

Information Sheet on Ramsar Wetlands (RIS) – 2009-2012 version

Available for download from http://www.ramsar.org/ris/key_ris_index.htm.

Categories approved by Recommendation 4.7 (1990), as amended by Resolution VIII.13 of the 8th Conference of the Contracting Parties (2002) and Resolutions IX.1 Annex B, IX.6, IX.21 and IX.22 of the 9th Conference of the Contracting Parties (2005).

Notes 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. Further information and guidance in support of Ramsar site designations are provided in the *Strategic Framework and guidelines for the future development of the List of Wetlands of International Importance* (Ramsar Wise Use Handbook 14, 3rd edition). A 4th edition of the Handbook is in preparation and will be available in 2009.
3. Once completed, the RIS (and accompanying map(s)) should be submitted to the Ramsar Secretariat. Compilers should provide an electronic (MS Word) copy of the RIS and, where possible, digital copies of all maps.

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

Estonian Wetland Society
Pärnu mnt 40, Häädemeeste, 86001 Pärnumaa, Estonia
Kai Kimmel (kkimmel@hotmail.ee)

FOR OFFICE USE ONLY.

DD MM YY

--	--	--

Designation date

--	--	--	--	--	--	--	--

Site Reference Number

2. Date this sheet was completed/updated:

31 May 2011

3. Country:

Estonia

4. Name of the Ramsar site:

The precise name of the designated site in one of the three official languages (English, French or Spanish) of the Convention. Alternative names, including in local language(s), should be given in parentheses after the precise name.

Luitemaa

5. Designation of new Ramsar site or update of existing site:

This RIS is for (tick one box only):

- a) Designation of a new Ramsar site ; or
b) Updated information on an existing Ramsar site

6. For RIS updates only, changes to the site since its designation or earlier update:

a) Site boundary and area

The Ramsar site boundary and site area are unchanged:

or

If the site boundary has changed:

- i) the boundary has been delineated more accurately ; or
- ii) the boundary has been extended ; or
- iii) the boundary has been restricted**

and/or

If the site area has changed:

- i) the area has been measured more accurately ; or
- ii) the area has been extended ; or
- iii) the area has been reduced**

** **Important note:** If the boundary and/or area of the designated site is being restricted/reduced, the Contracting Party should have followed the procedures established by the Conference of the Parties in the Annex to COP9 Resolution IX.6 and provided a report in line with paragraph 28 of that Annex, prior to the submission of an updated RIS.

b) Describe briefly any major changes to the ecological character of the Ramsar site, including in the application of the Criteria, since the previous RIS for the site:

7. Map of site:

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

a) A map of the site, with clearly delineated boundaries, is included as:

- i) a hard copy (required for inclusion of site in the Ramsar List): ;
- ii) an electronic format (e.g. a JPEG or ArcView image) ;
- iii) a GIS file providing geo-referenced site boundary vectors and attribute tables .

b) Describe briefly the type of boundary delineation applied:

e.g. the boundary is the same as an existing protected area (nature reserve, national park, etc.), or follows a catchment boundary, or follows a geopolitical boundary such as a local government jurisdiction, follows physical boundaries such as roads, follows the shoreline of a waterbody, etc.

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

8. Geographical coordinates (latitude/longitude, in degrees and minutes):

Provide the coordinates of the approximate centre of the site and/or the limits of the site. If the site is composed of more than one separate area, provide coordinates for each of these areas.

58°10' N 24°35' E

9. General location:

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

Luitemaa Nature Reserve is located in South-western coast of Estonia, in Pärnu County, approximately 20 kilometres south of Pärnu.

10. Elevation: (in metres: average and/or maximum & minimum)

0-34 m

11. Area: (in hectares)
11 240 ha

12. General overview of the site:

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

Luitemaa (the name of the area means the land of dunes) is a mosaic wetland complex with the diversity of coastal and inland habitats including shallow sea, the diverse coastline with small bays, capes and islands, coastal meadows and reed-beds. Remarkable ridges of dunes formed in various phases of the Baltic Sea, mires and dry and wet forest stands are characteristic. Being one of two mires Tolkuse Bog has formed in the place of an ancient lagoon between the dunes. The wetland, particularly the low sea and wide coastal meadows, has its specific significance for breeding and migrating birds.

13. Ramsar Criteria:

Tick the box under 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). All Criteria which apply should be ticked.

1 • 2 • 3 • 4 • 5 • 6 • 7 • 8 • 9

14. Justification for the application of each Criterion listed in 13 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).

Criterion 1

The site is a good representative of several types of coastal wetlands and a natural raised bog complex characteristic of the Boreal Biogeographical region. Wetland habitats occurring in Luitemaa Nature Reserve and listed in Annex I Habitat Directive are sandbanks which are slightly covered by seawater (1110), mudflats and sandflats not covered by seawater at low tide (1140), coastal lagoons (*1150), large shallow inlets and bays (1160), Boreal Baltic islets and small islands (1620), Boreal Baltic coastal meadows (*1630), active raised bogs (*7110), transition mires and quaking bogs (7140), bog woodland (*91D0), Fennoscandian deciduous swamp woods (*9080), rivers and streams (Water courses of plain to montane levels with the *Ranunculion fluitans* and *Callitriche-Batrachion* vegetation 3260), northern boreal alluvial meadows (6450), alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (91E0) and riparian mixed forests of *Quercus robur*, *Ulmus laevis*, *Fraxinus excelsior* along the rivers (91F0).

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

Criterion 2

The site supports an appreciable assemblage of rare, vulnerable and endangered species of birds and plants, some of them occurring in great numbers or densities (see also justification of criterion 4 and points 21 and 22).

It supports bird species of EU conservation interest, listed on Annex I of Council directive 2009/147/EEC: Tengmalm's Owl *Aegolius funereus*, Kingfisher *Alcedo atthis*, Lesser White-fronted Goose *Anser erythropus*, Tawny Pipit *Anthus campestris*, Short-eared Owl *Asio flammeus*, Hazel Hen *Bonasa bonasia*, Bittern *Botaurus stellaris*, Barnacle Goose *Branta leucopsis*, Eagle Owl *Bubo bubo*, Dunlin *Calidris alpina shinzui*, Black Stork *Ciconia nigra*, Marsh Harrier *Circus aeruginosus*, Montagu's Harrier *Circus pygargus*, Corncrake *Crex crex*, Bewick's Swan *Cygnus columbianus bewickii*, Whooper Swan *Cygnus cygnus*, White-backed Woodpecker *Dendrocopos leucotos*, Black Woodpecker *Dryocopus martius*, Nightjar

Caprimulgus europaeus, Red-breasted Flycatcher *Ficedula parva*, Great Snipe *Gallinago media*, Pygmy Owl *Glaucidium passerinum*, Crane *Grus grus*, White-tailed Eagle *Haliaeetus albicilla*, Red-backed Shrike *Lanius collurio*, Woodlark *Lullula arborea*, Bluethroat *Luscinia svecica*, Smew *Mergus albellus*, Ruff *Philomachus pugnax*, Tree-toed Woodpecker *Picooides tritactylus*, Grey-headed Woodpecker *Picus canus*, Golden Plover *Pluvialis apricaria*, Slavonian Grebe *Podiceps auritus*, Spotted Crake *Porzana porzana*, Little Crake *Porzana parva*, Black Grouse *Tetrao tetrix*, Capercaillie *Tetrao urogallus*, Wood Sandpiper *Tringa glareola*, Little Tern *Sterna albifrons*, Common Tern *Sterna hirundo*, Arctic Tern *Sterna paradisae*, Ural Owl *Strix uralensis*.

Also Otter *Lutra lutra* and Pond Bat *Myotis dasycneme* (listed in Annexes II and IV of EU Habitats Directive), Sand Lizard *Lacerta agilis* and Natterjack Toad *Bufo calamita* (listed in the Annex IV) and Swamp Angelica *Angelica palustris* (the Annex II of EU Habitats Directive) are present.

Some of the above mentioned species are also listed in the Red Data Book of Estonia. Highly endangered and strongly protected (I protection category) are Black Stork, Ruff and White-tailed Eagle.

Criterion 3

The site supports particular elements of biological diversity that are rare or particularly characteristic of the Boreal biogeographic region such as coastal grasslands (semi-natural meadows) and untouched naturally open raised bogs, which contain a significant proportion of species (e.g. *Sphagnum* mosses) adapted to special conditions of oligotrophic peatland environment.

Criterion 4

The site supports animal species at a critical stage in their life cycles, being a refuge for animals with large habitat requirements such as breeding sites for Wolf and Lynx as well hibernation sites for Brown Bear. The forests are important breeding and wintering areas for several rare and vulnerable sedentary bird species like Capercaillie *Tetrao urogallus*, Owls (*Bubo bubo*, *Strix uralensis*, *Aegolius funereus*) and Woodpeckers (*Dryocopus martius*, *Dendrocopus leucotos*, *Picooides tritactylus*, *Picus canus*).

The coastal wetlands are important stop-over areas for waterbirds staging in Luitemaa during migration periods. Shallow-water sea is moulting place for Goldeneyes (>10000) and Mute Swans (>1000). See also point 22.

Passage: Whooper Swan *Cygnus cygnus*, Northern Shoveler *Anas clypeata*, Smew *Mergellus albellus*, Great Cormorant *Phalacrocorax carbo*;

Breeding: Great Cormorant *Phalacrocorax carbo*, White-tailed Eagle *Haliaeetus albicilla*, Corncrake *Crex crex*, Eurasian Pygmy-owl *Glaucidium passerinum*, Eurasian Nightjar *Caprimulgus europaeus*, Wood Lark *Lullula arborea*.

Criterion 5

The site regularly supports during migration period substantial numbers of waterbirds (>20000), including Bewick's Swan *Cygnus columbianus* (>2000), *Anser fabalis* (>1000), *Anser albifrons* (>3000), *Branta leucopsis* (>15000), *Anas penelope* (>10000), *Anas crecca* (>10000), *Anas acuta* (>2000), *Bucephala clangula* (>11000), etc (census data from 2000-2009).

Criterion 6

The site regularly supports during migration period more than 1% of the individuals in the population of Bewick's Swan *Cygnus columbianus bewickii* (>10%) of the NW Europe wintering population and Barnacle Goose *Branta leucopsis* (3%) of the N Germany and Netherlands wintering population (census data from 2000-2009).

Criterion 8

It is an important spawning ground for the fish species: The Sea Trout *Salmo trutta* and River Lamprey *Lampetra fluviatilis* (Annex II of EU Habitats Directive).

15. 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:

A: Boreal Biogeographic region according to the EEA

B: terrestrial area Sarmatic mixed forests

freshwater area Southern Baltic Lowlands temperate floodplain rivers and wetlands

b) biogeographic regionalisation scheme (include reference citation):

A: EEA, European Environment Agency,

http://www.eea.europa.eu/publications/report_2002_0524_154909

B: 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. – *Bio Science* 58: 403-414.

16. Physical features of the site:

Characteristic is diverse coastline with small bays, capes and islands. The sea is shallow; extensive sandy and muddy areas with stone fields appear when the water is low.

The relief of the area is characterised by landforms reshaped by the sea and wind. Diverse coastal formations have formed in the various phases of the Baltic Sea. Due to the impact of the sea regression some of the coastal formations are today quite a long distance inland from the contemporary coast. The Soometsa dunes developed during the Ancylus stage of the Baltic; the Rannametsa dunes, closer to the sea today, in the Litorina stage. The latter are the highest in Estonia: the height of Tornimägi is 34 m above the sea level and the relative height of Tõotusemägi is 29 m. In between the dune formations, in place of an ancient lagoon the Tolkuse Mire (with max peat layer of 5 m) has developed.

17. Physical features of the catchment area:

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

The catchment area is the flat coastal lowland which has formed during the land uplift as a coastal terrace. Devonian sandstones form the basement. The relief is characterised by various marine and eolian landforms. The coastal lowland is drained by few rivers, biggest of them the River Rannametsa. Moist mineral soils and forests dominate.

The climate in the region is a transition from maritime to continental. The Baltic Sea has the strongest impact on the climate. The yearly average temperature is up from +5 to +6 degree. The

average precipitation is 600 - 650 mm (mainly from April to October). The duration of snow cover can change considerably, the average being about 90 days.

18. Hydrological values:

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

Mires are important as stabilizing and controlling the water regime of the surrounding areas.

19. 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: Xp A U Ts H 7 1 J D 9 Tp 2 E G M

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.

20. General ecological features:

Provide further description, as appropriate, of the main habitats, vegetation types, plant and animal communities present in the Ramsar site, and the ecosystem services of the site and the benefits derived from them.

The site includes large shallow sea areas, where extensive sandy and muddy areas with stone fields appear while the water level is low. Reeds, club-rushes and bulrushes spread widely. Large areas are covered by coastal grasslands, which are generally richer in species than is common in West Estonia: more than 250 plant species have been noted. Historically grazed coastal grasslands have covered nearly 1000 ha, nowadays over 600 ha are managed.

The unique complex where the growing conditions for plants vary greatly is formed due to the interchanging of dunes and peatlands. The dunes are covered by light-filled dry boreal pine forest. The Tolkuse Mire (5500 ha) has unique character due to the peculiarities in water movement and rapid peat growth.

21. Noteworthy flora:

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in 14, 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.*

More than 500 vascular plant species have been found. Protected plant species growing on wide coastal meadows are represented by Wild Meadow Gladiolus *Gladiolus imbricatus* (population of which is one of the largest in Europe), Shining Meadow Rue *Thalictrum ludicum*, Swamp Angelica *Angelica palustris*, Lesser Butterfly Orchid *Platanthera bifolia*, March Orchid *Dactylorhiza incarnata*, Butterbur *Petasites spurius*, Spotted Orchid *Dactylorhiza fuchsii*, Marsh Helleborine *Epipactis palustris*. Perennial Honesty *Lunaria rediviva* and Ramsons *Allium ursinum* occur in forest, while White Water-lily *Nymphaea candida* grows in mire pools and Club-moss *Diphasiastrum complanatum* on sand ridges.

22. Noteworthy fauna:

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in 14. 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.*

Fishes: The Sea Trout and River Lamprey spawn in the Timmkanal river.

Reptiles: The sandy patches in forested dunes are the habitat of the Sand Lizard *Lacerta agilis*.

Amphibians: The coastal meadows are the habitat of the Natterjack Toad *Bufo calamita*.

Birds: 271 species of birds have been observed of which 182 are breeders. Managed coastal meadows (in an area more than 600 ha) are habitats for the declining species: Dunlin *Calidris alpina schinzii* (0-8p) and Black-tailed Godwit *Limosa limosa* (2-4p). Noteworthy are Tundra Swan, Whooper Swan, Eurasian Wigeon, Mallard, Common Goldeneye, Smew, White-tailed Sea Eagle. Thousands of migrating Barnacle (up to 15000), White-fronted and Bean Geese feed on these grasslands.

The humid dune slacks are the home for the Eagle Owl *Bubo bubo* and Capercaillie *Tetrao urogallus*.

Mires are important habitats for Crane *Grus grus*, Whimbrel *Numenius phaeopus*, Golden Plover *Pluvialis apricaria*, Wood Sandpiper *Tringa glareola*, Black Grouse *Tetrao tetrix*,

Mammals: Mammals live mainly in marginal parts of the area and include Brown Bear *Ursus arctos*, Wolf *Canis lupus*, and Lynx *Lynx lynx*, also Beaver *Castor fiber* and Otter *Lutra lutra*. Pond Bat *Myotis dasycneme* lives in dune forests.

23. Social and cultural values:

a) Describe if the site has any general social and/or 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:

The area is important for traditional berry and mushroom picking.

b) Is the site considered of international importance for holding, in addition to relevant ecological values, examples of significant cultural values, whether material or non-material, linked to its origin, conservation and/or ecological functioning?

If Yes, tick the box and describe this importance under one or more of the following categories:

- i) sites which provide 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) sites which have exceptional cultural traditions or records of former civilizations that have influenced the ecological character of the wetland:
 - iii) sites where the ecological character of the wetland depends on the interaction with local communities or indigenous peoples:
 - iv) sites where 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:
-

24. Land tenure/ownership:

a) within the Ramsar site: About 70 % of the reserve area is owned by State, the rest is private land.

b) in the surrounding area: Surrounding agricultural areas are owned mainly by private owners, but surrounding forest areas is owned mainly by State.

25. Current land (including water) use:

a) within the Ramsar site: small-scale agriculture (management of coastal meadows), tourism, local fishery. Peat excavation is stopped, the abandoned area needs restoration.

b) in the surroundings/catchment: forestry, agriculture.

26. 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: The peatland area has a great number of ditches that endanger the water balance of the mire complex and worsen living conditions of plants and animals. For the coastal meadows the spread of reed and shrub, inconsistent mowing and grazing and using wrong management methods are the most important threats. As the area is popular for tourism activities also disturbance is important threat for wildlife.

b) in the surrounding area: Digging new ditches in the surrounding can influence the water balance of the wetland site.

27. Conservation measures taken:

a) List national and/or international category and legal status of protected areas, including boundary relationships with the Ramsar site:

In particular, if the site is partly or wholly a World Heritage Site and/or a UNESCO Biosphere Reserve, please give the names of the site under these designations.

In 1958 local protection sites in Rannametsa, Tolkuse Mire and Timmkanal outcrop were formed. In 1991 the Rannametsa-Soometsa reserve was established. In 2000 it was reorganised as a nature reserve and in 2004 renamed Luitemaa.

The site is also part of an IBA and a Natura 2000 site.

b) If appropriate, list the IUCN (1994) protected areas category/ies which apply to the site (tick the box or boxes as appropriate):

Ia ; Ib ; II ; III ; IV ; V ; VI

c) Does an officially approved management plan exist; and is it being implemented?:

Draft management plan for 2003-2012 has been compiled but not officially approved. Management plan for 2011-2020 is under preparation.

d) Describe any other current management practices:

In 2001-2005 EU LIFE-Nature project "Restoration and management of the Häädemeeste wetland complex" was carried out. Several habitat restoration activities (on coastal meadows and mire sites affected by drainage and peat cutting) were carried out. Important part of the project was development of the infrastructure and opportunities for the awareness-raising and dissemination of the project results.

28. Conservation measures proposed but not yet implemented:

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

29. Current scientific research and facilities:

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

There is a simple bird ringing site for studying and monitoring bird migration in Pulgoja reed-bed since 1979. The closest well-equipped field-station is located in Nigula Ramsar site, 20 km from Luitemaa.

30. Current communications, education and public awareness (CEPA) activities related to or benefiting the site:

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

In frame of the LIFE-Nature project several infrastructures and opportunities for the CEPA activities has been created: bird-watching towers, information boards, posters, coastal info house and nature trail in Tolkuse Bog.

Since 2009 the visiting management is the responsibility of the State Forest Management Centre.

31. Current recreation and tourism:

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

Luitemaa Nature reserve is an important attraction for ecotourism especially for bird-watching. Nature trail located in Tolkuse Bog close to Via Baltica is one of the most visited nature trails in Estonia.

32. Jurisdiction:

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

Territorial: Häädemeeste, Surju and Tahkuranna municipalities of the Pärnu County

Functional: Environmental Board under the Ministry of Environment (Narva mnt 7a, 15172 Tallinn, ESTONIA).

33. 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.

Environmental Board, Viljandi-Pärnu Region (Vana-Järve, Häädemeeste Parish, Estonia)

Mr. Sulev Vare (sulev.vare@keskkonnaamet.ee), director of the Pärnu-Viljandi Region of Environmental Board

34. Bibliographical references:

Scientific/technical references only. If biogeographic regionalisation scheme applied (see 15 above), list full reference citation for the scheme.

Kose, M. 1988. Ülevaade Tolkuse raba haudelinnustikust ja selle muutustest. - Loodusevaatlusi 1988 (1): 54-64.

Kose, M., Kose, M., Klein, A. 2003. The conservation history of the Rannametsa Dunes. - Metsanduslikud uurimused XXXIX: 93-99.

Kose, M. & Kose, M., Klein, A. 2004. Managing meadows or managing people? Coastal meadow restoration and management in the Häädemeeste region. - In: *Coastal meadow management. Best Practice Guidelines. The experiences of LIFE-Nature project "Boreal Baltic Coastal Meadow Preservation in Estonia"*. Ministry of Environment. Tallinn. Pp. 76-85.

Kose M., Klein A., Tammekänd I., Leivits A., Leivits M. 2008. Effect of the Natura 2000 habitat restoration on bird population in coastal meadows: experiences and management implications from

the EU Life project in Estonia. - In: *6th European Conference on Ecological Restoration: Towards a sustainable future for European Ecosystems - Providing restoration guidelines for Natura2000 habitats and species*, Ghent, Belgium, 8-12 September 2008.

Kose, M., Moora, M. 2004. Monitoring the Wild gladiolus (*Gladiolus imbricatus*) population under different meadow management regime. – In: *Coastal meadow management. Best Practice Guidelines. The experiences of LIFE-Nature project “Boreal Baltic Coastal Meadow Preservation in Estonia”*. Ministry of Environment. Tallinn. Pp. 70-71.

Moora, M., Kose, M., Jõgar, Ü. 2007. Optimal management of the rare *Gladiolus imbricatus* in Estonian coastal meadows indicated by its population structure. - *Applied Vegetation Science* 10: 161-168.

Restoration and management of the Häädemeeste wetland complex 2001-2005. EU LIFE-Nature project (LIFE00NAT/EE/7082) URL: <http://www.luitemaa.eoy.ee/>

Please return to: **Ramsar Convention Secretariat, Rue Mauverney 28, CH-1196 Gland, Switzerland**

Telephone: **+41 22 999 0170** • Fax: **+41 22 999 0169** • e-mail: **ramsar@ramsar.org**