Wikramanayake, E., Olson, D., Lopez, H. L., Reis, R. E., Lundberg, J.G., Sabaj Perez, M.H., Petry P., 2008, Freshwater Ecoregions of theWorld: A New Map of Biogeographic Units for Freshwater Biodiversity Conservation. - BioScience 58: 403-414.

3 - Why is the Site important?

3.1 - Ramsar Criteria and their justification

☑ Criterion 1: Representative, rare or unique natural or near-natural wetland types

Hydrological services provided	The site belongs to the hydrogeologically complex region of the Pandivere Upland where the ground- and surface water is connected through karst phenomena. It has an important role in the recharge and discharge of surface and ground water as well as in maintenance of water quality in Central Estonia (mire system acts as the natural purification system for waters derived from agricultural upland area).
Other ecosystem services provided	Biodiversity maintenance. Soil (peat) formation. Nutrient cycling. Water purification. Climate change mitigation. Pollution control and detoxification. Aesthetic and landscape values. Spiritual and inspirational services. Recreation and tourism. Scientific and educational services.
Other reasons	The site is a good representative of natural and near-natural non-forested peatlands (bogs and fens), forested peatlands (peatswamp forests), paludifying forests, freshwater lakes, permanent rivers as well as the whole mosaic wetland complex, characteristic of the Boreal Biogeographical region. The copious karst spring area laying on the territory of approximately 30 sq.km with more than 30 springs is unique for the Boreal biogeographical region.

☑ Criterion 2 : Rare species and threatened ecological communities

☑ Criterion 3 : Biological diversity

Justification	The site supports populations of plant and animal species important for maintaining the biological diversity of the Boreal Biogeographical Region. It is especially important in maintaining the geographic range of plant species and communities common to raised bogs.

☑ Criterion 4 : Support during critical life cycle stage or in adverse conditions

3.2 - Plant species whose presence relates to the international importance of the site

Scientific name	Common name	Criterion 2	Criterion 3	Criterion 4	IUCN Red List	CITES Appendix I	Other status	Justification
Carex magellanica irrigua		☑	☐	☐		☐	EN in Red List of Estonia	Protected species (II category).
Corallorhiza trifida	Coralroot Orchid	☑	☐	☐		☐	EN in Red List of Estonia	Protected species (II category). Number of localities is decreasing
Cypripedium calceolus	Lady´s Slipper	☑	☑	☐	LC	☐	Annex II of EU Habitats Directive	Protected species (II category)
Malaxis monophyllos	Sigle-leaf Malaxis	☑	☐	☐		☐	VU in Red List of Estonia	Protected species (II category)
Neottia cordata	Lesser Twayblade	☑	☐	☐	LC	☐	VU in Red List of Estonia	Protected species (II category)
Nuphar pumila	Least Water-lily	☑	☐	☐	LC	☐	VU in Red List of Estonia	Protected species (III category).
Pedicularis sceptrum-carolinum	Moor-king Lousewort	☑	☐	☐		☐	EN in Red List of Estonia	Protected species (II category). Rare and decreasing in Estonia
Rubus arcticus	Arctic Bramble	☑	☑	☐	LC	☐	CR in Red List of Estonia	Protected species (II category). Extremely rare in Estonia
Saussurea alpina	Alpine Saw-wort	☑	☐	☐		☐	Annex II of EU Habitats Directive	Endemic species Saussurea alpina ssp esthonica. Protected (II category)

3.3 - Animal species whose presence relates to the international importance of the site

Phylum	Scientific name	Common name	Species qualifies under criterion				Species contributes under criterion				Pop. Size	Period of pop. Est.	% occurrence 1)	IUCN Red List	CITES Appendix I	CMS Appendix I	Other Status	Justification
			2	4	6	9	3	5	7	8								
Birds																		
CHORDATA/ AVES	*Accipiter gentilis*	Northern Goshawk	☑	☐	☐	☐	☑	☐	☐	☐	4	2016		LC	☐	☐	Annex I of EU Bird Directive	4-6 pairs
CHORDATA/ AVES	*Alcedo atthis*	Common Kingfisher	☑	☑	☐	☐	☑	☐	☐	☐	3	2018		LC	☐	☐	Annex I of EU Bird Directive	2-3 breeding pairs
CHORDATA/ AVES	*Aquila chrysaetos*	Golden Eagle	☑	☑	☐	☐	☑	☐	☐	☐	1	2018		LC	☐	☐	VU in Red List of Estonia: Annex I of EU Bird Directive	Criterion 4: important breeding area for the strictly protected (I category) species
CHORDATA/ AVES	*Aquila pomarina*	Lesser Spotted Eagle	☑	☑	☐	☐	☑	☐	☐	☐	1	2016		LC	☐	☐	Annex I of EU Bird Directive	1-2 breeding pairs
CHORDATA/ AVES	*Botaurus stellaris*	Eurasian Bittern	☑	☑	☐	☐	☑	☐	☐	☐	3	2016		LC	☐	☐	Annex I of Council directive 2009/147/EEC	1-3 breeding pairs
CHORDATA/ AVES	*Caprimulgus europaeus*	European Nightjar	☑	☑	☐	☐	☑	☐	☐	☐	40	2016		LC	☐	☐	Annex I of EU Bird Directive	40-60 breeding pairs
CHORDATA/ AVES	*Chlidonias niger*	Black Tern	☑	☑	☐	☐	☑	☐	☐	☐	20	2018		LC	☐	☐	Annex I of Council directive 2009/147/EEC	20-50 breeding pairs
CHORDATA/ AVES	*Circus aeruginosus*	Western Marsh Harrier	☑	☑	☐	☐	☑	☐	☐	☐	4	2018		LC	☐	☐	Annex I of Council directive 2009/147/EEC	2-4 breeding pairs
CHORDATA/ AVES	*Circus pygargus*	Montagu's Harrier	☑	☑	☐	☐	☑	☐	☐	☐	3	2018		LC	☐	☐	Annex I of Council directive 2009/147/EEC	2-4 breeding pairs
CHORDATA/ AVES	*Crex crex*	Corn Crake	☑	☑	☐	☐	☑	☐	☐	☐	4	2018		LC	☐	☐	Annex I of Council directive 2009/147/EEC	2-5 breeding pairs
CHORDATA/ AVES	*Cygnus columbianus bewickii*	Bewick´s Swan	☑	☐	☐	☐	☐	☐	☐	☐					☐	☐	Annex I of EU Bird Directive 2009/147/EEC	Only during stop-over migration

Phylum	Scientific name	Common name	Species qualifies under criterion				Species contributes under criterion				Pop. Size	Period of pop. Est.	% occurrence 1)	IUCN Red List	CITES Appendix I	CMS Appendix I	Other Status	Justification
			2	4	6	9	3	5	7	8								
CHORDATA/ AVES	*Cygnus cygnus*	Whooper Swan	☑	☑	☐	☐	☐	☐	☐	☐	4	2018		LC	☐	☐	Annex I of EU Bird Directive	breeding; Migration stop-over migration
CHORDATA/ AVES	*Falco columbarius*	Merlin	☑	☑	☐	☐	☐	☐	☐	☐	2	2018		LC	☐	☐	Annex I of EU Bird Directive	1-2 breeding pairs
CHORDATA/ AVES	*Ficedula parva*	Red-breasted Flycatcher	☑	☑	☐	☐	☑	☐	☐	☐	300	2016		LC	☐	☐	Annex I of EU Bird Directive	300-400 breeding pairs
CHORDATA/ AVES	*Grus grus*	Common Crane	☑	☑	☐	☐	☑	☐	☐	☐	16	2018		LC	☐	☐	Annex I of Council directive 2009/147/EEC	10-15 breeding pairs
CHORDATA/ AVES	*Haliaeetus albicilla*	White-tailed Eagle	☑	☑	☐	☐	☐	☐	☐	☐	1			LC	☑	☑	Annex I of EU Bird Directive	Criterion 4: important breeding area for the strictly protected (I category) species
CHORDATA/ AVES	*Hydrocoloeus minutus*	Little Gull	☑	☑	☐	☐	☐	☐	☐	☐	7	2018		LC	☐	☐	Annex I of Council directive 2009/147/EEC	1-10 breeding pairs
CHORDATA/ AVES	*Lanius collurio*	Red-backed Shrike	☑	☑	☐	☐	☐	☐	☐	☐	5	2018		LC	☐	☐	Annex I of Council directive 2009/147/EEC	5-10 breeding pairs
CHORDATA/ AVES	*Lyrurus tetrix*	Black Grouse; Eurasian Black Grouse	☑	☑	☐	☐	☑	☐	☐	☐	45	2018		LC	☐	☐	Annex I of EU Bird Directive	40-100 breeding pairs
CHORDATA/ AVES	*Numenius arquata*	Eurasian Curlew	☑	☑	☐	☐	☐	☐	☐	☐	14	2018		NT	☐	☐	Vulnerable in Europe by the IUCN Red list	2-15 breeding pairs
CHORDATA/ AVES	*Pandion haliaetus*	Osprey; Western Osprey	☑	☑	☐	☐	☐	☐	☐	☐	1	2016		LC	☐	☐	VU in Red List of Estonia: Annex I of EU Bird Directive	1-2 pairs. Strongly protected (I category)
CHORDATA/ AVES	*Pluvialis apricaria*	European Golden Plover; European Golden-Plover	☑	☑	☐	☐	☑	☐	☐	☐	23	2018		LC	☐	☐	Annex I of Council directive 2009/147/EEC	10-25 breeding pairs
CHORDATA/ AVES	*Porzana parva*	Little Crake	☑	☑	☐	☐	☑	☐	☐	☐	3	2018			☐	☐	Annex I of EU Bird Directive	2-5 breeding pairs
CHORDATA/ AVES	*Porzana porzana*	Spotted Crake	☑	☑	☐	☐	☑	☐	☐	☐	2	2018		LC	☐	☐	Annex I of EU Bird Directive	1-10 breeding pairs
CHORDATA/ AVES	*Sterna hirundo*	Common Tern	☑	☑	☐	☐	☐	☐	☐	☐	18	2018		LC	☐	☐	Annex I of EU Bird Directive	10-20 breeding pairs
CHORDATA/ AVES	*Strix uralensis*	Ural Owl	☑	☑	☐	☐	☐	☐	☐	☐	5	2018		LC	☐	☐	Annex I of EU Bird Directive	4-6 breeding pairs
CHORDATA/ AVES	*Tetrao urogallus*	Western Capercaillie	☑	☑	☐	☐	☑	☐	☐	☐	30	2016		LC	☐	☐	Annex I of EU Bird Directive	30-35 ind
CHORDATA/ AVES	*Tetrastes bonasia*	Hazel Grouse	☑	☑	☐	☐	☐	☐	☐	☐	70	2018			☐	☐	Annex I of EU Bird Directive	60-80 breeding pairs
CHORDATA/ AVES	*Tringa glareola*	Wood Sandpiper	☑	☑	☐	☐	☑	☐	☐	☐	30	2018		LC	☐	☐	Annex I of EU Bird Directive	30-50 pairs
CHORDATA/ AVES	*Vanellus vanellus*	Northern Lapwing	☑	☐	☐	☐	☐	☐	☐	☐	20	2018		NT	☐	☐	Vulnerable in Europe by the IUCN Red list	10-12 pairs
Fish, Mollusc and Crustacea																		
CHORDATA/ ACTINOPTERYGII	*Cobitis taenia*	Spiny loach	☑	☐	☐	☐	☐	☐	☐	☐				LC	☐	☐	Annex II of EU Habitats Directive	
CHORDATA/ ACTINOPTERYGII	*Cottus gobio*	Common bullhead	☑	☐	☐	☐	☐	☐	☐	☐				LC	☐	☐	Annex II of EU Habitats Directive	
CHORDATA/ ACTINOPTERYGII	*Misgurnus fossilis*	Mud loach	☑	☐	☐	☐	☐	☐	☐	☐				LC	☐	☐	Annex II of EU Habitats Directive	
Others																		
CHORDATA/ MAMMALIA	*Alces alces*	Moose	☐	☑	☐	☐	☑	☐	☐	☐				LC	☐	☐		Criterion 4: The site supports animal species at a critical stage in their life cycles as refuge for animals with large habitat requirements

Phylum	Scientific name	Common name	Species qualifies under criterion				Species contributes under criterion				Pop. Size	Period of pop. Est.	% occurrence 1)	IUCN Red List	CITES Appendix I	CMS Appendix I	Other Status	Justification
			2	4	6	9	3	5	7	8								
CHORDATA/ MAMMALIA	*Canis lupus*	Wolf	☑	☑	☐	☐	☑	☐	☐	☐				LC	☑	☐		Criterion 4: The site supports animal species at a critical stage in their life cycles as refuge for animals with large habitat requirements
ARTHROPODA/ INSECTA	*Dytiscus latissimus*		☑	☐	☐	☐	☐	☐	☐	☐				VU	☐	☐	Annex II of EU Habitats Directive	
ARTHROPODA/ INSECTA	*Graphoderus bilineatus*		☑	☐	☐	☐	☐	☐	☐	☐				VU	☐	☐	Annex II of EU Habitats Directive	
CHORDATA/ MAMMALIA	*Lutra lutra*	European Otter	☑	☐	☐	☐	☑	☐	☐	☐				NT	☑	☐	Annexes II and IV of EU Habitats Directive	
CHORDATA/ MAMMALIA	*Lynx lynx*	Eurasian Lynx	☐	☑	☐	☐	☑	☐	☐	☐				LC	☐	☐		Criterion 4: The site supports animal species at a critical stage in their life cycles as refuge for animals with large habitat requirements
ARTHROPODA/ INSECTA	*Ophiogomphus cecilia*	Green Snaketail	☑	☐	☐	☐	☐	☐	☐	☐				LC	☐	☐	Annex II of EU Habitats Directive	
CHORDATA/ MAMMALIA	*Ursus arctos*	Brown Bear; Grizzly Bear	☑	☑	☐	☐	☑	☐	☐	☐				LC	☑	☐		Criterion 4: The site supports animal species at a critical stage in their life cycles as refuge for animals with large habitat requirements

1) Percentage of the total biogeographic population at the site

The site is a breeding area for number of bird species of EU conservation interest listed in Annex I of EU Birds Directive.

Data source: survey of breeding birds of Lake Endla and Lake Sinijärv (2018) and of eight bog massifs (2018).

3.4 - Ecological communities whose presence relates to the international importance of the site

Name of ecological community	Community qualifies under Criterion 2?	Description	Justification
Natural dystrophic lakes and ponds (3160)	☑		Annex I of EU Habitats Directive
Hard oligo-mesotrophic waters with bentic vegetation of Chara spp. (3140)	☑		Annex I of EU Habitats Direcrive
Fennoscandian deciduous swamp woods (*9080)	☑		Annex I of EU Habitats Directive, priority habitat type
Petrifying springs with tufa formations (*7220)	☑		Annex I of EU Habitats Directive, priority habitat type
Natural eutrophic lakes (3150)	☑		Annex I of EU Habitats Directive
Water courses (rivers and rivulets) (3260)	☑		Annex I of EU Habitats Directive
Hydrophilous tall herb fringe communities (6430)	☑		Annex I of EU Habitats Directive
Bog woodland (*91D0)	☑		Annex I of EU Habitats Directive, priority habitat type
Active raised bogs (*7110)	☑		Annex I of EU Habitats Directive, priority habitat type
Alkaline fens (7230)	☑		Annex I of EU Habitats Directive
Transition mires and quaking bogs (7140)	☑		Annex I of EU Habitats Directive, priority habitata type
Fennoscandian mineral-rich springs and springfens (7160)	☑		Annex I of EU Habitats Directive

Optional text box to provide further information

In Estonia management planning (inventories, monitoring and reporting) in protected sites is largely based on habitat types listed in Annex I of EU Habitats Directive.

Wetland habitats of Annex I occurring in Endla site are: hard oligo-mesotrophic waters with bentic vegetation of Chara spp. (3140), natural dystrophic lakes and ponds (3160), water courses of plain to montane levels with the Ranunculion fluitans and Callitricho-Batrachion vegetation (3260), hydrophilous tall herb fringe communities of plains and of the montane to alpine levels (6430), active raised bogs (*7110), transition mires and quaking bogs (7140), depressions on peat substrates of the Rhynchosporion (7150), alkaline fens (7230), Fennoscandian deciduous swamp woods (*9080) and bog woodland (*91D0).

Other important types are: Western taiga (*9010) and Fennoscandian herb-rich forests with Picea abies (9050).

4 - What is the Site like? (Ecological character description)

4.1 - Ecological character

Eight bog complexes surrounding large and shallow Endla Lake are separated by rivers and wet forests. The bogs typical for East-Estonia are characterized by their convex form and by a marked contour parallel system of pools, hollows and long-streched Sphagnum hummocks. Leatherleaf (Chamaedaphne calyculata) not growing in the West-Estonian bogs is characteristic here.
Lake Endla and Lake Sinijärv and four smaller relic lakes (remnants of the Great Endla Lake) are shallow and plant-rich, with large reed-bed areas.

4.2 - What wetland type(s) are in the site?

Inland wetlands

Wetland types (code and name)	Local name	Ranking of extent (1: greatest - 4: least)	Area (ha) of wetland type	Justification of Criterion 1
Fresh water > Flowing water >> M: Permanent rivers/ streams/ creeks		0	47	Representative
Fresh water > Lakes and pools >> O: Permanent freshwater lakes		3	343	Representative
Fresh water > Lakes and pools >> Tp: Permanent freshwater marshes/ pools		4	89	Representative
Fresh water > Marshes on inorganic soils >> Ts: Seasonal/ intermittent freshwater marshes/ pools on inorganic soils		0		Representative
Fresh water > Marshes on peat soils >> U: Permanent Non-forested peatlands		2	644	Representative
Fresh water > Marshes on inorganic soils >> W: Shrub-dominated wetlands		0	1	Representative
Fresh water > Marshes on inorganic soils >> Xf: Freshwater, tree-dominated wetlands		0	34	Representative
Fresh water > Marshes on peat soils >> Xp: Permanent Forested peatlands		1	5984	Representative
Fresh water > Flowing water >> Y: Permanent Freshwater springs; oases		0		Rare

Human-made wetlands

Wetland types (code and name)	Local name	Ranking of extent (1: greatest - 4: least)	Area (ha) of wetland type	Justification of Criterion 1
9: Canals and drainage channels or ditches		1	4	

Other non-wetland habitat

Other non-wetland habitats within the site	Area (ha) if known
Forests and small meadows on mineral soils	
forests and meadows on mineral soils	

4.3 - Biological components

4.3.1 - Plant species

Other noteworthy plant species

Scientific name	Common name	Position in range / endemism / other
Dactylorhiza fuchsii	Common Spotted Orchid	Protected species (III category)
Dactylorhiza incarnata	Early Marsh Orhid	protected species (III category)
Dactylorhiza maculata	Heath Spotted Orchid	Protected species (III category)
Epipactis palustris	Marsh Helleborine	Protected species (III category)
Goodyera repens	Creeping Ladyś Tresses	protected species (III category)
Gymnadenia conopsea	Fragrant Orchid	Protected speciea (III category)
Huperzia selago	Clubmoss	Protected species (III category)
Platanthera bifolia	Lesser Butterfly Orchid	Protected species (III category)
Viola uliginosa		Protected species (III category)

Optional text box to provide further information

Lists include 461 species of vascular plants and 165 moss species (among them 24 Sphagnum species).
32 vascylar plant species are nationaaly protected (I-III category).

4.3.2 - Animal species

Other noteworthy animal species

Phylum	Scientific name	Common name	Pop. size	Period of pop. est.	%occurrence	Position in range /endemism/other
CHORDATA/AVES	*Bucephala clangula*	Common Goldeneye	8			5-10 pairs
CHORDATA/MAMMALIA	*Castor fiber*	Eurasian Beaver		2012-2019		Characteristic and widely spread
CHORDATA/AVES	*Lanius excubitor*	Northern Shrike;Great Grey Shrike	4	2018		2-4 pairs
CHORDATA/AVES	*Tringa nebularia*	Common Greenshank	4	2018		1-4 breeding pairs
CHORDATA/AVES	*Tringa totanus*	Common Redshank	4	2018		1-4 breeding pairs

Optional text box to provide further information

The bird fauna includes 182 species, 153 of them are breeding birds.
34 species of mammals have been counted. The area belongs to the best habitats in Estonia for big carnivores such as Lynx (Lynx lynx), Wolf (Canis lupus) and Brown Bear (Ursus arctos), and also for Beaver (Castor fiber) and Otter (Lutra lutra).

The local fauna of dragonflies is very rich.

4.4 - Physical components

4.4.1 - Climate

Climatic region	Subregion
D: Moist Mid-Latitude climate with cold winters	Dfb: Humid continental (Humid with severe winter, no dry season, warm summer)

The site is situated in the transition zone from the sub-maritime to the sub-continental climate.
The coldest month is February (-7,5oC in average), the warmest month is July (16,5o C). Mean annual temperature is 4.2 o C. The mean annual precipitation is 670 mm per year (68% during the warm period). The number of rainy days is 170-180. Relative humidity of the air is relatively high through the whole year. The number of humid days with relative humidity more than 80% is 145-150.

4.4.2 - Geomorphic setting

a) Minimum elevation above sea level (in metres): 73

a) Maximum elevation above sea level (in metres): 88

- Entire river basin ☐
- Upper part of river basin ☐
- Middle part of river basin ☑
- Lower part of river basin ☐
- More than one river basin ☐
- Not in river basin ☐
- Coastal ☐

Please name the river basin or basins. If the site lies in a sub-basin, please also name the larger river basin. For a coastal/marine site, please name the sea or ocean.

Põltsamaa River

4.4.3 - Soil

Mineral ☑

(Update) Changes at RIS update: No change ◉ Increase ○ Decrease ○ Unknown ○

Organic ☑

(Update) Changes at RIS update: No change ◉ Increase ○ Decrease ○ Unknown ○

No available information ☐

Are soil types subject to change as a result of changing hydrological conditions (e.g., increased salinity or acidification)? Yes ○ No ◉

Please provide further information on the soil (optional)

Quaternary deposits (mainly boulder- and clay- rich moraine and fluvioglacial sediments).
Lake marl, gyttja and peat (with maximum thickness of up to 8 m) are widely spread.
Eutric and Dystric Histosols dominate.

4.4.4 - Water regime

Water permanence

Presence?	Changes at RIS update
Usually permanent water present	No change

Source of water that maintains character of the site

Presence?	Predominant water source	Changes at RIS update
Water inputs from surface water	☐	No change
Water inputs from rainfall / snowfall	☑	No change
Water inputs from groundwater	☑	No change

Water destination

Presence?	Changes at RIS update
To downstream catchment	No change
Feeds groundwater	No change

Stability of water regime

Presence?	Changes at RIS update
Water levels largely stable	No change

Please add any comments on the water regime and its determinants (if relevant). Use this box to explain sites with complex hydrology.

The site belongs to the hydrogeologically complex region of the Pandivere Upland where the ground- and surface water is connected through karst phenomena. It has important role in the recharge and discharge of surface and ground water as well as in maintenance of water quality (mire system acts as the natural purification system for waters derived from agricultural upland area).

4.4.5 - Sediment regime

Significant accretion or deposition of sediments occurs on the site ☑

(Update) Changes at RIS update: No change ◉ Increase ○ Decrease ○ Unknown ○

Significant transportation of sediments occurs on or through the site ☑

(Update) Changes at RIS update: No change ◉ Increase ○ Decrease ○ Unknown ○

Sediment regime unknown ☐

Please provide further information on sediment (optional):

Peat accumulation. Sediment transportation along rivers.

4.4.6 - Water pH

Acid (pH<5.5) ☑

(Update) Changes at RIS update: No change ◉ Increase ○ Decrease ○ Unknown ○

Circumneutral (pH: 5.5-7.4) ☑

(Update) Changes at RIS update: No change ◉ Increase ○ Decrease ○ Unknown ○

Unknown ☐

Please provide further information on pH (optional):

Acid in raised bogs, circumneutral in other habitats

4.4.7 - Water salinity

Fresh (<0.5 g/l) ☑

(Update) Changes at RIS update: No change ◉ Increase ○ Decrease ○ Unknown ○

Unknown ☐

4.4.8 - Dissolved or suspended nutrients in water

Eutrophic ☑

(Update) Changes at RIS update: No change ◉ Increase ○ Decrease ○ Unknown ○

Dystrophic ☑

(Update) Changes at RIS update: No change ◉ Increase ○ Decrease ○ Unknown ○

Unknown ☐

Please provide further information on dissolved or suspended nutrients (optional):

Eutric and Dystric Histosols dominate.

4.4.9 - Features of the surrounding area which may affect the Site

Please describe whether, and if so how, the landscape and ecological characteristics in the area surrounding the Ramsar Site differ from the site itself: i) broadly similar ○ ii) significantly different ◉

Surrounding area has greater urbanisation or development ☐

Surrounding area has higher human population density ☑

Surrounding area has more intensive agricultural use ☑

Surrounding area has significantly different land cover or habitat types ☑

Please describe other ways in which the surrounding area is different:

Surrounding areas are mainly in agricultural use. Main part of the catchment lies in the Pandivere Upland (north of the site). This is more densly populated region with most fertile soils in Estonia (brown soils and pseudopodzolic soils) and with intensive agriculture.

4.5 - Ecosystem services

4.5.1 - Ecosystem services/benefits

Provisioning Services

Ecosystem service	Examples	Importance/Extent/Significance
Food for humans	Sustenance for humans (e.g., fish, molluscs, grains)	Low
Wetland non-food products	Timber	Low

Regulating Services

Ecosystem service	Examples	Importance/Extent/Significance
Maintenance of hydrological regimes	Groundwater recharge and discharge	High
Pollution control and detoxification	Water purification/waste treatment or dilution	Medium
Climate regulation	Regulation of greenhouse gases, temperature, precipitation and other climactic processes	High

Cultural Services

Ecosystem service	Examples	Importance/Extent/Significance
Recreation and tourism	Nature observation and nature-based tourism	Medium
Recreation and tourism	Recreational hunting and fishing	Medium
Scientific and educational	Major scientific study site	Medium
Scientific and educational	Educational activities and opportunities	High
Scientific and educational	Long-term monitoring site	High
Scientific and educational	Important knowledge systems, importance for research (scientific reference area or site)	High

Supporting Services

Ecosystem service	Examples	Importance/Extent/Significance
Biodiversity	Supports a variety of all life forms including plants, animals and microorganizms, the genes they contain, and the ecosystems of which they form a part	High
Soil formation	Accumulation of organic matter	High
Nutrient cycling	Carbon storage/sequestration	High
Nutrient cycling	Storage, recycling, processing and acquisition of nutrients	Medium
Pollination	Support for pollinators	Low

Optional text box to provide further information

The site is practically uninhabited (3 inhabitants).
The forest use is limited (allowed only in on quarter of the area (limited management zone).
Lake Endla and Lake Sinijärv are popular among fishermen.
Nature tourism (regulated) is a growing activity.

Other ecosystem service(s) not included above:

Within the site: about 10

Have studies or assessments been made of the economic valuation of ecosystem services provided by this Ramsar Site? Yes ○ No ◉ Unknown ○

4.5.2 - Social and cultural values

i) the site provides a model of wetland wise use, demonstrating the application of traditional knowledge and methods of management and use that maintain the ecological character of the wetland ☐

ii) the site has exceptional cultural traditions or records of former civilizations that have influenced the ecological character of the wetland ☐

iii) the ecological character of the wetland depends on its interaction with local communities or indigenous peoples ☐

iv) relevant non-material values such as sacred sites are present and their existence is strongly linked with the maintenance of the ecological character of the wetland ☐

<no data available>

4.6 - Ecological processes

<no data available>

5 - How is the Site managed? (Conservation and management)

5.1 - Land tenure and responsibilities (Managers)

5.1.1 - Land tenure/ownership

Public ownership

Category	Within the Ramsar Site	In the surrounding area
National/Federal government	☑	☑

Private ownership

Category	Within the Ramsar Site	In the surrounding area
Other types of private/individual owner(s)	☑	☑

Provide further information on the land tenure / ownership regime (optional):

within the Ramsar site: mostly state owned, about 10 % in private ownership

in the surrounding area: state and private lands

5.1.2 - Management authority

Please list the local office / offices of any agency or organization responsible for managing the site: Environmental Board of South Region

Provide the name and title of the person or people with responsibility for the wetland: Mrs Ena Poltimäe, director of the South Region of Environmental Board

Postal address: Aleksandri 14, 51004 Tartu, Estonia

E-mail address: ena.poltimae@keskkonnaamet.ee

5.2 - Ecological character threats and responses (Management)

5.2.1 - Factors (actual or likely) adversely affecting the Site's ecological character

Water regulation

Factors adversely affecting site	Actual threat	Potential threat	Within the site	Changes	In the surrounding area	Changes
Drainage	Medium impact	Medium impact	☑	decrease	☑	No change

Agriculture and aquaculture

Factors adversely affecting site	Actual threat	Potential threat	Within the site	Changes	In the surrounding area	Changes
Livestock farming and ranching	Medium impact	Medium impact	☐	No change	☑	No change

Biological resource use

Factors adversely affecting site	Actual threat	Potential threat	Within the site	Changes	In the surrounding area	Changes
Fishing and harvesting aquatic resources	Medium impact	Medium impact	☑	No change	☐	No change
Hunting and collecting terrestrial animals	Medium impact	Low impact	☐	No change	☑	No change
Logging and wood harvesting	Medium impact	Medium impact	☑	increase	☑	increase

Human intrusions and disturbance

Factors adversely affecting site	Actual threat	Potential threat	Within the site	Changes	In the surrounding area	Changes
Recreational and tourism activities	Medium impact	Medium impact	☑	increase	☐	No change

Pollution

Factors adversely affecting site	Actual threat	Potential threat	Within the site	Changes	In the surrounding area	Changes
Agricultural and forestry effluents	Medium impact	Medium impact	☑	No change	☑	No change
Household sewage, urban waste water	Medium impact	Medium impact	☑	No change	☑	No change

Please describe any other threats (optional):

within the Ramsar site: No big threats are posed to ecological character of the wetland due to the protection regime and appropriate management activities.
Nevertheless the site is influenced by ancient drainage and lowering of lake water tables (mainly in 1950-s), small-scale forestry, fishing, small amount of waste waters coming from the catchment and possible agricultural pollution in the catchment area.

There is an increasing pressure of logging in limited management zones of the reserve (legally allowed activity) and growing intensity of nature tourism.

in the surrounding area: agricultural pollution from the Pandivere Upland spreading by rivers and ground water, waste waters from villages located on the catchment area upstream of the wetland, drainage, hunting, clearcuttings.

5.2.2 - Legal conservation status

Regional (international) legal designations

Designation type	Name of area	Online information url	Overlap with Ramsar Site
EU Natura 2000	Endla		whole

National legal designations

Designation type	Name of area	Online information url	Overlap with Ramsar Site
nature reserve	Endla		whole

Non-statutory designations

Designation type	Name of area	Online information url	Overlap with Ramsar Site
Important Bird Area	Endla		whole

5.2.3 - IUCN protected areas categories (2008)

- Ia Strict Nature Reserve ☑
- Ib Wilderness Area: protected area managed mainly for wilderness protection ☑
- II National Park: protected area managed mainly for ecosystem protection and recreation ☐
- III Natural Monument: protected area managed mainly for conservation of specific natural features ☐
- IV Habitat/Species Management Area: protected area managed mainly for conservation through management intervention ☑
- V Protected Landscape/Seascape: protected area managed mainly for landscape/seascape conservation and recreation ☐
- VI Managed Resource Protected Area: protected area managed mainly for the sustainable use of natural ecosystems ☑

5.2.4 - Key conservation measures

Legal protection

Measures	Status
Legal protection	Implemented

Habitat

Measures	Status
Hydrology management/restoration	Partially implemented
Habitat manipulation/enhancement	Partially implemented

Species

Measures	Status
Threatened/rare species management programmes	Partially implemented

Human Activities

Measures	Status
Fisheries management/regulation	Implemented
Regulation/management of recreational activities	Implemented
Communication, education, and participation and awareness activities	Partially implemented
Research	Partially implemented

Other:

Restoration projects have been carried out to restore hydrological regime of edge areas of bog massifs affected of 1960-ties drainage: Toodiksaare Bog (2013), Kaasikjärve Bog (2018-2019), Linnusaare Bog (2018-2019).

5.2.5 - Management planning

Is there a site-specific management plan for the site? Yes

Has a management effectiveness assessment been undertaken for the site? Yes ◉ No ○

If the site is a formal transboundary site as indicated in section Data and location > Site location, are there shared management planning processes with another Contracting Party? Yes ○ No ◉

Please indicate if a Ramsar centre, other educational or visitor facility, or an educational or visitor programme is associated with the site:

No special Ramsar centre. The small centre of the Environmental Board located at Tooma operates also as educational center. The permanent exhibition introduces Estonian mires and main habitats of the site.
There are good facilities for school visits (rooms for seminars), special educational programmes for pupils are offered.
There are 2 systems of nature trails (one in spring region, another introducing mire and lake communities) and a watching tower.

Visiting management is the responsibility of the State Forest Management Centre.

URL of site-related webpage (if relevant): https://www.kaitsealad.ee/eng

5.2.6 - Planning for restoration

Is there a site-specific restoration plan? Yes, there is a plan

5.2.7 - Monitoring implemented or proposed

Monitoring	Status
Water regime monitoring	Implemented
Water quality	Implemented
Plant species	Implemented
Animal species (please specify)	Implemented
Birds	Implemented

The environmental and biological monitoring is carried out mainly in the framework of the Estonian Environmental Monitoring Programme. The stations of several monitoring programs are located in Endla: meteorological monitoring, monitoring of groundwater and inland waters, monitoring of rare and protected plant communities, mire bird monitoring (last survey in 2018) and also the monitoring of bird communities of Lake Endla (last survey in 2018).
The only specialised hydrometeorological station in Estonia is operating in Endla since 1950.

Several research projects concerning mire ecology are carried out.
Water table monitoring in restored mire sites with permanent electronic loggers is carried out by State Forest Centre.

6 - Additional material

6.1 - Additional reports and documents

6.1.1 - Bibliographical references

Aaviksoo, K. 1995. Vegetation of Endla Nature Reserve classified on the basis of LANDSAT TM data. - In: Consortium Masingii. Scripta Botanica 9. Tartu University, pp. 27-36.
Aber J.S., Aaviksoo, K., Karofeld, E. & Aber S.W. 2002. Patterns in Estonian bogs as depicted in color kite aerial photographs. Suo 53 (1), pp. 1-15
Eesti Loodus 10. 1997. Special issue devoted to the Endla Nature Reserve. In estonian with english summaries.
Frezel, P. & Karofeld, E. 2000. CH4 emission from hollow-ridge complex in a raised bog: The role of CH4 production and oxidation. Biogeochemistry 51, pp. 91-112.
Ilomets, M. 1988. Vertical distribution and spatial pattern of Sphagnum communities in two Estonian treeless bogs. In: M. Zobel (Ed.) Dynamics and ecology of wetlands and lakes in Estonia. Tallinn, pp. 24-39.
Ilomets, M., Punning, J.-M. & Yevdokimova, A. 1992. Heavy metal contents in Sphagnum, acrotelm and peat in the Männikjärve Bog, Estonian S.S.R. In: Bragg, O., Hulme, P.D., Ingram, H.A.P. & Robertson R.A. (ed-s) Peatland Ecosystems and Man: An Impact Assessment. Univ. of Dundee, pp. 196-199.
Karofeld, E. 2001. Transplantation experiment to study the development of mud-bottoms. Proc.Estonian Acad.Sci.Biol.Ecol., 50, 4, 256-268.
Karofeld, E. & Toom, M. 1999. Mud-bottoms in Männikjärve Bog, central Estonia. Proc. Estonian Acad. Sci.Biol.. Ecol., 48, 3, 216-235.
Kimmel, K. 1998. Mire research traditions in Endla Nature Reserve. Estonia Maritima 3, pp. 179-186
Leito, A., Tammur, E. 1991. On the bird fauna of the Endla State Nature Reserve and its changes. - Loodusevaatlusi. 1989, 1. 27-42 (in Estonian with English summary).
Lõhmus, A., Kalamees, A., Kuus, A., Kuresoo, A., Leito, A., Leivits, A., Luigujõe, L., Ojaste, I., Volke, V. 2001. Bird species of conservation concern in the Estonian protected areas and important bird areas. Hirundo Supplementum 4: 37-167.
Masing, V. 1998. Vegetation of Endla bogs. - Yearbook of the Estonian Naturalist´s Society, Vol. 78, pp. 27-48 (in estonian with english summary)
Paal,J., Leibak, E. 2011. Estonian mires: inventory of habitats.
Valgma, Ü. 1998. Impact of precipitation on the water table level of different ombrotrophic raised bog complexes, central Estonia. Suo 49 (1), pp. 13-21.
Valgma, Ü. 1998. The role of hollows in the regulation of the bog water balance: Männikjärve bog, central Estonia. In: Wheater, H.. & Kirby, K. (ed-s). Hydrology in a Changing Environment. John Wiley & Sons, pp. 465-471.

6.1.2 - Additional reports and documents

i. taxonomic lists of plant and animal species occurring in the site (see section 4.3)
<no file available>

ii. a detailed Ecological Character Description (ECD) (in a national format)
<no file available>

iii. a description of the site in a national or regional wetland inventory
<no file available>

iv. relevant Article 3.2 reports
<no file available>

v. site management plan
<1 file(s) uploaded>

vi. other published literature
<1 file(s) uploaded>

6.1.3 - Photograph(s) of the Site

Please provide at least one photograph of the site:


Männikjärve bog (*Herdis Fridolin, 21-07-2015*)


Boardwalk (*Herdis Fridolin, 21-07-2015*)


Männikjärve bog from tower (*Herdis Fridolin, 21-07-2015*)


Habitats restoration - closing the ditches (*Herdis Fridolin, 16-05-2017*)


Vilbaste spring area (*Kaili Viilma, 11-09-2006*)


Oostriku spring (*Kaili Viilma, 11-09-2006*)


Oostriku spring on winter (*Herdis Fridolin, 24-01-2019*)


Sopa spring (*Herdis Fridolin, 24-01-2019*)

6.1.4 - Designation letter and related data

Designation letter
<1 file(s) uploaded>

Date of Designation	1997-06-05