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 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.

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

Miljøfaglig Utredning AS commissioned by Norwegian Directorate for Nature Management, Tungasletta 2, 7485 Trondheim
Tlf +47 73580500
Fax: +47 73580501
E-mail: postmottak@dirnat.no

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DD MM YY

Designation date | Site Reference Number

2. Date this sheet was completed/updated:

March 2012

October 2011

3. Country:

Norway

4. Name of the Ramsar site:

Nordre Tyrifjorden Wetlands System: Lamyra
(International No. 802, National No. 15)

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
i) 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:

None

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 border is the same as for Lamyra Nature Reserve.

8. Geographical coordinates (latitude/longitude):
60° 07'N 10° 16'E

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

The site is 5 km south of Hønefoss and about 40 km north-west of Oslo, in Ringerike and Hole municipalities in the county of Buskerud in south-east Norway.

10. Elevation: (average and/or max. & min.)
63 m.a.s.l.

11. Area: (in hectares)
34 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.

Lamyra includes about half of an oxbow lake, where all phases of succession from water and land with productive woodland can be studied. This is the oldest and largest of the large meanders along the lower reaches of the Storelva river. Overgrowing with trees has accelerated in recent decades. Open water covers around 45 decares, mire around 80 decares, whereas productive woodland now covers around 215 decares, of which most is wet woodland. The pool Mostjern has an open water surface, whereas Frøenstjern only has a significant water surface during periods of flood.

This reserve is of lesser importance for nesting and staging waterfowl compared to the two other oxbow lakes within the Nordre Tyrifjorden wetland system. This is due to the advanced state of succession at Lamyra. The area is mostly used by ducks and waders during periods of flooding. Breeding species include Mallard *Anas plathyrhynchos*, Common Snipe *Gallinago gallinago* and Lesser Spotted Woodpecker. Mute Swan *Cygnus cygnus* and Green Sandpiper *Tringa chloropus* breed occasionally, and Spotted Crake *Porzana porzana* has been recorded during the breeding season.

The most important biological values are associated with water, bog and rich mire vegetation, especially in and around Mostjern. A number of rare and threatened species are recorded, including several geographically interesting species. Rich mires are also of interest both in terms of their development and hydrogeographically. In addition the area has a rich freshwater fauna, amongst which are large populations of breeding amphibia.

13. 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 • 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. Part of the delta area around the mouth of the Storelva river, one of Norway's largest inland deltas and with an interesting geomorphology. The delta landscape comprises slow-flowing meandering river, oxbow lakes in various stages of succession, channels and drift walls along the Tyrifjord. Oxbow lakes such as at Lamyra are an unusual element in the delta.

Criterion 2. Lamyra is an oxbow lake, in the Norwegian red list on habitat this kind of habitat is considered as VU. The site is also important for birds like Water Rail *Rallus aquaticus* (VU) and for several red listed plant species like: *Carex heleonastes* (VU), *Eriophorum gracile* (EN), *Stellaria palustris* (EN), *Microstylis monophyllos* (EN), *Thelypteris palustris* (EN) and *Bidens cernua* (VU). The national red list from 2010 is used. See also point 22.

Criterion 3. Undeveloped inland deltas have become less common due to in-filling in connection with industry and such like. Therefore it is important to look after the remaining examples of this type, and thus protect the regional biodiversity. The Nordre Tyrifjorden wetland system has a well developed annual vegetation on exposed banks *(Nanocyperetalia)* and submerged meadows which are typical for river deltas below the marine limit in southern Norway, as well as bog and rich fen vegetation associated with oxbow lakes under succession. These vegetation communities contain a number of rare and threatened species which are in need of protection together with their habitats. The wetland fauna in Nordre Tyrifjorden includes both rare species as well as species which are typical or representative for the biogeographical region.

Criterion 4 This reserve is of lesser importance for nesting and staging waterfowl compared to the two other oxbow lakes within the Nordre Tyrifjorden wetland system. This is due to the advanced state of succession at Lamyra. The area is mostly used by ducks and waders during

periods of flooding. Breeding species include Mallard *Anas plathyrhynchos*, Common Snipe *Gallinago gallinago* and Llesser Spotted Woodpecker. Mute Swan *Cygnus cygnus* and Green Sandpiper *Tringa chloropus* breed occasionally, and Spotted Crake *Porzana porzana* has been recorded during the breeding season. see also point 22.
In addition the area has a rich freshwater fauna, amongst which are large populations of breeding amphibian. E.g. the threatened moor frog *Rana arvalis* (NT) breeds at Mostjern, and perhaps also at Frøenstjern.

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:

1. Boreonemoral vegetation zone, transitional zone (Bn-OC).
2. Boreal

b) biogeographic regionalisation scheme (include reference citation):

1. Zonal division showing the variation in vegetation from south to north and from the lowlands to the mountains, and sectional graduation showing the variation between the coast and inland (In: Moen, A. 1998. Nasjonalatlas for Norge; vegetasjon. Statens kartverk, Hønefoss).
2. Biogeographical regions of Europe, European Environment Agency, 2005

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.

Geology	A geological boundary runs along the Storelva river, with nutrient-rich cambrosilurian bedrocks on the east side, where Lamyra is situated, and Precambrian basement rocks on the west side. Storelva has dug it's way into the impressive ice-edge deposits with sand and exposed marine deposits of clay.
Geomorphology	The delta by the mouth of the Storelva river is rich in various components. There are active river meanders, oxbow lakes, river terraces, terrace edges, old river courses, flood channels and freshwater drift walls along the stretch between Karlsrudtangen to Averøy in Nordfjorden. Of special interest are the oxbow lakes such as that at Lamyra. The rising land surface after the last ice age has led to river meanders becoming cut off from Storelva.
Substrate / soil type	Most of Lamyra has succeeded to a stage of peat and mire formations. Below the layer of peat is loose material from fine-grained marine deposits with silt and clay. The terrace edge bordering the reserve is composed of sand.
Water quality	The water quality in Mostjern and Frøenstjern is unknown, although in the case of the latter it is probably poor as the pool only receives water form Storelva during periods of flood – a time when thee water quality in the river normally is poorest.
Water depth / fluctuations	The water in the two pools is very shallow. Water levels are influenced by water from the Storelva river, although it is only during periods of severe flooding that water reaches the reserve.
Climate	The area has a slightly continental climate, with relatively warm summers and cold winters and moderate annual precipitation (500 – 700 mm).

17. 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).

Lamyra has a limited catchment area which only includes the nearby agricultural land and woodlands close to the oxbow lake. In the south and west is a a large wooded sandy plain, whereas towards the east there are agricultural areas on clay soils. However, the reserve's ecology is influenced by the Storelva (river). The climate in the catchment area is the same as in the reserve (see point 14).

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

Lamyra's function as a sediment trap where nutrients become bound to the sediments is limited, and it only during periods of severe flooding that water from Storelva flows into the reserve. Sedimentation is therefore very limited.

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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:
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.

Xp, U, Ts, Tp

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

Lamyra is an oxbow lake which became separated from the Storelva river about 5500 years ago. This makes it the oldest oxbow lake in the Storelva delta, and all stages of succession from open water to productive woodland are represented. Most of the area is wet woodland with birch *Betula* and grey alder *Alnus incana* although common alder *Alnus glutinosa* also occurs as a small stand. There are stil large open areas, mostly bogs with sedge meadows and reedbeds *Phragmites communis* with minerotrophic rich mires with willow *Salix cinerea* scrub along the edges. *Thypa latifolia* has also spread to Lamyra. The open water surface of the pool at Mostjern is mainly covered in floating plant species. Rich mire vegetation grows along the edges. The mires are calcerous and mainly mud-bottomed blanket bog.

The invertebrate fauna is poorly known. Amphibia breed at both Mostjern and Frøenstjern.

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21. 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.*

See point 14 criterion 2.

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.*

Birds:

The area is important as a breeding site for species associated with deciduous woodland and wet woodland with much dead wood, such as Lesser Spotted Woodpecker *Dendrocopos minor* . The rare and threatened Spotted Crake *Porzana porzana* (EN) has been recorded in the wetter parts during the breeding season. There are historical records of breeding Red-throated Divers *Gavia stellata* Mostjern from the 1800s.

Amphibia:

The threatened moor frog *Rana arvalis* (NT) breeds at Mostjern, and perhaps also at Frøenstjern.

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:

Mostjern is mentioned in a children's book ("I Brønden og i Tjærnet" from 1851) written by the priest and storyteller Jørgen Moe, where he describes a floating island with a diver nest.

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: Private
(b) in the surrounding area: Private

25. Current land (including water) use:

(a) within the Ramsar site:
A small part of the mire is fenced for sheep grazing. In recent years large areas of the reserve have been grazed to reduce vegetational succession of the mires and bogs. No forestry takes place in the wooded parts.

(b) in the surroundings/catchment:

Tyrifjord and Storelva are regulated for production of hydroelectricity, and water levels in Frøenstjern and Mostjern are affected by water levels in Tyrifjorden and Storelva. The reserve is surrounded by intensively managed agriculture and woodland. Hønefoss, with about 13 500 residents, is about 5 km north of the reserve. The rivers Randselva and Begna meet and Hønefoss, and then form Storelva. There are several smaller settlements farther upriver.

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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:
Regulation of the Begna watercourse and Storelva influence water levels and geomorphological processes in all of the reserves. Flood reduction processes in the delta are thus hampered. Increased livestock grazing should help reduce overgrowing of the mires and bogs. The building of a caul at the mouth of Storelva to prevent floodwater from flowing back into the river has had a positive effect on the overgrowth situation. Canadian pondweed *Elodea canadensis* was introduced to Europe from North America around 1836, and first recorded in Tyrifjorden in 1976. There is a small amount in Frøenstjern.

(b) in the surrounding area:
Peat extraction and refilling with sand along the part of the meander bend not included in the reserve has altered water tables and accelerated the overgrowing processes.

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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.

Lamyra was designated as a nature reserve on 21st March 1975.

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 management plan has been approved, and measures are carried out on a continual basis. The management plan will be revised in connection with the ongoing process to expand the Ramsar sites in Tyrifjorden.

d) Describe any other current management practices:

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28. Conservation measures proposed but not yet implemented:
e.g. management plan in preparation; official proposal as a legally protected area, etc.

The Norwegian Ornithological Society (NOF) has proposed protection for several sites in Nordre Tyrifjorden Wetlands System, including the lower reaches of Storelva and Nordfjorden such that the five existing protected areas can be linked to form one large site. In addition the society has proposed that several of the shallow waters and islands farther west in Tyrifjorden, in Steinfjorden and along Randselva and Begna receive protection.

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29. Current scientific research and facilities:
e.g., details of current research projects, including biodiversity monitoring; existence of a field research station, etc.

The Hole and Ringerike branch of the Norwegian Ornithological Society (NOF) carry out annual monitoring of breeding and wintering waterbirds in Nordre Tyrifjorden.

30. Current conservation education:
e.g. visitors' centre, observation hides and nature trails, information booklets, facilities for school visits, etc.

The local game management association (Ringerike Viltnemnd) have produced a booklet about Nordre Tyrifjorden, which includes a section on Lamyra nature reserve.

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

The area is visited by birdwatchers, although to a lesser degree than the other reserves in Nordre Tyrifjorden.

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

Norwegian Directorate for Nature Management (DN), Tungasletta 2, 7485 Trondheim
Ph +47 73580500
Fax +47 73580501
Email: postmottak@dirnat.no

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.

The site is managed by the County Governor of Buskerud, which is under the instruction of DN. Address: County Governor of Buskerud, Statens Hus, Postboks 1604, 3007 Drammen, Norway. Phone +47 32266600. E-mail: postmottak@fmbu.no

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

Botanical/management plans:
Brandrud, T. E. 1998. Biologisk mangfold i verneområder på Ringerike: Vann- og sumpvegetasjon, samt soppflora i tilknytning til kroksjøer langs Storelva og deltaet i Nordre Tyrifjorden. *NIVA Rapport* Lnr. 3856-98: 1-44. (In Norwegian with English abstract – on water- and swamp vegetation and fungi in oxbow lakes and the delta in Nordre Tyrifjorden)
Fylkesmannen i Buskerud, Miljøvernavdelingen 1997. Lamyra naturreservat i Hole og Ringerike kommuner. Forvaltningsplan. *Fylkesmannen i Buskerud, Miljøvernavdelingen Rapport* nr. 4-1997. 33 s. (In Norwegian – management plan for Lamyra nature reserve)
Hanssen, E. W. 1999. *Vurdering av våtmarksområder i Nordre Tyrifjorden med Storelva og Begna. Deres betydning for biologisk mangfold - spesielt våtmarksfugler - og andre naturverdier.* Oppdragsrapport for Fylkesmannen i Buskerud, Miljøvernavdelingen. 61 s. (In Norwegian – on biodiversity (especially wetland birds) in Nordre Tyrifjord area).

Freshwater ecology/fish/invertebrates:
Elgmork, K. (red.) 1969. Verneverdige områder på Ringerike av interesse for naturvitenskapelig forskning og undervisning. Avgrensning og verneverdi. Univeristetet i Oslo. 41 s. ((In Norwegian – on areas of conservation value in Ringerike municipality of interest for research and education).

Birds:

Ree, V. 1995a. Nordre Tyrifjorden-området i Buskerud - en av Norges viktigste innlandslokaliteter for våtmarksfugl. *Vår Fuglefauna 18:* 15-19. (In Norwegian – on the importance of the Nordre Tyrifjorden Wetland system for waterbirds)
Ree, V. 1995b. *Fuglelivet i og ved Nordre Tyrifjorden. En presentasjon av reservater og nærliggende våtmarker i ornitologisk sammenheng.* Ringerike Viltnemnd, Hønefoss. (In Norwegian – a presentation of bird life in the reserves of Nordre Tyrifjord and their surroundings).

Geomorphology:

Erikstad, L., Reitan, O., Stabbetorp, O. & Ytrehorn, O. 1999. Ringeriksbanen - en landskapsøkologisk analyse av konsekvensene for ulike traséer gjennom Hole og Ringerike kommuner. *NINA Oppdragsmelding 606*: 1-44. (In Norwegian with English abstract – on landscape and delta processes).
Trondsen, T. I. 1983. Storelvas terrasse og meanderlandskap. Dannelse og utvikling av kroksjøer mellom Hønefoss og Tyrifjorden. Sammendrag av hovedfagsoppgave, Univ. i Oslo. 15 s. (In Norwegian – on formation of oxbow lakes between Hønefoss and Tyrifjorden).

Please return to: **Ramsar Convention Bureau, Rue Mauverney 28, CH-1196 Gland, Switzerland**
Telephone**: +41 22 999 0170** • Fax: **+41 22 999 0169** • e-mail: **ramsar@ramsar.org**