

Information Sheet on DOJРАН LAKE (RIS) – 2006-2008 version

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).

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:

2 August 2007

3. Country: The FYR of Macedonia

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.

Dojran Lake (Dojransko Ezero)

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.

Site boundary follows the shoreline of Dojran Lake and include swamps near the lake and one thermal spring Toplec, also near the lake.

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.

E: 22°44'35"; N: 41°12'45"

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.

Dojran Lake is located in the SE part of the Republic of Macedonia on the border with Greece. It lies in the Star Dojran municipality located on its shore.

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

Average: 144 m.a.sl.; max: 148 m. a. s. l. and min: 140 m

11. Area: (in hectares) **2696** 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.

Shallow eutrophic lake on the south-eastern part of Macedonia famous by its unique fish hunting method known since the ancient Macedonians (Micevski, 1997), several endemic subspecies of fish, one endemic fish species, 11 endemic invertebrates, 4 CORINE species of Dragonflies (Odonata), 5 CORINE Fish Species and 10 CORINE bird Species.

(The CORINE is a program. (Co-ordination of Information on the Environment) implemented for the EU countries since 1985 and since 1991 it has been implemented for the Central European and Balkan countries. It is like a precursor of Emerald and NATURA 2000 program. The program itself include list of species which are important for nomination of CORINE biotopes in each of the countries where this program was implemented. The majority of that species are also on IUCN, Habitat directives or Bern list of species)

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).

	CRITERIA
A	Sites containing representative, rare or unique wetland types
1	It is representative, rare or unique example of a natural or near-natural wetland type found within the appropriate biogeographical region; It is particularly good representative example of a wetland, which plays a substantial hydrological biological or ecological role in the natural functioning of a major river basin or coastal system especially where it is located in a trans-border position.
Justification	<i>Dojran Lake is a natural, relict and eutrophic Mediterranean lake and present remaining of the Peonian Pleistocene Lake when it was 3 times bigger and 10 times deeper. This lake is the third largest one in the FYR of Macedonia.</i> <i>Dojran Lake is at the border between Macedonia and Greece; 2/3 of the water inflow comes from Greek side and 1/3 from Macedonia (trans-border position)</i>
B	Sites of international importance for conserving biological diversity
2	it supports vulnerable, endangered or critically endangered species or threatened ecological communities
Justification	<i>dragonflies species; Lindenia tetraphylla (EU Habitat Directive Annex IV); Coenagrion ornatum (EU Habitat Directive Annex II);</i> <i>Fish Species: Cyprinus carpio (native populations); Rhodens sericeus ammarus (EU Habitat Directive Annex II); Alburnoides bipunctatus (Bern Convention Annex III); Silurus glanis (Bern Convention Annex III);</i> <i>bird Species: Pelecanus crispus (EU Bird Directive, Annex I); Phalacrocorax pygmeus (EU Bird Directive, Annex I); Oxyura leucocephala (EU Bird Directive, Annex I); Recurvirostra avosetta (EU Bird Directive, Annex I); Circus aeruginosus (EU Bird Directive, Annex I); Pelecanus onocrotalus (EU Bird Directive, Annex I); Ardea purpurea (EU Bird Directive, Annex I); Lanius nubicus (EU Bird Directive, Annex I);</i> All the above mentioned species are also included in the CORINE list. <i>Myriophyllo- Nupharetum – Dojran, Nikolich (rare and endangered plant community)</i> This community is considered as endangered in Macedonia according to Academic Micevski who was an expert for wetland communities (and for plant communities in general) and he wrote an article about the plant communities in Dojran Lake. Also that community is involved in the recently published National Biodiversity Strategy of Macedonia See Bibliographical references under Micevski 1963.
3	A wetland should be considered internationally important if it supports populations of plant and/or animal species important for maintaining the biological diversity of a particular biogeographic region.

<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Justification</p>	<p><i>The site can be considered of international important as it maintains many of the endemic species in Macedonia , in particular restricted to the Dojran Lake area:</i></p> <p><i>Invertebrates:</i> <i>Porifera:</i> 1. <i>Eunapius carteri dojranensis</i> Dabčiče 1953 <i>Gastropoda aquatica</i> (Mollusca: <i>Gastropoda</i>) 1 end. species:: 2. <i>Graecoanatolica macedonica</i> Radoman & Stankovich 1978; <i>Oligochaeta</i> (<i>Annelida</i>)- 1 endemic species: 3. <i>Isochaeta dojranensis</i> Hrabe 1958; <i>Annelida insertae sedis</i>- <i>Branchiobdellidae</i>: 4 endemic Species : 4. <i>Branchiobdella capito</i> Georgevitch 1955; 5. <i>Cambarincola dojranensis</i> Georgevitch 1955; 6. <i>Pterodrilus prion</i> Georgevitch 1955; 7. <i>Xironodrilus crassus</i> Georgevitch 1955; <i>Crustacea: Copepoda-Cyclopoida</i>:8. <i>Microcyclops varicans dojranensis</i> Petkovski, 1954; <i>Ostracoda (Branchiata: Crustacea)</i> 9. <i>Physicypria inverse</i> (Klie, 1941) end <i>Crustacea: Malacostraca >>Amphipoda</i>: 10. <i>Niphargus pancici dojranensis</i> Karaman G. 1960 (end); <i>Insecta, Psocoptera</i>:11. <i>Liposcelis macedonicus</i> Gunther 1980 (endemic)] <i>Vertebrates : Pisces</i>: 12. <i>Sabanejewia doiranica</i> Economidis & Nalbant, 1966; (endemic, Pisces)</p>
<p style="text-align: center;">4</p>	<p>A wetland should be considered internationally important if it supports plant and/or animal species at a critical stage in their life cycles, or provides refuge during adverse conditions.</p>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Justification</p>	<p>4a) <i>More than 100 individuals of Pelecanus crispus in the period from November till March remain on Lake Dojran (as it is quite warmer) and later they turn back (possible as the studies are not yet done) to Prespa Lake, a Ramsar site which is on 850 m asl. and surrounded by high mountains and much colder (during the winter).</i></p> <p>4b) <i>For the rest of the bird and fish species which are autochthonous species (14 Species) the lake is the only ecosystem where they are feeding, breeding and protecting. . in particular: Cyprinus carpio (native populations); Rhodeus sericeus ammarus; Blennius fluviatilis; Alburnoides bipunctatus; Silurus glanis; - As it is a closed ecosystem without effluents – they are in the lake during their whole life cycle as the lake doesn't have.</i></p>
<p style="text-align: center;">6</p>	<p>A wetland should be considered internationally important if it regularly supports 1% of the individuals in a population of one species or subspecies of waterbird.</p>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Justification</p>	<p><i>In the period from November up to March it support more than 100 individuals of Pelecanus crispus what is more than 1% (45 individuals correspond to the 1% threshold published by Wetlands International for the Black Sea, Mediterranean population of Pelecanus crispus).</i></p>
<p style="text-align: center;">7</p>	<p>A wetland should be considered internationally important if it supports a significant proportion of indigenous fish subspecies, species or families, life-history stages, species interactions and/or populations that are representative of wetland benefits and/or values and thereby contributes to global biological diversity.</p>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Justification</p>	<p><i>There are 49 species of fish in Macedonia (Georgiev 1998). Of them 42 are autochthonous. In the Dojran Lake there are 14 ones which correspond to 33,3 %.</i> <i>All 14 fish species are indigenous species; one endemic species and several endemic subspecies</i></p>
<p style="text-align: center;">8</p>	<p>A wetland should be considered internationally important if it is an important source</p>

	of food for fishes, spawning ground, nursery and/or migration path on which fish stocks, either within the wetland or elsewhere, depend
Justification	<i>The most eutrophic lake in Europe, rich with phyto and zooplankton. Having endemic and autochthon fish species living in it shows clearly that the lake offers sources of food to sustain the fish populations and serves as a spawning ground as well.</i>
9	A wetland should be considered internationally important if it regularly supports 1% of the individuals in a population of one species or subspecies of wetland-dependent non-avian animal species.
Justification	<p><i>11 endemic invertebrates represent 100 % of their population in Dojran Lake!</i></p> <p>Invertebrates:</p> <p>Porifera:</p> <p>1. <i>Eunapius carteri dojranensis</i> Dabzisce 1953</p> <p>Gastropoda aquatica (Mollusca: Gastropoda) 1 end. species::</p> <p>2. <i>Graecoanatolica macedonica</i> Radoman & Stankovich 1978;</p> <p>Oligochaeta (Annelida)- 1 endemic species: 3. <i>Isochaeta dojranensis</i> Hrabe 1958;</p> <p>Annelida insertae sedis- Branchiobdellidae: 4 endemic Species :</p> <p>4. <i>Branchiobdella capito</i> Georgevitch 1955;</p> <p>5. <i>Cambarincola dojranensis</i> Georgevitch 1955;</p> <p>6. <i>Pterodrilus prion</i> Georgevitch 1955;</p> <p>7. <i>Xironodrilus crassus</i> Georgevitch 1955;</p> <p>Crustacea: Copepoda-Cyclopoida:8. <i>Microcyclops varicans dojranensis</i> Petkovski, 1954;</p> <p>Ostracoda (Branchiata: Crustacea) 9. <i>Physocypria inverse</i> (Klie, 1941) end</p> <p>Crustacea: Malacostraca >>Amphipoda: 10. <i>Niphargus pancici dojranensis</i> Karaman G. 1960 (end);</p> <p>Insecta, Psocoptera:11. <i>Liposcelis macedonicus</i> Gunther 1980 (endemic)]</p> <p><i>Unfortunately an exact population density is not available.</i></p>

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:

Dojran lake lies in between the Continental (Macedonian side) and the Mediterranean (Greek side) biogeographical regions

b) biogeographic regionalisation scheme (include reference citation): “*Biogeographical regions, Europe 2005*” (<http://dataservice.eea.europa.eu/atlas/viewdata/viewpub.asp?id=2038>) which is the official delineations used in the Habitats Directive (92/43/EEC) in the European Union.

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.

Dojran Lake is natural eutrophic lake, remaining from the pleistocenic Peonin Lake and in the moment is about 6 m deep. It has ellipsoid form with dimensions 8,9 km long and 7 km with. There are no effluents of the Doryan Lake . Only local people are imitating effluent by using the water for the irrigation.

17. Physical features of the catchment area:

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

Catchment area of Dojran Lake is 132 km² from which 80,7km² are in Macedonia. Climate of the catchments area is 30 % in the sub-Mediterranean zone, 30 % in the cold continental and sub-mountain continental is 35 %.

From 1961 to 1990 the average annual temperature was between 13,2 to 15,2°C and annual precipitation 600-680 mm/year.

18. Hydrological values:

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

No information available

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.

O-95%; M-2%; Tp-3%; Y-1%;

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.

Nr of settlements -4; Settlements above 1000 inhabitants- 1; one from 500-1000 and 2 are below 500 inhabitants. Total nr of inhabitants: 2324. Quantity of water -213x10⁶ m³ (Macedonian side) and 284x10⁶ m³ (Greek side).

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.*

Plants (rare plants for Macedonia) : *Marsilea quadrifolia; Najas marina; Najas minor; Myriophyllum spicatum; Potamogeton perfoliatus; Paspalum paspalodes; Salvinia natans; Nymphaea alba; Spirodela polyrhiza; Butomus umbellatus; Hydrocharis morsus-ranae; Scirpus lacustris; Ceratophyllum demersum; Iris pseudacorus.*

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: 10 CORINE Species: *Pelecanus crispus, n= (+), w=100i; Phalacrocorax pygmeus, w=<250i, u; Oxyura leucocephala, u=1i (+); Phalacrocorax carbo sinensis, w=>2500i; Recurvirostra avosetta, w=10i; Cygnus columbianus, w=10i; Circus aeruginosus, n=2-3p, u; Pelecanus onocrotalus, n= (+); Ardea purpurea, n= (+); Lanius nubicus, n= (+);*

Fish: 5 CORINE Species: *Cyprinus carpio (native populations); Rhodeus sericeus ammarus; Blennius fluviatilis; Alburnoides bipunctatus; Silurus glanis;*

Invertebrates>Odonata (4 CORINE species): *Anaciaeschna isosceles* (*); *Lindenia tetraphylla* (*); *Coenagrion ornatum* (*); *Coenagrion scitulum* (*);

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:

Unique hunting practice dating from the Ancient Macedonians (written data from Herodotus dating from the 5th century b.c.) even now is used by the local community in fact by the management organization for fishing. This technique include many special tools, inventions, equipment and excellent knowledge of bird, fish and plant species, their ecology and phenology. It is fully encompassed in the traditional lifestyle of Dojran Town inhabitants of whom 20 % are employed in the fishery. The most interesting are "mandras" (enclosed hunting grounds) which give special spirit to the lake but also "nasekas" and "juntas" together with unique boats and cottage hides (koliba) for chasing birds and special fish traps (pilekatniks) which are necessary for the hunting process. The process lasts throughout the year and includes the winter and spring fishing season.

This is the only known place in the world were this fishing method is used (Micenski, 1997, 1998)

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:

We believe that the unique fishing technique by using of birds and reed plates is something what keep the ecological characteristics of the lake nearly the same for the last 25 hundred years.

ii) sites which have exceptional cultural traditions or records of former civilizations that have influenced the ecological character of the wetland:

Above mentioned hunting technique is known since the 5th century bc.

iii) sites where the ecological character of the wetland depends on the interaction with local communities or indigenous peoples:

Yes. In case of Dojran Lake the reedbed must be preserved in order unique hunting technique to be practiced.

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: *State property*

b) in the surrounding area: *70 % private property and 30 % state property*

25. Current land (including water) use:

a) within the Ramsar site:

Fishing: 150-180 kgr/ha/year or 500 T/year up to 90-ies

b) in the surroundings/catchment

Number of settlements -4; Settlements above 1000 inhabitants- 1; one from 500-1000 and 2 are below 500 inhabitants. Total number of inhabitants: 2324.

Forestry, stock farming and hunting – are nearly absent;

Agriculture: 700ha on Macedonian side from which 70% or 490 ha are private and 30 % or 210 ha state property. In Greece there is 6500 ha agricultural land from which 37, 5 % or 2430 ha use irrigation. Farmers in Greece take the water not directly from the lake but through pumping from nearly 300 boreholes along the lake shore.

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: *decreasing of water level due to over pumping of water and dry climate in the 90ies. .*

b) in the surrounding area: *tourism development;*

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.

Since 1977 Dojran Lake is Monument of Nature (Official Gazette of RM, 45/77);

Since 1987, it is on the shadow list of Ramsar sites from Macedonia;

In December 1999, Dojran Lake was included in the Balkan Green Belt (EECONET);

In 2000 is proposed as a CORINE site from Macedonia (P00000002) and in 2002 is included like a Wetland site from Macedonia in the Macedonian wetlands inventory (MKWS0003)

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?:

NO

d) Describe any other current management practices:

Fishing, reed collecting and taking water for irrigation are the only activities. However a management plan for these activities does not exist.

28. Conservation measures proposed but not yet implemented:

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

In 2004 Macedonian Ramsar Committee have proposed a project for nomination and management plan preparation for Dojran Lake but unfortunately the project was refused by Ramsar SGF.

29. Current scientific research and facilities:

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

In the moment there are no research projects for Dojran Lake.

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.

Such kinds of activities are not present- due to the lack of financial support.

31. Current recreation and tourism:

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

In 1988 Dojran has 300 000 tourists; in 2000- only 20 000 and this year -2007 – 200 000 tourists. The tourists are mainly summer tourists and located in Nikolik, Achikot and Nov and Star Dojran.

32. Jurisdiction:

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

Dojran community/ municipality.

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.

Up to 2005, *Company AD Dojransko Ezero, Star Dojran*. Since 2004, *Lake is given under concession to private company NOTA*.

34. Bibliographical references:

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

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