



# Ramsar Information Sheet

Published on 20 May 2020

Update version, previously published on : 1 January 2012

## Estonia

### Muraka



Designation date	5 June 1997
Site number	909
Coordinates	59°08'36"N 27°07'30"E
Area	13 980,00 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

Muraka, located in the middle of extensive Alutaguse lowland in the margins of the Tagajõgi, Pungerja, and Purtse rivers' catchment area, is a large complex of three bog massifs together with fens and transition bogs and old-growth forests. The core is formed by the large and varied Muraka Mire, in the northeast lies the Ratva Mire with Lake Ratva and in the southeast the Matka Mire.

The site is important as one of the few surviving extensive wilderness areas in northeastern Estonia, the main industrial and most polluted part of the country. The species diversity is one of the highest of mires in Estonia.

## 2 - Data & location

### 2.1 - Formal data

#### 2.1.1 - Name and address of the compiler of this RIS

##### Compiler 1

Name	Kai Kimmel
Institution/agency	Estonian Wetland Society
Postal address	Suurküla 21, Häädemeeste, 86001 Pärnumaa, Estonia
E-mail	kkimmel@hotmail.ee
Phone	+3725077652

##### Compiler 2

Name	Marika Kose
Institution/agency	Estonian Wetland Society
Postal address	Suurküla 21, Häädemeeste, 86001 Pärnumaa, Estonia
E-mail	marika.kose@mail.ee
Phone	+37256561373

#### 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)	Muraka
---	--------

#### 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 <input checked="" type="radio"/> No <input type="radio"/>
(Update) The boundary has been delineated more accurately	<input checked="" type="checkbox"/>
(Update) The boundary has been extended	<input type="checkbox"/>
(Update) The boundary has been restricted	<input type="checkbox"/>
(Update) B. Changes to Site area	the area has increased
(Update) The Site area has been calculated more accurately	<input type="checkbox"/>
(Update) The Site has been delineated more accurately	<input checked="" type="checkbox"/>
(Update) The Site area has increased because of a boundary extension	<input type="checkbox"/>
(Update) The Site area has decreased because of a boundary restriction	<input type="checkbox"/>

#### 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 a restoration project (2014-2015) hydrological conditions and quality of habitats at the edge of the Muraka bog massif are 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 (Muraka Nature Reserve)

2.2.2 - General location

- a) In which large administrative region does the site lie?
- b) What is the nearest town or population centre?

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):

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

2.2.5 - Biogeography

Biogeographic regions

Regionalisation scheme(s)	Biogeographic region
EU biogeographic regionalization	1. Boreal Biogeographic region according to the EEA
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

- EEA, European Environment Agency, [http://www.eea.europa.eu/publications/report\\_2002\\_0524\\_154909](http://www.eea.europa.eu/publications/report_2002_0524_154909)
- 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. Wettenberg, 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 the World: 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 plays an important role in the recharge and discharge of groundwater and maintenance of water quality. Together with surrounding areas acts as a buffer zone between the oil-shale basin and agricultural areas.

Other ecosystem services provided: Biodiversity maintenance. Soil (peat) formation. Ecosystem stability and resilience. Carbon storage. Climate change mitigation. Nature tourism. Education and research.

Other reasons: The site is a good representative of natural mosaic wetland complex comprised by non-forested peatlands (bogs and fens), forested peatlands (peatswamp forests) and paludifying forests characteristic of the Boreal Biogeographical region. The site supports primeval forests (mainly boreal, sandy heath and bog types). It is one of the few extensive wilderness areas still preserved in North-east Estonia.

Other reasons: Wetland habitats listed in Annex I of EU Habitats Directive are: active raised bogs (\*7110), transition mires and quaking bogs (7140), bog woodland (\*91D0), Fennoscandian deciduous swamp woods (\*9080), northern boreal alluvial meadows (6450), lakes (hard oligo-mesotrophic waters with benthic vegetation of Chara spp. - 3140, natural dystrophic lakes and ponds - 3160) and alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (\*91E0).

The wetland complex playing a substantial hydrological, biological and ecological role in the region is identified both as an IBA and Natura 2000 site.

- 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.

- 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
<i>Cypripedium calceolus</i>	Lady's Slipper	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	LC	<input type="checkbox"/>	Annex II of EU Habitats Directive	
<i>Epipogium aphyllum</i>	Ghost Orchid	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	CR in Red List of Estonia	Very rare. One of the few localities in Estonia.

#### 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 <sup>1)</sup>	IUCN Red List	CITES Appendix I	CMS Appendix I	Other Status	Justification
			2	4	6	9	3	5	7	8								
<b>Birds</b>																		
CHORDATA / AVES	<i>Aquila chrysaetos</i>	Golden Eagle	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1	2012-2019		LC	<input type="checkbox"/>	<input type="checkbox"/>	Annex I of Council directive 2009/147 EEC; VU in Red List of Estonia	Criterion 4: important breeding area for the strictly protected species.
CHORDATA / AVES	<i>Aquila pomarina</i>	Lesser Spotted Eagle	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		2012-2019		LC	<input type="checkbox"/>	<input type="checkbox"/>	Annex I of Council directive 2009/147 EEC	
CHORDATA / AVES	<i>Bubo bubo</i>	Eurasian Eagle-Owl	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		2012-2019		LC	<input type="checkbox"/>	<input type="checkbox"/>	Annex I of Council directive 2009/147 EEC	Criterion 4: It is an important breeding area for this species.
CHORDATA / AVES	<i>Calidris alpina schinzii</i>	Dunlin	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1	2012-2019			<input type="checkbox"/>	<input type="checkbox"/>	EN in Red List of Estonai	
CHORDATA / AVES	<i>Caprimulgus europaeus</i>	European Nightjar	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1	2012-2019		LC	<input type="checkbox"/>	<input type="checkbox"/>	Annex I of Council directive 2009/147 EEC	
CHORDATA / AVES	<i>Circus aeruginosus</i>	Western Marsh Harrier	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2	2012-2019		LC	<input type="checkbox"/>	<input type="checkbox"/>	Annex I of Council directive 2009/147 EEC	
CHORDATA / AVES	<i>Circus cyaneus</i>	Northern Harrier	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1	2014		LC	<input type="checkbox"/>	<input type="checkbox"/>	Annex I of Council directive 2009/147 EEC	1-2 pairs
CHORDATA / AVES	<i>Circus pygargus</i>	Montagu's Harrier	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3	2012-2019		LC	<input type="checkbox"/>	<input type="checkbox"/>	Annex I of Council directive 2009/147 EEC	3-5 breeding pairs
CHORDATA / AVES	<i>Crex crex</i>	Corn Crane	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>	Annex I of Council directive 2009/147 EEC	
CHORDATA / AVES	<i>Ficedula parva</i>	Red-breasted Flycatcher	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2	2012-2019		LC	<input type="checkbox"/>	<input type="checkbox"/>	Annex I of Council directive 2009/147 EEC	
CHORDATA / AVES	<i>Grus grus</i>	Common Crane	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	15	2012-2019		LC	<input type="checkbox"/>	<input type="checkbox"/>	Annex I of Council directive 2009/147 EEC	10-20 breeding pairs
CHORDATA / AVES	<i>Lagopus lagopus</i>	Willow Ptarmigan; Willow Grouse	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		2012-2019		LC	<input type="checkbox"/>	<input type="checkbox"/>	EN in Red List of Estonia	Criterion 4: very important breeding area for the strictly protected species
CHORDATA / AVES	<i>Lanius collurio</i>	Red-backed Shrike	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8	2012-2019		LC	<input type="checkbox"/>	<input type="checkbox"/>	Annex I of Council directive 2009/147 EEC	
CHORDATA / AVES	<i>Limosa limosa</i>	Black-tailed Godwit	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	38	2015		NT	<input type="checkbox"/>	<input type="checkbox"/>	VU in Europe at the IUCN Red list	Nationally protected bird
CHORDATA / AVES	<i>Lymnocyptes minimus</i>	Jack Snipe	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		2012-2019		LC	<input type="checkbox"/>	<input type="checkbox"/>	VU in Red List of Estonia	one of the few breeding places in Estonia; 2-5 pairs
CHORDATA / AVES	<i>Lyrurus tetrix</i>	Eurasian Black Grouse; Black Grouse	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	35	2012-2019		LC	<input type="checkbox"/>	<input type="checkbox"/>	Annex I of Council directive 2009/147 EEC	50-80 lekking males
CHORDATA / AVES	<i>Numenius arquata</i>	Eurasian Curlew	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	15	2015		NT	<input type="checkbox"/>	<input type="checkbox"/>	VU in Europe at the IUCN Red list	Nationally protected bird
CHORDATA / AVES	<i>Numenius phaeopus</i>	Whimbrel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	55	2015		LC	<input type="checkbox"/>	<input type="checkbox"/>		30-60 breeding pairs
CHORDATA / AVES	<i>Pandion haliaetus</i>	Western Osprey; Osprey	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1	2014		LC	<input type="checkbox"/>	<input type="checkbox"/>	Annex I of Council directive 2009/147 EEC;	Criterion 4: important breeding area for the strictly protected (I category) species.

Phylum	Scientific name	Common name	Species qualifies under criterion				Species contributes under criterion				Pop. Size	Period of pop. Est.	% occurrence <sup>1)</sup>	IUCN Red List	CITES Appendix I	CMS Appendix I	Other Status	Justification
			2	4	6	9	3	5	7	8								
CHORDATA / AVES	<i>Philomachus pugnax</i>	Ruff	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>		Criterion 4: It is an important breeding area for Ruff <i>Philomachus pugnax</i>	
CHORDATA / AVES	<i>Picoides tridactylus</i>	Three-toed Woodpecker	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>	Annex I of Council directive 2009/147 EEC		
CHORDATA / AVES	<i>Picus canus</i>	Grey-headed Woodpecker	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>	Annex I of Council directive 2009/147 EEC		
CHORDATA / AVES	<i>Pluvialis apricaria</i>	European Golden Plover; European Golden-Plover	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	85	2015		LC	<input type="checkbox"/>	<input type="checkbox"/>	Annex I of Council directive 2009/147 EEC	70-100 breeding pairs	
CHORDATA / AVES	<i>Strix uralensis</i>	Ural Owl	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>	Annex I of Council directive 2009/147 EEC		
CHORDATA / AVES	<i>Tetrao urogallus</i>	Western Capercaillie	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	25			LC	<input type="checkbox"/>	<input type="checkbox"/>	Annex I of Council directive 2009/147 EEC	20-30 breeding pairs	
CHORDATA / AVES	<i>Tetrastes bonasia</i>	Hazel Grouse	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>	Annex I of Council directive 2009/147 EEC		
CHORDATA / AVES	<i>Tringa glareola</i>	Wood Sandpiper	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	75	2015		LC	<input type="checkbox"/>	<input type="checkbox"/>	Annex I of Council directive 2009/147 EEC	50-80 breeding pairs	
CHORDATA / AVES	<i>Tringa nebularia</i>	Common Greenshank	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	30	2015		LC	<input type="checkbox"/>	<input type="checkbox"/>		20-30 pairs	
CHORDATA / AVES	<i>Vanellus vanellus</i>	Northern Lapwing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	60	2015		NT	<input type="checkbox"/>	<input type="checkbox"/>	VU in Europe at the IUCN Red list	Nationally protected bird	
<b>Others</b>																		
CHORDATA / MAMMALIA	<i>Canis lupus</i>	Wolf	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC	<input checked="" type="checkbox"/>	<input type="checkbox"/>		Criterion 4: It is a refuge for animals with large habitat requirements, especially this species.	
CHORDATA / MAMMALIA	<i>Castor fiber</i>	Eurasian Beaver	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>			
CHORDATA / MAMMALIA	<i>Lutra lutra</i>	European Otter	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				NT	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Annexes II and IV of EU Habitats Directive		
CHORDATA / MAMMALIA	<i>Lynx lynx</i>	Eurasian Lynx	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>			
CHORDATA / MAMMALIA	<i>Pteromys volans</i>	Siberian Flying Squirrel	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC	<input type="checkbox"/>	<input type="checkbox"/>	Annexes II and IV of EU Habitats Directive; VU in Red List of Estonia; strongly protected (I category)	Criterion 4: extremely important habitat for rare and endangered species strongly protected in Estonia.	
CHORDATA / MAMMALIA	<i>Ursus arctos</i>	Brown Bear; Grizzly Bear	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC	<input checked="" type="checkbox"/>	<input type="checkbox"/>		Criterion 4: It is a refuge for animals with large habitat requirements, especially this species.	

1) Percentage of the total biogeographic population at the site

### 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
Hard oligo-mesotrophic waters with bentic vegetation of Chara spp. (3140)	<input checked="" type="checkbox"/>	Ratva Lake	Annex I of EU Habitats Directive
Bog woodland (*91D0)	<input checked="" type="checkbox"/>		Annex I of EU Habitats Directive, priority habitat type
Active raised bogs (*7110)	<input checked="" type="checkbox"/>		Annex I of EU Habitats Directive, priority habitat type
Natural dystrophic lakes and ponds (3160)	<input checked="" type="checkbox"/>	Nearly 900 bog pools	Annex I of EU Habitats Directive
Northern boreal alluvial meadows (6450)	<input checked="" type="checkbox"/>		Annex I of EU Habitats Directive
Transition mires and quaking bogs (7140)	<input checked="" type="checkbox"/>		Annex I of EU Habitats Directive
Fennoscandian deciduous swamp woods (*9080)	<input checked="" type="checkbox"/>		Annex I of EU Habitats Directive, priority habitat type
Alluvial forests with Alnus glutinosa and Fraxinus excelsior (*91E0)	<input checked="" type="checkbox"/>		Annex I of EU Habitats Directive, priority habitat type

[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 Muraka site are: hard oligo-mesotrophic waters with bentic vegetation of Chara spp. (3140), natural dystrophic lakes and ponds (3160), 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), also Fennoscandian hemiboreal natural old broad-leaved deciduous forests (\*9020).



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

### 4.1 - Ecological character

Main habitats of the large flat area are raised bogs, transitional bogs and fens which are surrounded by extensive wet forests. Bogs make up 60% of the peatland area. These are mainly open grass-bogs and dwarf-shrub bogs, partly pine-bogs. Fens form 25% of the mire area, the remaining 15% are the transition bogs. Primeval forests occur among the surrounding forests (mainly boreal, sandy heath and bog types). There is one dystrophic relict lake and a number of bog-pools (1-3 m deep) covering 10-40% of the bog 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 > Lakes and pools >> O: Permanent freshwater lakes		0	25	Representative
Fresh water > Lakes and pools >> Tp: Permanent freshwater marshes/pools		4	78	Representative
Fresh water > Marshes on peat soils >> U: Permanent Non-forested peatlands		1	7042	Representative
Fresh water > Marshes on inorganic soils >> W: Shrub-dominated wetlands		0	51	
Fresh water > Marshes on inorganic soils >> Xf: Freshwater, tree-dominated wetlands		3	292	Representative
Fresh water > Marshes on peat soils >> Xp: Permanent Forested peatlands		2	3701	Representative

#### 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
2: Ponds		0		

#### Other non-wetland habitat

Other non-wetland habitats within the site	Area (ha) if known
forests 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
<i>Allium ursinum</i>	Wild garlic	Nationally protected
<i>Dactylorhiza fuchsii</i>	Common Spotted Orchid	Nationally protected
<i>Dactylorhiza maculata</i>	Heath Spotted Orchid	Nationally protected

#### Optional text box to provide further information

The site is important in maintaining the geographic range of plant species common to raised bogs, fens and bog forests. 402 species of vascular plant species are known, of them 17 species are protected nationally.

Characteristic flora of natural bogs of continental type (*Eriophorum* sp., *Ledum palustre*, *Calluna vulgaris*, *Chamaedaphne calyculata*, and *Sphagnum* spp.), additionally several species characteristic of bogs of maritime type (e.g. *Trichophorum caespitosum*). Fens are represented mainly by *Carex* spp., *Phragmites australis*, *Menyanthes trifoliata* and *Equisetum* spp.

### 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	<i>Anas crecca</i>	Eurasian Teal; Green-winged Teal	9	2015		
CHORDATA/AVES	<i>Gallinago gallinago</i>	Common Snipe	40	2015		
CHORDATA/AVES	<i>Lanius excubitor</i>	Northern Shrike; Great Grey Shrike	10	2015		Nationally protected
CHORDATA/AVES	<i>Tringa totanus</i>	Common Redshank	12	2015		(Nationally protected bird)

#### 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)

Climate is transitional from sub-maritime to sub-continental type, with more continental features (relatively high parameters of rainfall and snowcover).

Water originates mostly from precipitation. Mean annual precipitation 690 mm (of these, 3/4 during warm period). Lower parts of the bogs are partly overflowed in April and in October-November.

Mean July temperature is 16 C, mean January temperature is -7 C.

##### 4.4.2 - Geomorphic setting

a) Minimum elevation above sea level (in metres)

a) Maximum elevation above sea level (in metres)

- 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.

The Muraka mire system is situated in the watershed of the small rivers Tagajõe, Pungerja and Ojamaa

##### 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)

Ordovician limestone bedrock is covered by moraine alluvial and lake sediments, and by peat deposition (min. 1-2 m, in average 5-7 m).

##### 4.4.4 - Water regime

###### Water permanence

Presence?	Changes at RIS update
Usually permanent water present	

###### Source of water that maintains character of the site

Presence?	Predominant water source	Changes at RIS update
Water inputs from rainfall	<input checked="" type="checkbox"/>	No change
Water inputs from groundwater	<input type="checkbox"/>	No change
Water inputs from surface water	<input type="checkbox"/>	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 plays important role in the recharge and discharge of groundwater and maintenance of water quality. Together with surrounding areas acts as a buffer zone between the oil-shale basin and agricultural areas. Lower parts of the bogs are partly overflowed in April and in October-November.

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

Sediment regime unknown

Please provide further information on sediment (optional):

Ordovician limestone bedrock is covered by moraine alluvial and lake sediments, and by peat deposition (min. 1-2 m, in average 5-7 m).

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 bogs, circumneutral in other communities

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

Dystrophic

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

Unknown

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:

forestry, agriculture, oil-shale mining (in 15 km and further).

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)	Medium

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	High
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	Low
Recreation and tourism	Recreational hunting and fishing	Low
Scientific and educational	Long-term monitoring site	Medium
Scientific and educational	Educational activities and opportunities	Medium

Supporting Services

Ecosystem service	Examples	Importance/Extent/Significance
Biodiversity	Supports a variety of all life forms including plants, animals and microorganisms, 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
Pollination	Support for pollinators	Low

Optional text box to provide further information

No inhabitants. The wilderness area is not suitable for recreation. Local guides provide small-scale hiking trips, also the area is seasonally visited by berry-pickers.

In the frame of the state monitoring program mire breeding bird community studies are carried out regularly (the last census in 2015), also eagles and endangered plant species (*Epipogium aphyllum*) are monitored. There is also the monitoring plot in Heinassaare primeval forest (especially Fungi).

Other ecosystem service(s) not included above:

Within the site:

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	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Private ownership

Category	Within the Ramsar Site	In the surrounding area
Other types of private/individual owner(s)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

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

within the Ramsar site: nearly entirely (approx. 98%) state owned land, some small areas are privately owned

in the surrounding area: state and private land

#### 5.1.2 - Management authority

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

North Region of Environmental Board

Provide the name and title of the person or people with responsibility for the wetland:

Mr. Jaak Jürgenson; director of the North Region of Environmental Board

Postal address:

Pargi 15, 41537 Jõhvi, Estonia

E-mail address:

jaak.jurgenson@keskkonnaamet.ee

## 5.2 - Ecological character threats and responses (Management)

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

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	<input checked="" type="checkbox"/>	increase	<input type="checkbox"/>	No change

Natural system modifications

Factors adversely affecting site	Actual threat	Potential threat	Within the site	Changes	In the surrounding area	Changes
Dams and water management/use	Medium impact	Medium impact	<input type="checkbox"/>	No change	<input checked="" type="checkbox"/>	No change
Vegetation clearance/land conversion	Medium impact	High impact	<input checked="" type="checkbox"/>	No change	<input type="checkbox"/>	No change

Pollution

Factors adversely affecting site	Actual threat	Potential threat	Within the site	Changes	In the surrounding area	Changes
Industrial and military effluents	Medium impact	Medium impact	<input checked="" type="checkbox"/>	No change	<input checked="" type="checkbox"/>	No change
Unspecified	Medium impact	Medium impact	<input checked="" type="checkbox"/>	No change	<input checked="" type="checkbox"/>	No change

Please describe any other threats (optional):

within the Ramsar site: the alkalic pollution from electric power stations with in 40-60 km (near Narva) is reduced significantly in recent years due to filters but accumulated pollution can still cause changes in normal paludification process; pollution from oil-shale chemical industry (within 30 km, in Kohtla-Järve and Kiviõli). Potential threat is intensification of forestry and clearcuttings and also increasing tourism.

in the surrounding area: changes in hydrologic regime influenced by neighbouring oil-shale mines; increase of pollution by oil-shale mining and industry.

#### 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	Muraka		whole

## National legal designations

Designation type	Name of area	Online information url	Overlap with Ramsar Site
National Park	Alutaguse	<a href="https://www.kaitsealad.ee/eng/muraka-bog-system">https://www.kaitsealad.ee/eng/muraka-bog-system</a>	partly

## Non-statutory designations

Designation type	Name of area	Online information url	Overlap with Ramsar Site
Important Bird Area	Muraka		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	Implemented

## Species

Measures	Status
Threatened/rare species management programmes	Partially implemented

## Human Activities

Measures	Status
Harvest controls/poaching enforcement	Implemented
Regulation/management of recreational activities	Implemented
Communication, education, and participation and awareness activities	Partially implemented
Research	Partially implemented

## Other:

Since 2018 Muraka nature reserve is a part of Alutaguse National Park. The main task of the national park (total area 44 331 ha) is to protect large bog massifs, forests and coastal landscapes of Lake Peispi together with cultural heritage characteristic to northeastern Estonia.

## 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:

In the wetland area there are no nature trails and visitors' centre.

#### 5.2.6 - Planning for restoration

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

Further information

The basic document is the Action plan for Estonian protected mires 2016-2023 which designates the restoration needs, areas, and order of planning and implementing.

#### 5.2.7 - Monitoring implemented or proposed

Monitoring	Status
Plant community	Implemented
Birds	Implemented

There is no field research station. In the frame of the state monitoring program mire breeding bird community studies are carried out regularly (the last census in 2015), also eagles and endangered plant species (*Epipogium aphyllum*) are monitored. There is also the monitoring plot in Heinassaare primeval forest (especially Fungi).

## 6 - Additional material

### 6.1 - Additional reports and documents

#### 6.1.1 - Bibliographical references

Leito, T. 2001. Muraka raba (Muraka mire). 48 p. (in estonian and english).  
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.

#### 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

<no file available>

#### 6.1.3 - Photograph(s) of the Site

Please provide at least one photograph of the site:



Bog pools ( *Agu Leivits, 25-05-2015* )



Transition mire area ( *Agu Leivits, 25-05-2015* )



Open bog landscape with mineral islands ( *Agu Leivits, 25-05-2015* )

#### 6.1.4 - Designation letter and related data

Designation letter

<1 file(s) uploaded>

Date of Designation