

Information Sheet on Ramsar Wetlands (RIS)

Categories approved by Recommendation 4.7, as amended by Resolution VIII.13 of the Conference of the Contracting Parties.

Note for compilers:

1. The RIS should be completed in accordance with the attached *Explanatory Notes and Guidelines for completing the Information Sheet on Ramsar Wetlands*. Compilers are strongly advised to read this guidance before filling in the RIS.

2. Once completed, the RIS (and accompanying map(s)) should be submitted to the Ramsar Bureau. Compilers are strongly urged to provide an electronic (MS Word) copy of the RIS and, where possible, digital copies of maps.

1. Name and address of the compiler of this form:

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Designation date

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Site Reference Number

2. Date this sheet was completed/updated:

08.04.2003

3. Country:

Estonia

4. Name of the Ramsar site:

Matsalu Nature Reserve

5. Map of site included:

Refer to Annex III of the *Explanatory Note and Guidelines*, for detailed guidance on provision of suitable maps.

a) hard copy (required for inclusion of site in the Ramsar List): yes -or- no

b) digital (electronic) format (optional): yes -or- no

6. Geographical coordinates (latitude/longitude):

58°45'N 23°40'E

7. General location:

Include in which part of the country and which large administrative region(s), and the location of the nearest large town.

The wetland is situated on the West-Estonian coast, in Lääne County. The administration center is located at Penijõe, 3 km from nearest town Lihula, 60 km from Haapsalu (capital of Lääne County) and 150 km from Tallinn, capital of Estonia.

8. Elevation: (average and/or max. & min.)

average: 10 m ; min: 0 m; max: 32,8 m

9. Area: (in hectares)

48 610

10. Overview:

Provide a short paragraph giving a summary description of the principal ecological characteristics and importance of the wetland.

Matsalu wetland consists of a shallow islet-rich brackish-water bay (the Matsalu Bay) surrounded by 3000 ha of coastal meadows, 3000 ha of reedbeds and 4000 ha of floodplain of the Kasari River delta which serve as excellent roosting and feeding place for large number of species of water and coastal avifauna. Especially the area is important as roosting place for waterfowl on East-Atlantic Fly-way.

11. Ramsar Criteria:

Circle or underline each Criterion applied to the designation of the Ramsar site. See Annex II of the *Explanatory Notes and Guidelines* for the Criteria and guidelines for their application (adopted by Resolution VII.11).

1 • 2 • 3 • 4 • 5 • 6 • 7 • 8

12. Justification for the application of each Criterion listed in 11. above:

Provide justification for each Criterion in turn, clearly identifying to which Criterion the justification applies (see Annex II for guidance on acceptable forms of justification).

1 - The site is a particularly good representative of a mosaic complex of marine, coastal and inland wetlands (shallow sea waters, estuarine waters, coastal lagoons, inland deltas, saltmarshes, flooded meadows) characteristic of the Boreal Biogeographical Region. The alluvial meadow of the Kasari River delta (4000 ha) is one of the biggest open wet meadows in Europe, 2500 ha of which are actively managed.

2 - the site supports a number of vulnerable and endangered species which are under state protection or listed in the Red Data Book of Estonia as *Haliaeetus albicilla* White-tailed Eagle of I protection category, lot of bird species of II and III protection category; 22 strongly protected (II category) plant species; *Bufo calamita* Natterjack toad and 10 species of mammals of II protection category

3 - the site supports populations of plants and animal species important for maintaining the biological diversity of the Boreal Biogeographical Region.

Plants: *Prunus spinosa* Blackthorn, *Malus sylvestris* Wild Apple, *Cypripedium calceolus* Lady's Slipper

Birds: *Botaurus stellaris* Bittern, *Porzana porzana* Spotted Crane, *Crex crex* Corncrake, *Gallinago media* Great Snipe, *Sterna caspia* Caspian Tern, *Sterna albifrons* Little Tern, *Haliaeetus albicilla* White-tailed Eagle, *Cygnus olor* Mute swan, *Anser anser* Greylag Goose;

Amphibians: *Bufo calamita* Natterjack Toad

Mammals: *Pusa hispida* Ringed Seal, *Halichoerus grypus* Grey Seal

4 - The site supports bird species at a critical stage of their life cycles and provides refuge during adverse conditions. Matsalu wetland is the most important bird area in Estonia and among the most important roosting places for waterfowl of East-Atlantic Fly-way. Over 40 000 different waterfowl are moulting in the reedbed; over 40 000 *Branta leucopsis* are roosting annually on coastal grasslands a month before breeding

5 - the site regularly supports around 315 000 birds staying on their migration for shorter or longer periods, around 40 000 birds moulting and 33 500 birds breeding on coastal and floodplain meadows, islets and reedbed.

6 - wetland regularly supports 1% of the individuals in a population of following waterbirds, mainly migration species:

10,3-46,6% of the individuals of the NW Europe (non-br) population of *Cygnus columbianus* Tundra Swan (3000-13 500 ind.),

0,8-9,7% of the individuals of the N mainland Europe (br) population of *Cygnus cygnus* Whooper Swan (500-5700 ind.),

1,6% of the individuals of the population of *Anser fabalis* Bean Goose (1600 ind.),

1,3-2,8% of the individuals of the NW Europe (br) population of *Anser anser* Greylag Goose (5000-11 000 ind.),

5,6-11,1% of the individuals of the N Russia, E Baltic (br) population of *Branta leucopsis* Barnacle Goose (20 000-40 000 ind.),
 1,2-2,4% of the individuals of the NW Europe (non-br) population of *Anas penelope* Eurasian Wigeon (18 000-36 000 ind.),
 0,3-1% of the individuals of the NW Europe (non-br) population of *Anas crecca* Common Teal (1000-4000 ind.),
 13,3-16,7% of the individuals of the NW Europe (non-br) population of *Anas acuta* Northern Pintail (8 000-10 000 ind.),
 2,5% of the individuals of the NW & C Europe (non-br) population of *Anas chapeata* Northern Shoveler (1000 ind.),
 0,9-9,1% of the individuals of the NE & NW Europe (non-br) population of *Aythya ferina* Common Pochard (3 000-32 000 ind.),
 0,8-2,9% of the individuals of the NW Europe (non-br) population of *Aythya fuligula* Tufted Duck (10 000-35 000 ind.),
 3,2-12,9% of the individuals of the W Europe (non-br) population of *Aythya marila* Greater Scaup (10 000-40 000 ind.),
 2,5-7,5% of the individuals of the NW, Central Europe (non-br) population of *Bucephala clangula* Common Goldeneye (10 000-30 000 ind.),
 0,8-2,5% of the individuals of the NW & C Europe (non-br) population of *Mergus albellus* Smew (300-1000 ind.),
 0,6-1,1% of the individuals of the NW Europe (non-br) population of *Fulica atra* Common Coot (10 000-20 000 ind.),
 4,1% of the individuals of the Europe, N Africa (non-br) population of *Charadrius hiaticula* Great Ringed Plover (3000 ind.),
 5% of the individuals of the Baltic (br) population of *Calidris alpina schinzii* Dunlin (100 p),
 4,3 % of the individuals of the Europe (br) population of *Sterna caspia* Caspian Tern (140 p).

7 - 49 fish species (as of the 76 species registered in Estonia) have been found in the Matsalu Bay, incl. *Lampetra fluviatilis* River Lamprey and *Salmo trutta* Sea Trout, listed in Estonian Red Data Book.

8 - During spring floods floodplain meadows serve as spawning place for *Esox lucius* Pike, *Leuciscus idus* Ide and *Rutilus rutilus* Roach. The shallow bay serves good spawning conditions for *Osmerus eperlanus eperlanus* Smelt and *Percu fluviatilis* Perch.

13. Biogeography (required when Criteria 1 and/or 3 and /or certain applications of Criterion 2 are applied to the designation):

Name the relevant biogeographic region that includes the Ramsar site, and identify the biogeographic regionalisation system that has been applied.

a) biogeographic region: Boreal

b) biogeographic regionalisation scheme (include reference citation): Map of Biogeographical Regions of Europe serving the Habitats Directive of the European Community (Council Directive 92/43/EEC) and the Emerald network under the Bern Convention

14. Physical features of the site:

Describe, as appropriate, the geology, geomorphology; origins - natural or artificial; hydrology; soil type; water quality; water depth, water permanence; fluctuations in water level; tidal variations; downstream area; general climate, etc.

The bedrock is formed by Silurian limestone and is divided by the valley containing the bay and the Kasari River. Silurian sediments are covered by marine, glacial and post-glacial sediments. The area is mostly flat as for a long time it was submerged by the water of the Baltic Sea. Shoreline length is about 165 km. No high banks, mostly shingle shores; muddy and overgrown

with reed in the most sheltered inner part of the Matsalu Bay. Water regime is slightly altered by drainage. Annual inflow into the bay from the Kasari River exceeds the volume of the bay itself approx. 8 times. The outflow is into the Moonsund. Water salinity is 0-7 promils, oxygen 8-1 mg/l, pH 7.0-9.0, tot-N 0.9-1.8 mg/l, tot-P up to 0.1 mg/l. Depth of the bay is up to 3.8 m, average 1.5 m. Fluctuations over 2 m due to winds, no significant tidal variations. Average seasonal variation of the Kasari River exceeds 1.7 m.

Average temperatures range from -5^o C in February to +17^o C in July. The average rainfall is 745 mm and evaporation 450 mm.

15. Physical features of the catchment area:

Describe the surface area, general geology and geomorphological features, general soil types, general land use, and climate (including climate type).

The catchment area is 3594 sq km (3210 sq km that of the River Kasari).

The bedrock is formed by Silurian and Ordovician limestones. The relief is dominately flat, enlivened by coastal formations, basement escarpments and river valleys. Loamy till and fluviolacustrine (laminated clay) plains dominate. There are also alvar areas with very thin Quaternary cover and peatlands. The soils are mainly Fluvisols, Gleysols and Clayey Gleysols, Eutric Histosols (fen areas) and Dystric Histosols (transition mires and bogs).

The climate is characterized by mean February temperature of -5^o C and mean July temperature of 17^o C. The average rainfall is 700 mm, the number of days with snowcover 100-105.

Agricultural landscapes and several bigger and smaller villages are characteristic.

16. Hydrological values:

Describe the functions and values of the wetland in groundwater recharge, flood control, sediment trapping, shoreline stabilization, etc.

Spring floods last a month or two. The floodplain meadow is often flooded also in summer and autumn during great rains and western storms.

Sediments from the River Kasari get trapped in the Matsalu Bay. Eutrophic waters of the bay support various food chains, including that of the water-fowl, raptors, carnivores and pinnipeds.

17. Wetland Types

a) presence:

Circle or underline the applicable codes for the wetland types of the Ramsar "Classification System for Wetland Type" present in the Ramsar site. Descriptions of each wetland type code are provided in Annex I of the *Explanatory Notes & Guidelines*.

Marine/coastal: A • B • C • D • E • F • G • H • I • J • K •
Zk(a)

Inland: L • M • N • O • P • Q • R • Sp • Ss • Tp • Ts • U •
Va •
Vt • W • Xf • Xp • Y • Zg • Zk(b)

Human-made: 1 • 2 • 3 • 4 • 5 • 6 • 7 • 8 • 9 • Zk(c)

b) dominance: F A E J K L M O I R S s Ts W Xf Y 2 9

List the wetland types identified in a) above in order of their dominance (by area) in the Ramsar site, starting with the wetland type with the largest area.

18. General ecological features:

Provide further description, as appropriate, of the main habitats, vegetation types, plant and animal communities present in the Ramsar site.

All terrestrial vegetation types are influenced by human activities (semi-natural vegetation). The main communities are:
alluvial meadows (*Carex ssp.*, *Salix ssp.*, *Alopecurus pratensis*, *Deschampsia caespitosa*, *Phalaroides arundinacea*);
coastal meadows (sea-shore pioneer associations, alvars);
forests and wooded meadows (*Alnus glutinosa*, *Betula pubescens*, *Salix pentandra*, *Populus tremula*), latter have mostly overgrown;
reed-beds (*Phragmites australis*, *Typha angustifolia*, *Scirpus lacustris*, *S. tabernaemontani*);
marine waters - *Chara ssp.* and in some areas algal blooms caused by eutrophication (f.ex. *Cladophora glomerata*).

19. Noteworthy flora:

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in 12. Justification for the application of the Criteria) indicating, e.g., which species/communities are unique, rare, endangered or biogeographically important, etc. *Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the RIS.*

Totally 772 plant species have been described. 22 species are of II protection category (endangered species with scientific value): *Asplenium ruta-muraria*, *Asplenium trichomanes quadrivalens*, *Gardamine hirsuta*, *Carex extensa*, *Carex glareosa*, *Carex mackenziei*, *Coenoglossum viride*, *Cypripedium calceolus*, *Dactylorhiza incarnata cruenta*, *Dianthus superbus*, *Festuca altissima*, *Geranium lucidum*, *Herminium monorchis*, *Najas marina intermedia*, *Ophrys insectifera*, *Orchis mascula*, *Orchis ustulata*, *Polygonum oxyspermum*, *Prunus spinosa*, *Sagina maritima*, *Suaeda maritima maritima*, *Viola elator*.

Typical are underwater habitats: *Chara* and loose *Fucus* communities.

20. Noteworthy fauna:

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in 12. Justification for the application of the Criteria) indicating, e.g., which species/communities are unique, rare, endangered or biogeographically important, etc., including count data. *Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the RIS.*

Most important birds (strongly protected in Estonia and/or listed in EU Bird Directive I Appendix): *Haliaeetus albicilla* White-tailed Eagle (4 pairs), *Circus aeruginosus* Marsh Harrier (about 20 pairs), *Botaurus stellaris* Great Bittern (about 25 pairs), *Branta leucopsis* Barnacle Goose (17 nesting pairs, about 40,000 migrating), *Anser erythropus* Lesser White-fronted Goose (about 40 migrating birds), *Anser anser* (400 pairs; about 5,000 – 11 000 migrating), *Cygnus olor* Mute Swan (280 pairs), *Cygnus cygnus* Whooper Swan (500 -5700 migrating), *Cygnus columbianus* Bewick's Swan (3000-13 500 migrating), *Grus grus* Common Crane (6700-20 000 migrating), *Sterna caspia* Caspian Tern (140 pairs), *Calidris alpina schinzii* Dunlin (100 pairs), *Gallinago media* Great Snipe (35-50 pairs).

On molting in Kasari delta: *Anas platyrhynchos* Mallard (12,000 males), *Anas chrypeata* Northern Shoveler (3,000 males), *Anas penelope* Eurasian Wigeon (1,000 males)

Protected mammals: *Pusa hispida* Ringed Seal, *Halichoerus grypus* Grey Seal, *Lutra lutra* Otter, *Castor fiber* European Beaver, *Myotis dasycneme* Pond Bat, *Myotis daubentoni* Daubenton's Bat, *Myotis nattereri* Natterer's Bat, *Plecotus auritus* Brown Long-eared Bat, *Pipistrellus nathusii* Nathusius Pipistrelle, *Pipistrellus pipistrellus* Pipistrelle, *Eptesicus nilsoni* Northern Bat, *Nyctalus noctula* Noctule

Amphibians: *Bufo calamita* Natterjack toad (II protection category), a very rare species in Estonia

21. Social and cultural values:

e.g., fisheries production, forestry, religious importance, archaeological sites, social relations with the wetland, etc. Distinguish between historical/archaeological/religious significance and current socio-economic values.

Social and cultural values include traditional grazing and hay making practices, reed-cutting and roofs made of reeds, small scale fishery with flat boats, forestry and hunting. Different bird figures are used in traditional handicraft. Small scale tourism is developed. The archeology of the site is mostly unexplored. An important site of archeology and ancient history is the nearest small town Lihula (1600 inhabitants).

22. Land tenure/ownership:

(a) within the Ramsar site: at present the land-reform is going on, it means partial privatization of the land

(b) in the surrounding area: at present the land-reform is going on, it means partial privatization of the land

23. Current land (including water) use:

(a) within the Ramsar site: mostly used for extensive grazing and haymaking supported by Estonian government

(b) in the surroundings/catchment: mostly previous agricultural areas not in use

24. Factors (past, present or potential) adversely affecting the site's ecological character, including changes in land (including water) use and development projects:

(a) within the Ramsar site:

1) drainage in the past; 2) lack of management – grazing of coastal meadows is not intensive enough and part of the alluvial meadows are not mowed any more; most of wooded meadows are not mowed any more

(b) in the surrounding area:

bioaccumulation of nutrients; 2) alien species (introduced) *Nyctereutes procyonoides* Raccoon Dog suppresses native species (fox and badger) and disseminates diseases

25. Conservation measures taken:

List national category and legal status of protected areas, including boundary relationships with the Ramsar site; management practices; whether an officially approved management plan exists and whether it is being implemented.

Matsalu Nature Reserve was founded in 1957. The boundaries of protected area have been changed repeatedly, last time in 1997.

Melioration, construction, fishing and hunting are strongly restricted but not totally banned (waterfowl hunting is banned). Trespassing is forbidden to meadows in nesting period. The site is has been managed according several management plans: 1994-1996; 1996-1999 (Kasari catchment area integrated management plan); 2000-2002. Since 1996 yearly contracts have been made with local farmers (and compensations have been paid) to secure mowing and grazing in the reserve. This is necessary to avoid overgrowing of floodplain and coastal meadows. The new management plan is under preparation (2002).

26. Conservation measures proposed but not yet implemented:

e.g. management plan in preparation; official proposal as a legally protected area, etc.

Preparation of a new management plan for 2003-2006

The Matsalu Bay is a proposed HELCOM Baltic Sea Protected Area (BSPA).

27. Current scientific research and facilities:

e.g., details of current research projects, including biodiversity monitoring; existence of a field research station, etc.

Matsalu Nature Reserve is the centre for bird-ringing in Estonia. Long term counting of nesting and migration birds is going on since 1957.

Long term monitoring of coastal fish population, monitoring of changes in vegetation of coastal meadows connected to grazing intensity. Investigation and reintroduction of *Bufo calamita* (1999-2003). Long term data on sea-bottom communities is available for Matsalu Bay (Trei, 1991)

28. Current conservation education:

e.g. visitors' centre, observation hides and nature trails, information booklets, facilities for school visits, etc.

The new centre of the reserve offers good possibilities for conservation education. Annually 6000 people visit the exhibition center. Special programs for different levels of school students have been prepared in nature class. Cooperation projects are going on with the nearest schools (green spots etc.).

A set of bird-watching towers and nature trails is available.

29. Current recreation and tourism:

State if the wetland is used for recreation/tourism; indicate type(s) and their frequency/intensity.

Tourism is organized by the cooperation contracts between administration of the reserve and local entrepreneurs. Several tourism farms are working in the area. Several nature trails and 6 bird watching towers are opened. Boat-trips are organized on some rivers and some parts of the bay in the way that is not disturbing for birds.

30. Jurisdiction:

Include territorial, e.g. state/region, and functional/sectoral, e.g. Dept of Agriculture/Dept. of Environment, etc.

territorial: Lääne County, 4 local municipalities (Ridala, Martna, Lihula, Hanila).

functional: Ministry of Environment (Department of Nature Conservation)

31. Management authority:

Provide the name and address of the local office(s) of the agency(ies) or organisation(s) directly responsible for managing the wetland. Wherever possible provide also the title and/or name of the person or persons in this office with responsibility for the wetland.

Administration of the Matsalu Nature Reserve.
Penijõe 90305 Lihula, Läänemaa, Estonia.

32. Bibliographical references:

scientific/technical references only. If biogeographic regionalisation scheme applied (see 13 above), list full reference citation for the scheme.

Erm, V., Järv, L., Lepik, I., Lotman, A., Matsalu kalad, kahepaiksed, roomajad ja imetajad. Fishes, amphibians, reptiles and mammals of Matsalu. Tartu, 1998.

Kalamees, A. (ed.) Important Bird Areas in Estonia. Tartu, 2000, Eesti Loodusfoto, 114 p.

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Kumari, E. (ed.). Ornitoloogiline kogumik III. Tartu, 1963. 208 p. In Estonian with Russian and English summaries. (Collection of ornithological research III.)

Kumari, E. (ed.). Waterfowl in Estonia. Tallinn, 1970. 72 p.

Kumari, E. et al (ed.). Matsalu maastik ja linnud. Ornitoloogiline kogumik VI. Tallinn, 1973. 167 p. In Estonian with Russian and English summaries. (Landscape and Birds of Matsalu. Collection of ornithological research VI)

Kumari, E.(ed.). Estonian Wetlands and Their Life. Estonian Contributions to the International Biological Program, No 7. Tallinn, 1974. 208 p. (Collection of ornithological researches VI.)

Kumari, E. (ed.). Matsalu -rahvusvahelise tähtsusega märgala. Tallinn, 1985. 311 p. In Estonian with Russian and English summaries. (Matsalu- a Wetland of International Importance).

Mägi, E., Kaisal, K. Kui palju linde elab Matsalu niitudel. Loodusvaatlusi 1997-1999. Lihula, 1999. In Estonian and English summary. (How many bird are on the meadows of Matsalu). p.88-104

Mägi, E., Kastepõld, T. Matsalu lindude nimestik. Birds of Matsalu. Tallinn, 1996.

Oulasvirta, P., Leinikki, J., Reitalu, T. Underwater biotopes in Väinameri and Kõpu area, western Estonia. Helsinki 2001. 76 p.

Trei, T. Phytobentos of Matsalu Bay. Tallinn 1991. (In Estonian with English summary)

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