

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

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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 7, 2nd edition, as amended by COP9 Resolution IX.1 Annex B). A 3rd edition of the Handbook, incorporating these amendments, is in preparation and will be available in 2006.
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:

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Designation date

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Site Reference Number

2. Date this sheet was completed/updated:

9 September 2010

3. Country:

Lithuania

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.

Nemunas Delta (Nemuno delta)

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:

There are no changes to the ecological character of 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 the Nemunas Delta Regional Park area – 28952 ha. A plan of boundaries of Nemunas Delta Regional Park and its zones was approved by Resolution No 1312 of the Government of the Republic of Lithuania of 7 November 2001.

The territory of the park is divided into functional priority zones:

- Conservation priority: reserves – 2,753.43 ha, conservation areas – 11,779.61 ha.
- Ecological protection priority: 10,300.53 ha.
- Recreational priority: 349.77 ha.
- Economic priority: 2,529.97 ha.
- Residential: 24.22 ha.
- Other (public waters): 1,275.47 ha.

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.

Coordinates of the approximate centre:

55°18' N; 21°20' 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.

In the western part of Lithuania. Šilute district, Klaipėda county, approximately 8 km west of the town of Šilute (21500 inh.). There are Rusnė small town (2300 inh.), Pakalnė village (130 inh.), Uostadvaris village (125 inh.), Ventė village (185 inh.) and Minija village (Mingė) (50 inh.) in protected area of regional park.

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

Average elevation above sea level is 0.6-1.2 m, max 4.8 m

11. Area: (in hectares)

28952 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.

A unique system of Nemunas delta distributaries (Atmata, Pakalnė, Skatulė, Skirvytė, Vytinė, Vorusnė and other), Rusnė islands, the landscape of Ventės Ragas and Žalgiriai, oxbow lakes, Lake Krokų Lanka of lagoon origin, upland swamp complexes and impressive water meadows in the lower reaches of Nemunas as well as the Curonian Lagoon avandelta.

The Nemunas delta and surrounding water meadows, moist forests and swamps comprise a unique natural complex of the Baltic region. This complex influences the hydrological and ecological functioning of the entire Nemunas basin. The Nemunas delta features a great variety of biotopes, flora and fauna. There are the only growing areas of some endangered plant species in Lithuania. Lithuania's most important migration path of many fish species extends along the lower reaches of Nemunas. The Nemunas delta and the bordering part of the Curonian Lagoon are home to several fish species included in the Red Data Book of Lithuania as well as endangered species of amphibians and mammals. There are some of Europe's most valuable resting sites of migratory water and swamp birds and Lithuania's most important breeding grounds of many bird species (including globally endangered).

There are impressive structures reflecting the relationship between the population of the region and water, such as Uostadvaris and Ventė lighthouses, the engineering complex of the old water lift station and the old polder engineering equipment. There is a unique folk architectural ensemble of the Skirvytė village. The Mingė village is called the Venice of Lithuania, as the River Minija has become its main street. Rusnė has a distinctive old town.

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 territory includes a very valuable and unique natural complex of the Baltic region. This complex influences the hydrological and ecological functioning of the entire Nemunas basin. Wetlands of the site

include the eastern periphery of the water area of Curonian Lagoon with Kniapupas Bay and a dense hydrographic network of inland waters – the deltaic river system of Nemunas, river mouth channels, lagoon-origin (Krokų Lanka) and oxbow lakes, polder canals, fishing ponds, deltaic upland and lowland swamp complexes, and shallow ground waters. This is a representative, rare and relatively large undisturbed complex of bogs, swamps, mires and rivulets.

Threatened communities included in the Annex I of the European Habitats directive:

- 1130 estuaries (2,080 ha),
- 1150 lagoons (3,100 ha),
- 2330 inland dunes with open *Corynephorus* and *Agrostis* grasslands (9 ha),
- 3160 natural dystrophic lakes (16 ha),
- 6120 xeric sand calcareous grasslands (6 ha),
- 7110 active raised bogs (600 ha),
- 7120 degraded raised bogs (326.3 ha),
- 9080 fennoscandian deciduous swamp woods (100 ha),
- 91D0 bog woodland (19.7 ha).

Criterion 2:

The territory is home to rare and endangered species (including globally endangered) as well as rapidly vanishing ecological communities.

Breeding bird species included in the Annex I of European Birds Directive:

Botaurus stellaris, *Circus aeruginosus*, *Circus pygargus*, *Haliaeetus albicilla*, *Porzana porzana*, *Porzana parva*, *Crex crex*, *Recurvirostra avosetta*, *Calidris alpina*, *Philomachus pugnax*, *Gallinago media*, *Larus minutus*, *Sterna hirundo*, *Sterna albifrons*, *Chlidonias niger*, *Chlidonias hybridus*, *Bubo bubo*, *Asio flammeus*, *Alcedo atthis*, *Acrocephalus paludicola*, *Lanius collurio*, *Emberiza hortulana*.

Species included in the Annex II of the European Habitats directive

- Mammals: *Myotis dasycneme*.
- Fishes: *Petromyzon marinus*, *Misgurnus fossilis*.
- Insects: *Leucorhinia pectoralis*.

The site also supports a number of plant and animal species listed in the Red Data Book of Lithuania - see point 21 and 22.

Criterion 3:

The territory includes flora and fauna populations of importance to the preservation of biodiversity in the Baltic Sea region. The Nemunas delta features a great variety of biotopes, flora and fauna.

Criterion 4:

The territory includes resting sites for migratory water and swamp bird populations of international importance and important wintering grounds for water birds – see justification of criterion 5. The delta and surrounding water meadows, swamps and wet forests are Lithuania's most important breeding grounds for many rare and endangered bird species – see point 22.

Criterion 5:

The Nemunas Delta Regional Park is one of Europe's most important resting sites for many migratory water and swamp bird species. Concentrations of 11 water bird species of international importance were observed here in 1994-1999. Water meadows of the regional park are among Europe's most important resting sites for whooper swans (*Cygnus cygnus*). A total of 6,800 swans (about 11,5% of the north-west European population) were counted in March 1999. Large flocks of Bewick's swans (*Cygnus columbianus bewickii*) are also observed in the regional park during migration. Some 3,200 such birds (16% of the north-west European population) were counted in the autumn of 1995. Wet meadows surrounding the delta are among the most important resting sites for white-fronted geese (*Anser albifrons*) and greylag geese (*Anser anser*) in the Baltic region. Up to 70,000 white-fronted geese and up to 5,000 greylag geese were observed there in the early spring of 1998-1999. Small flocks of globally endangered lesser white-fronted geese (*Anser erythropus*) have been observed in this territory during autumn migrations in recent years. Some 200 geese of this rare species were counted in the regional park in the autumn of 1997. There are some of Europe's most important resting sites for migratory pochards (*Aythya ferina*) and tufted ducks (*Aythya fuligula*) in the Nemunas delta. Some 41,000 pochards and 38,000 tufted ducks were counted there during a plane trip in 1995-1998. Lithuania's largest flocks of green-winged teals and garganey teals (*Anas crecca*, *A. querquedula*), widgeons (*Anas Penelope*), pintails, shovellers, gadwalls and coots are regularly registered in the regional park. Delta shallows, sand islands and surrounding wet meadows are some of

the most important resting sites for migratory plovers (*Charadriidae*) in the Baltic region. Huge flocks of lapwings (*Vanellus vanellus*) (up to 11,000), ruffs (*Philomachus pugnax*) (up to 8,000), dunlins (up to 5,000) and other plovers have been observed there in recent years.

There is an extremely important wintering ground of sea eagles in the delta. Up to 40 wintering eagles were counted there in 1992-1994.

Criterion 6:

More than 1% of the whole biogeographical population of several species of water birds is concentrated in the territory: whooper swans (*Cygnus cygnus*), Bewick's swans (*Cygnus columbianus bewickii*), white-fronted geese (*Anser albifrons*), lesser white-fronted geese (*Anser erythropus*), pochards (*Aythya ferina*) and tufted ducks (*Aythya fuligula*) – see numbers provided in the justification of criterion 5.

Criterion 8:

Nemunas delta is also important migration path of protected fish species (*Salmo salar*, *Salmo trutta trutta*).

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:

The area belongs to the Boreo-nemoral vegetation zone, i.e. North European mixed forest region (Udvardy, 1975.).

Boreal (Council Directive 92/43/EEC)

b) biogeographic regionalisation scheme (include reference citation):

The area belongs to the Boreo-nemoral vegetation zone (Udvardy, 1975.). The original boreo-nemoral vegetation comprises a mixture of coniferous and deciduous trees, although conifers have probably always predominated. This zone is wide in Baltic states and together with Sweden and western Russia contains a comparatively large proportion of Europe's boreo-nemoral regions.

Council Directive 92/43/EEC

16. 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 Nemunas delta lowland is part of the lower reaches of Pajūris. Its relief was formed in Pleistocene by a glacier in the lower reaches of Nemunas. Later it was changed by glacier-dammed lakes and deltaic sediments of Nemunas silt. The Curonian Lagoon started forming in the Littorina Sea period 5000-4500 years ago. The delta lowlands are still changed by the branches of the Nemunas delta (Gilija, Rusnė, Atmata, Skirvytė) and the deltas of Minija, Šyša, Tenenis and other rivers merging with the Nemunas delta. Owing to a growing amount of silt at the mouth of Nemunas, the delta is slowly increasing and moving towards the Curonian Lagoon. For example, since 1800, the delta at the mouth of Skirvytė moved westwards by over 2 km. The Nemunas delta starts 48 km from the mouth (beneath Tilžė), where Nemunas splits into the Rusnė and Gilija branches. Thirteen kilometres from the mouth (near the town of Rusnė) Rusnė splits into Atmata and Skirvytė. Every year, Nemunas brings an average of some 21 km² of water to the Curonian Lagoon through the delta. The bulk of the annual amount of water (approximately 41-46%) is brought in spring. Some 16-29% of Nemunas discharge goes to Gilija and the rest of it goes to the Rusnė branches: Skirvytė (48-54%) and Atmata (23-30%). In addition, the delta is crossed by a number of small streams, oxbows, channels, and detached branches that have turned into streams or oxbow lakes. The Nemunas delta lowland descends from the east to the west. Its average height is 0.6-1.2 m above sea level. In the east, the delta lowland starts with a wide Nemunas floodplain. A flat lowland area extends westwards of Šilutė. The delta is dominated by alluvial deposits. There are moors buried under alluvial deposits. Ventė-Kintai surroundings afford a view of peripheral moraine formation crests. Some 25% of the delta area is covered by swamps (Aukštumalė, Rupkalviai, Medžioklė, Berštai and other). The delta includes the largest Lithuanian island of Rusnė (area – 45.2 km²) and the largest lake of estuary origin, Krokų Lanka (area – 7.8 km²), which formed after Nemunas silt partitioned part of the Curonian Lagoon. The mouth of the River Nemunas is surrounded by very fertile water

meadows. Spring floods last for an average of 60 days. During floods, the water level in the delta rises to up to 2-3 m, flooding large areas (up to 20,000 ha). Some 5-20t/ha of silt is deposited in the delta during floods every year.

The average air temperature of the warmest month (July) is +16.8°C and that of the coldest month (January) is -2.6°C. The annual amount of precipitation averages 810 mm.

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 surface of the current regional park is covered by a shallow low-lying (the average height above sea level is 2–5 metres) alluvial Nemunas delta plain, whose relief was formed in Pleistocene by a glacier in the lower reaches of Nemunas during the last glacial period. Later this surface was changed by glacier-dammed lakes and deltaic sediments. All of these processes have been accompanied by neotectonic sinking (at present is makes up 1–2 mm per year). The transport and accumulation of alluvium have intensified as a result of intensifying agriculture in the Nemunas basin, deforestation and the washing away of large areas by surface water. It accumulated in the delta plain, river mouths, blocking the opening of some depositaries. Detached oxbows have turned into separate lakes (oxbow lakes). Deltaic deposits have partitioned Lake Krokų Lanka, which used to be a bay before. A large amount of silt has resulted in fast growth of the front part of the delta and formation of new silt deposits and islands (Briedžiai, Kubiliai, Triušiai, Kiemas, Vitas). Owing to such deltaic deposition, the deltaic bank has moved 4–8 km westwards. In addition, this process still continues in the Rusnė avandelta. Every year, silt deposits move towards the lagoon by a dozen of metres.

The park is covered by forests (10.3%), water bodies (17.3%), swamps (13.0%), agricultural land (51.6%), settlements (0.6%) and other areas (7.2%). It embraces part of the Nemunas delta and Ventės Ragas, the Rusnė island, the nearby islands of Ragininkai and Galzdonai, Lake Krokų Lanka, Aukštumala, Rupkalviai and Medžioklė swamps. The Nemunas Delta Regional Park is part of the alluvial deltaic plain landscape. There are three catchments: Šilutė, Kintai and Rusnė. Šilutė is the largest catchment extending from the south-eastern boundary of the park to the lower reaches of the River Minija. There are three units of landscape: a wavy fine sandy loam plain scenery, largely swampy sandy loam floodplain scenery and largely swampy sandy loam non-floodplain scenery. The southern part of the Kintai catchment is covered by the landscape of a chain of moraine hills containing two sceneries: largely wavy sandy loam plain and wavy fine sandy loam plain sceneries. The Rusnė catchment covers the youngest part of the delta. This plain and the lowermost part of the park have the densest network of surface waters. The catchment is dominated by a loamy floodplain scenery with summer and winter polders and fertile and infertile meadows.

Most of the Nemunas Delta Regional Park territory, except washed-away raised moraine surfaces, is affected by various bog formation processes. The main upland bog and lowland bog complexes of the park are as follows: the Aukštumala bog (3,018 ha, actually unaffected – 1,017 ha), the Rupkalviai bog (3,410 ha, actually unaffected – 166.7 ha), the Medžioklė bog (1,450 ha, actually unaffected – 208.1 ha), the Berštai bog – 517 ha, the Leitgiriai bog (166 ha). The very valuable deltaic upland bogs create favourable conditions for the growth of unique plant communities. These are the only deltaic upland bogs of the kind in the Lithuania.

The Nemunas Delta Regional Park is part of the Pajūris Lowland climatic sub-district. The average air temperature in the Nemunas delta ranges between -3.5 and -2.5°C in January, +5.0°C in April, +17°C in July, +7.0 to +7.5°C October. The minimum air temperature in winter: -23°C (average), -35°C (maximum). The first autumn frosts on the surface of the ground occur on around 10 October. Frost affects an average of 80 cm of the ground. The frost period lasts from 15 December to 3 April. A steady snow cover forms on 25 to 30 December. The thickness of the snow cover averages 10–15 cm (30–35 cm in harsh winters). The snow cover persists for 75–80 days per year. The last spring frosts end on 10–12 May. The vegetation period without frosts lasts 160–170 days. The average annual amount of precipitation in the park territory is 700–750 mm per year. The bulk of precipitation falls in September (75–85 mm) and the smallest amount of it falls in March (35–40 mm). South-western, north-eastern, south-eastern and north-western winds prevail in the Nemunas Delta Regional Park in January, north-western, south-eastern, western and eastern winds in April, western, eastern, north-western and south-eastern winds in July, western, eastern, south-western and north-eastern winds in October. Total solar

radiation averages 85 kcal/cm² per year in most of the park territory and rises to 87 kcal/cm² per year in the western part of the park (the Rusnė island near the lagoon).

18. Hydrological values:

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

In terms of hydrographical regionalism, the Nemunas Delta Regional Park is part of the Baltic Sea coast area. Inland waters of the park include the eastern periphery of the water area of Curonian Lagoon with Kniapupas Bay and a dense hydrographic network of inland waters – the deltaic river system of Nemunas, river mouth channels, lagoon-origin (Krokų Lanka) and oxbow lakes, polder canals, fishing ponds, deltaic upland and lowland swamp complexes, and shallow ground waters.

Most of the Nemunas Delta Regional Park (except the sloping part of Ventės Ragas) lies within the Nemunas basin. The stream channel of the main river system artery – the River Nemunas (Rusnė – Skirvytė – Tiesioji to be precise) (some 35 kilometre-long) coincides with the southern periphery of the regional park. The northern periphery of the park is also connected with the rivers: the lower reaches of Minija and Tenenis, the left tributary of Minija. The mouth of the River Veržė (Veičas), a right tributary of Nemunas, is on the south-easternmost periphery of the park between Šilininkai and the Galzdonai island.

The Nemunas Delta Regional Park is crossed by the rivers Leitė, Voryčia (right tributaries of Rusnė); Šyša, Minija (right tributaries of Atmata), Upaitė, a branch of the mouth of Minija (flows into Kniapupas Bay), Aukštumala (an Atmata branch flowing into the Lake Krokų Lanka), Pamatukas, Kampė, Kurpinė (the small tributaries of Krokų Lanka), Purvalankis (a lake canal connecting it with the River Minija), and Rupkalvė, a canalised left tributary of Šyša.

Rusnė, the main branch of the delta of the River Nemunas, splits into two branches of the river mouth near the town of Rusnė: Atmata (13 km) and Skirvytė (9 km), with the River Pakalnė (9 km) branching off from it several hundred metres away. Leaving its oxbow (the old Skirvytė), on the right bank, the Rusnė island, just before the river mouth, Skirvytė splits into two branches: Tiesioji and Vytinė. Tiesioji (the southern branch), which divides the Briedžiai island from the Kaliningrad Region seacoast, coincides with the boundary of the park, while Vytinė splits into a number of smaller canals surrounding deltaic deposits delivered by Skirvytė.

Pakalnė splits into two canals, namely Rusnaitė and Vorusnė (Skatulė). In addition, there are two independent stream systems on the Rusnė island, which are separated from the main streams by deltaic deposits. These are the Naikupė stream, which has no tributaries and flows directly into the Curonian Lagoon, and the Ulmas stream, a left tributary of Atmata, which has a dense network of regulated streams and canals.

The water yield of the main branches of Nemunas flowing across of the park or along its peripheries is distributed as follows: an average of 23% of Rusnė water per year flows in Atmata and 77% in Skirvytė. During spring floods, 35% of water flows in Atmata, 62% in Skirvytė and 3% in Pakalnė. River silt is distributed in a similar way, with 5–20 t/ha of alluvial sediments deposited in the delta during spring floods every year.

An ice covering starts forming in Nemunas and its tributaries, except Minija, on 19–23 December. Ice drifts occur on 16–20 March.

Lakes cover 909.1 ha of Nemunas Delta Regional Park. In terms of their origin, these lakes are divided into 3 groups: lagoon-origin, oxbow and upland bog lakes. The first group includes Krokų Lanka covering an area of 787 ha. It is the largest lake of the regional park: it is 4.1 km in length, its maximum width is 3.3 km and the maximum depth is 2.5 m. The lake has low-lying sandy and boggy shores in the northern part. The shallows of Krokų Lanka are almost entirely covered by bulrushes, reeds and cattails.

Fluvial (oxbow) lakes in the territory of the park are concentrated on the Rusnė island (the young delta) and floodplains in Paleičiai–Girininkai–Šilininkai surroundings. The total area of oxbow lakes is 92.6 ha. The largest of them are Didysis Žiogis (14.6 ha), Dumblis (10.9 ha) and Kalnupžiogis (4.4 ha).

Small lakes of the Aukštumala upland bog, most of which are located in the convex centre and unaffected eastern part of the bog (their total area is some 16 ha), form a specific group.

The Nemunas delta is the only territory in Lithuania where river water filtering through the banks replenishes ground water reserves rather than ground water feeds rivers.

Depending on their severity, floods in Pamarys cover quite large areas of the Nemunas delta. The territory flooded in the Nemunas delta extends from the Rambynas hill to the Curonian Lagoon. The total area of the flooded territory is approximately 600 km², including some 400 km² on the right bank delta belonging to Lithuania. In some places water covers an area of up to 56 km from the river bed. Owing to higher embankments in the left bank delta belonging to the Kaliningrad Region, water covers a much smaller area of up to 1.5 km. Only near Skirvytė it may spread up to 5 km.

Spring, autumn and winter floods covering large areas of summer polders, except the chain of moraine hills in Ventės Ragas, winter polders and relatively higher areas of summer polders, are typical of Pamarys. Spring floods in the lower reaches of Nemunas start on around 19 March. The average duration of floods is 16 days and the maximum duration is 51 days. Floods reach the maximum level 6–8 days after the river overflows its banks. The average water level in the park territory near Rusnė during floods is 150–200 cm. In order to protect settlements and agricultural land from floods and high water (irregular floods), embankments have been built in Lithuania since the start of the last century. Embankments surround separate territories, whose name is derived from the Dutch word ‘polder’. Polder is a low-lying drained (usually mechanically) and cultivated area protected from regular or periodic floods by embankments. There are two types of polders in the Nemunas lowland: winter and summer. They differ in the height of embankments and the likelihood of flooding. The higher ones, winter polders, are built to protect settlements and cultivated fields. They may be flooded only during extreme floods occurring once in a century. The purpose of summer polders is to protect meadows from floods in the summer – autumn period, so that cultivated meadows are not affected by water. These polders are flooded during spring floods. Summer polders (there are 17 of them) occupy 82% of flooded polder areas.

Polders have been built in Lithuania since the start of the last century. The first polder was built in Uostadvaris (on the Rusnė island) in the lowland of Nemunas in 1907. It covers an area of 1,952 ha. Eight polders covering a total area of 7,500 ha were built in Lithuania prior to World War II. The first summer polder system was arranged as late as 1954 (Smalkai summer polder). Some 1,400 km of different-size ditches have been dug in polders.

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 • Q • 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:

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.

L – M – O – Sp – U – Tp – Ts – Xp

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 Nemunas delta and surrounding areas are distinctive for a great variety of biotopes and flora and fauna. There are 3 quite large upland bogs in the Nemunas Delta Regional Park (Aukštumalė, Medžioklė and Rupkalviai) as well as many small swamps, the shallow Lake Krokų Lanka (the average depth is 2.3 m), a large complex of Rusnė fishing ponds, several rivers and a variety of small streams, oxbows, canals, lakelets and large areas of floodplains. A wide (up to 250 m) strip of water plants extends along the

western shore of the Rusnė island and Kniaupas Bay. It is dominated by reed (*Phragmitetum communis*) and bulrushes (*Scirpetum lacustris*). Some shores are covered by reed mace (*Typhetum latifoliae*) or soft-stem bulrushes (*Schoenoplectus tabernaemontani*). Creeping spikerush (*Eleocharis palustris*) is common in reed. Deeper places are covered by a strip of broad-leaved pondweed, which is dominated by natant perfoliate pondweed (*Potamogetoneta natantis*, *P. perfoliati*). Common spatterdock (*Nupharetta lutei*) grows in the Lake Krokų Lanka in Kniaupas Bay at a depth of 1-1.2 m. The Avandelta islands, Kniaupas Bay and Lake Krokų Lanka are surrounded by a wide strip of limnades dominated by stonewort (*Chara* sp.). There are many aquatic moss (*Fontinalis antipyretica*) communities. There is a great variety of meadow communities in large areas of water meadows. The most common of them are sedge (*Caricetum distichae*, *C. Gracilis*, *C. Elatae*), dropwort and marsh cranesbill (*Filipendulo–Geranietum palustris*) as well as marsh fern and reed (*Thelypteri-Phragmitetum*) communities. The Briedžiai island and other islands are dominated by black alder (*Carici elongatae–Alnetum*) and osier (*Myrico-Salicetum auritae*; *Salicetum pentandrocinereae*) communities. Wet forests of the regional park are dominated by deciduous trees.

Bottom fauna communities are dominated by zebra mussels (*Dreissena polymorpha*), polychaete worms (*Nereis diversicolor*), larvae of nonbiting midges (*Chironomidae*) and oligochaete worms (*Oligochaeta*). Some 50 fish species live in the Nemunas delta. There is a breeding ground of many rare and endangered bird species and some of Europe's most important resting places for migratory water and swamp birds.

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.*

There is a variety of plant communities in the water meadows of Nemunas Delta Regional Park. A total of 430 species of flowering plants have been registered, including several rare and endangered species included in the Red Data Book of Lithuania. Endangered fringed water lily (*Nymphoides peltata*), which is very rare in Lithuania, grows in the Nemunas delta. There is deer grass (*Baeothryon caespitosum*), which is common in western Lithuania. The eastern boundary of the habitat of this endangered species extends via Lithuania. Halophytic species growing in wet meadows surrounding the delta, which are found only in the Lithuanian seacoast region, are very valuable: salt-marsh rush (*Juncus gerardii*), bog myrtle (*Myrica gale*), sea arrowgrass (*Triglochin maritimum*) and other.

22. 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.*

Fish species:

Lithuania's most important migration path of many fish species extends along the lower reaches of Nemunas. Several rare fish species included in the Red Data Book of Lithuania live in the Nemunas delta and the neighbouring Curonian Lagoon: *sea lamprey (*Petromyzon marinus*), *salmon (*Salmo salar*) and sea trout (*Salmo trutta trutta*). In the XIX century, there were many *sturgeons (*Acipenser sturio*) and blue breams (*Abramis ballerus*) in the Curonian Lagoon. However, these species, included in the Red Data Book of Lithuania, must have disappeared. *Twaite shad (*Alosa fallax*), a common species in the Curonian Lagoon 50 years ago, is vanishing as well. Several rare European fish species entered in the Bern Convention list are also found in the Nemunas delta: *river lamprey (*Lampetra fluviatilis*, *L. planeri*), *asp (*Aspius aspius*), *razor fish (*Pelecus cultratus*) and catfish (*Silurus glanis*).

Amphibian:

Some of rare amphibian species are common spadefoot (*Pelobates fuscus*) and natterjack toad (*Bufo calamita*) included in the Red Data Book of Lithuania. There are quite many lake frogs (*Rana ridibunda*), which are rare in Lithuania, in Nemunas oxbows.

Reptilian:

The reptilian population is not big. There are many common vipers (*Vipera berus*) in the wetlands surrounding the Nemunas delta. Viviparous lizard (*Lacerta vivipara*) is common in intermediate-type swamps and on shores of lakelets. Grass snakes (*Natrix natrix*) live in some wetlands.

Mammals:

Rare mammal species included in the Red Data Book of Lithuania are found in the regional park: northern birch mouse (*Sicista betulina*), *pond bat (*Myotis dasycneme*), Brandt's bat (*Myotis brandti*), *European bat (*Barbastella barbastella*) and *otter (*Lutra lutra*). Other bats included in the Red Data Book of Lithuania are caught in bird traps at the Ventės Ragas ornithological station every year: noctule bat (*Nyctalus noctula*), very rare Leisler's bat (*Nyctalus leisleri*), pipistrelle bat (*Pipistrellus pipistrellus*), northern bat (*Eptesicus nilssonii*), serotine bat (*Eptesicus serotinus*) and particoloured bat (*Vespertilio murinus*). Sibling vole (*Microtus rossiaemeridionalis*) lives there as well.

Birds (rare and endangered):

Approximately 300 bird species are found in the regional park. The delta and surrounding water meadows, swamps and wet forests are Lithuania's most important breeding grounds for many rare and endangered bird species. As many as 40 rare bird species included in the Red Data Book of Lithuania breed or may breed in this territory (including globally endangered species).

- **Black-necked grebe** (*Podiceps nigricollis*). Some 20 to 30 pairs breed in Rusnė fishing ponds.
- **Red-necked grebe** (*Podiceps grisegena*). Five to seven pairs breed in the regional park, mostly in Rusnė fishing ponds.
- ***Bittern** (*Botaurus stellaris*). Some 20 pairs breed in the regional park. The largest population of these birds breeds in Kniapup Bay and Lake Krokų Lanka.
- ***Little bittern** (*Ixobrychus minutus*). Individual pairs may breed in the Nemunas delta.
- ***Black stork** (*Ciconia nigra*). Individual pairs breed in the regional park.
- **Greylag goose** (*Anser anser*). The Nemunas delta is the most important breeding ground for greylag geese in Lithuania. Up to 100 pairs of geese breed in Rusnė fishing ponds, Kniapup Bay and Lake Krokų Lanka every year.
- **Shelduck** (*Tadorna tadorna*). Ten to 15 pairs of shelducks regularly breed in Rusnė and Kintai fishing ponds, Kniapup Bay and Vorusnė polder. This territory is the most important breeding ground for shelducks in Lithuania.
- **Gadwall** (*Anas strepera*). Up to 25 pairs of gadwalls breed in Rusnė fishing ponds, Vorusnė polder and Rupkalviai wet meadows.
- **Pintail duck** (*Anas acuta*). Three to five pairs breed in Rusnė fishing ponds.
- **Shoveler duck** (*Anas chapeata*). Up to 150 pairs of shoveler ducks breed in the regional park. It is the most important breeding ground for these ducks in Lithuania.
- ***Ferruginous duck** (*Aythya nyroca*). This globally endangered species may breed in the Nemunas delta. Individual birds have been observed during the breeding period.
- ***Honey buzzard** (*Pernis apivorus*). Individual pairs may breed in the regional park.
- ***Black kite** (*Milvus migrans*). Two to four pairs of black kites breed in the regional park every year.
- ***Montagu's harrier** (*Circus pygargus*). Several pairs breed in the regional park.
- ***Lesser spotted eagle** (*Aquila pomarina*). Four to six pairs breed in moist forests of the regional park.
- ***Sea eagle** (*Haliaeetus albicilla*). Four to six pairs have regularly bred in the regional park in recent years.
- ***Black grouse** (*Tetrao tetrix*). A bird common in the upland bogs of the regional park. Some 20 pairs breed in the Aukštumalė conservation area and other swamps.
- ***Common crane** (*Grus grus*). Ten to 15 pairs breed in the Aukštumalė and Žalgiriai conservation areas and on the Briedžiai island.
- **Spotted crake** (*Porzana porzana*). A quite common bird in the regional park. Over 100 nested areas have been counted in wet meadows surrounding the delta.
- ***Little crake** (*Porzana parva*). May breed in the regional park. Individual little crakes have been observed in the breeding period.

- ***Corncrake** (*Crex crex*). A common bird in the regional park. Over 300 nested areas have been counted in wet meadows surrounding the delta. It is one of the most important breeding grounds for corncrakes.
- ***Golden plover** (*Pluvialis apricaria*). Two to three pairs breed in the Aukštumalė upland bog.
- **Oystercatcher** (*Haematopus ostralegus*). Four to six pairs breed in the Nemunas delta. It is the most important breeding ground for these birds in Lithuania.
- ***Wood sandpiper** (*Tringa glareola*). Five to four pairs breed in the Aukštumalė upland bog and wet meadows.
- **Redshank** (*Tringa totanus*). A quite common bird in the regional park. Some 50 to 60 pairs of redshanks have been counted.
- ***Ruff** (*Philomachus pugnax*). Up to 100 pairs of ruff breed in wet meadows surrounding the delta. It is the most important breeding ground of these birds in Lithuania.
- **Dunlin** (*Calidris alpina*). Some 12 pairs of dunlins breed in wet meadows surrounding the delta. It is one of the most important breeding grounds for these endangered birds in Lithuania.
- ***Great snipe** (*Gallinago media*). Some 30 to 50 pairs of great snipes breed in Medžioklė, Rupkalviai and Rusnė conservation areas and other places of the regional park. It has been Lithuania's most important breeding ground of these endangered birds in recent year.
- **Curlew** (*Numenius arquata*). Two to four pairs breed in the regional park.
- **Black-tailed godwit** (*Limosa limosa*). A quite common bird in the regional park. Over 100 pairs breed every year.
- ***Little tern** (*Sternula albifrons*). Some 50 to 60 pairs breed in the Nemunas delta.
- **Stock dove** (*Columba oenas*). Individual pairs breed in the Ventė conservation area.
- ***Eagle owl** (*Bubo bubo*). Two pairs of eagle owls have regularly bred in the regional park in recent years.
- ***Short-eared owl** (*Asio flammeus*). One pair bred in the Aukštumalė upland bog in 1996.
- ***Kingfisher** (*Alcedo atthis*). Several pairs breed on the banks of Minija and other rivers.
- **Green woodpecker** (*Picus viridis*). Individual pairs breed in the regional park.
- **Great grey shrike** (*Lanius excubitor*). Several pairs breed in the upland bogs of the regional park.
- ***Aquatic warbler** (*Acrocephalus paludicola*). Ten to 20 pairs of aquatic warblers breed in the Nemunas delta every year. It is one of the most important breeding grounds for these globally endangered birds in Lithuania.
- ***Bluethroat** (*Luscinia svecica*). Individual pairs breed in the regional park.
- **Bearded tit** (*Panurus biarmicus*). Up to 60 pairs of bearded tits breed in Kniapup Bay, Lake Krokų Lanka, Briedžiai island, and on the banks of Atmata and Skirvytė.

There are many other bird species that are rare in Lithuania in the Nemunas delta. It is the only place in Lithuania where *avocets (*Recurvirostra avosetta*), which have recently built nests there, breed. Ten to 15 pairs of avocets have bred in Rusnė fishing ponds, Kniapup Bay and Rupkalviai meadows in recent years. A breeding Blyth's reed warbler (*Acrocephalus dumetorum*), which is very rare in Lithuania, has been noticed in Ventės Ragas. Lithuania's biggest colonies of *little gulls (*Larus minutus*) and *black terns (*Chlidonias niger*) live in the delta. There are some 300 pairs of little gulls and some 500 pairs of black terns. There are many breeding great-crested grebes (*Podiceps cristatus*), mallards (*Anas platyrhynchos*), pochards (*Aythya ferina*), tufted ducks (*Aythya fuligula*), coots (*Fulica atra*), little ringed plovers (*Charadrius dubius*), lapwings (*Vanellus vanellus*), common sandpipers (*Actitis hypoleucos*), common snipes (*Gallinago gallinago*), grasshopper warblers, Savi's warblers and river warblers (*Locustella naevia*, *L. luscinioides*, *L. fluviatilis*), great reed warblers and Eurasian reed warblers (*Acrocephalus arundinaceus*, *A. scirpaceus*), sedge warblers (*A. schoenobaenus*) and other birds of reedy areas and swamps.

Species listed in the Annex II of the EU Habitats Directive or in the Annex I of the EU Birds directive are marked with asterisk (*)

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 most impressive structures reflecting the relationship between the population of the region and water are the Uostadvaris and Ventė lighthouses, the engineering complex of the old water lift station and the old polder engineering equipment. There is a unique folk architectural ensemble of the Skirvytėlė village. The Mingė village is called the Venice of Lithuania, as the River Minija has become its main street. Rusnė has a distinctive old town.

The majority of the region's population were "water culture" people. Many of them have been fishing in the Nemunas delta and the seacoast since ancient times. A specific lifestyle, traditions, fishing tackle and fishing methods, homesteads and buildings of local fishermen have developed over hundreds of years. Reed craftsmen would cut reeds on the seacoast in winter and use them for roofing local buildings. Water meadows in the Nemunas delta would be used by stockbreeders. Newcomers would settle in the peripheries of Rupkalviai, Aukštumalė, Berštai and Medžioklė swamps, which would be partly drained and used for agriculture and stockbreeding. They would also mine and export peat.

Nowadays important site for nature conservation, agriculture and fishery, science and education, a unique ethnocultural district, the Aukštumalė bog is one of the first bogs studied in detail in the world.

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:

Mainly state owned (~70%), with some agricultural lands as private property (~30%).

b) in the surrounding area:

Surrounding agricultural lands (mainly cultivated meadows) are state owned, but in the nearest future it will be private ownership.

25. Current land (including water) use:

a) within the Ramsar site:

Research, locally education use. Hay and hay powder production, dairy farming, non-commercial fishing, peat production, small scale recreation and tourism.

b) in the surroundings/catchment:

Agricultural activity on a large scale, forestry, hunting, commercial fishing in Curonian lagoon.

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:

Extension of the polder system is adversely affecting the hydrological and hydrochemical regime. Most of natural flooded meadows have been transformed into cultivated meadows.

b) in the surrounding area:

Extension of the polder system is adversely affecting the hydrological and hydrochemical regime. Recently polders covered about 360 sq km. The main threat is the pollution of the Nemunas River by wastewater and agricultural runoff.

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.

National status: Nemunas Delta Regional Park since 1992 (same area).

International status: Natura 2000, the Nemunas Delta site meets territorial selection criteria of importance to the protection of natural habitats (the boundaries coincide with the boundaries of Nemunas Delta Regional Park, except recreational and other (residential) priority functional zones), since 2005.

International status: Natura 2000, Nemunas Delta, a protected area of the Republic of Lithuania, or its part embracing an area of importance to the protection of birds (the boundaries of the area of importance to the protection of birds coincide with the approved boundaries of Nemunas Delta Regional Park, except recreational, agricultural and other (residential) priority functional zones of the park), since 2006.

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?:

A Nemunas Delta Regional Park management plan (planning scheme) was approved by Order No D1-488 of the Minister of Environment of the Republic of Lithuania of 12 October 2005. The management plan is being implemented.

d) Describe any other current management practices:

Conservation objectives provided for in the Nemunas Delta Regional Park management plan are reflected in the following main environmental tasks of the regional park: to preserve valuable natural complexes and objects; to retain the stability of the natural ecosystem of the Nemunas delta; to restore affected natural landscape complexes and objects; to regulate the use of meadows and irrigation systems; to preserve fish resources. It is sought to turn agricultural arable land in the regional park into forest land, keep grass land, stopping the growth of arable land areas.

28. Conservation measures proposed but not yet implemented:

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

Plan for the natural management of the Kniaupis botanical-zoological conservation area of Nemunas Delta Regional Park and part of the ecological protection priority zone, the Tulkiaragė polder (prepared in 2008). Coordination and approval procedures are underway.

29. Current scientific research and facilities:

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

- Monitoring of species and habitats included in Annexes of the EU Habitat and Bird directives (carried out by the direction of Nemunas delta regional park and scientific organisations);
- Monitoring of water level in Aukstumale swamp (carried out by the direction of Nemunas delta regional park);
- Monitoring of dynamic of rare mammals and breeding birds (carried out by the direction of Nemunas delta regional park);
- Hydrological monitoring of wetland (carried out by the direction of Nemunas delta regional park);
- Landscape monitoring of regional park territory (carried out by the direction of Nemunas delta regional park);

Since 1929, birds' ringing station at Ventes Ragas cape exists, more than 60-70 thousand migratory birds are ringed annually.

Hydrological and ichthyologic studies are carried out by Vilnius University Ecological institute.

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.

An information centre providing information on leisure opportunities in the Nemunas delta is located on the Rusnė island. The regional park directorate offers sightseeing trips around the Nemunas delta by bike, horse and car, photo-hunting, bird watching, cheap amateur fishing licences (for foreign tourists as well), an opportunity to enjoy holidays at local residents' homesteads, park campsites and guesthouses, a young naturalist camp, boat, bike, tent and other tourism equipment rental, as well as information for tourists.

There are recreational areas – the bank of Nemunas in front of the town of Rusnė and the Šyša village, Švyturys surroundings, the Šilininkai recreational complex and its surroundings.

The most popular activities in the delta are amateur fishing, which is allowed everywhere except the Avandelta reserve, Lake Krokų Lanka and Kniaupas Bay. In winter, thousands of ice-fishing enthusiasts gather on the frozen Curonian Lagoon.

Very popular water tourism is also allowed in all water bodies except the abovementioned ones. One can canoe in Nemunas branches, the rivers Minija, Šyša and Leitė to admire the distinctive beauty of the surroundings. There are three quite big ports in the regional park, namely Šilutė, Rusnė, Uostadvaris ports, and a number of quays, such as Šilininkai, Rusnė, Pakalnė, Šyša, Ventė, Šturmai and Minija quays.

One can travel in the Nemunas Delta Regional Park by car, by bike or on foot. There are nature trails, an ornithological route with bird watching towers.

Boats, bikes and other tourism equipment are available for rent at the regional park information centre. They are also rented by private persons.

There is a museum at the Ventės Ragas ornithological station where one can familiarise oneself with the nature of the delta, bird migration studies and the history of bird ringing, and an ethnographic homestead-museum in the Skirvytėlė village.

31. Current recreation and tourism:

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

Preliminary number of tourists – under 100000 visitors per year. Specification type is fishing and recreational tourism.

32. Jurisdiction:

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

The direction of Nemunas delta regional park that is supervised by State service for protected areas under the Ministry of Environment of the Republic of Lithuania manages the site.

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.

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www.nemunodelta.lt

34. Bibliographical references:

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

Web sites about site:

Managed by the direction of NDRP (in Lithuanian, English, German): <http://www.nemunodelta.lt/>;

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