# Information Sheet on Ramsar Wetlands (RIS)

Categories approved by Recommendation 4.7 of the Conference of the Contracting Parties.

1. Date this sheet was completed:	16	June 2001
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2. Country: I.R. of IRAN







3. Name of wetland: Gomishan Lagoon

**4. Geographical coordinates:** Coordinates for the approximate center of the part of Gomishan Wetland, which is situated within I.R. of Iran: 37°, 11′N and 53°, 57′E

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

The average elevation of the Wetland surface is the same as the Caspian Sea and is nearly 27 m. below the global mean sea level.

**6. Area:** (in hectares)

Area of the part of the Wetland that is situated in Iran is nearly 17,700 hectares.

7. Overview: (general summary, in two or three sentences, of the wetland's principal characteristics)

It is a coastal lagoon in the extreme southern part of eastern coast of Caspian Sea, which is situated in western border of Turkmen Steppe plains. The Wetland is separated from the Sea only by a very narrow sandy barrier, which in some points is too low to make the Wetland separate from the Sea. Average depth of the Wetland is one meter.

**8. Wetland Type** (please circle the applicable codes for wetland types; in the present document, the "Ramsar Classification System for Wetland Type" is found on page 9)

marine-coastal: 
$$A \cdot B \cdot C \cdot D \cdot E \cdot F \cdot G \cdot H \cdot I \cdot J \cdot K \cdot Zk(a)$$

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

human-made:  $1 \cdot 2 \cdot 3 \cdot 4 \cdot 5 \cdot 6 \cdot 7 \cdot 8 \cdot 9 \cdot Zk(c)$ 

Please now rank these wetland types by listing them from the most to the least dominant:

It is a very good example of «Coastal Permanent Brackish Lagoon» and no other types can be suited to the Wetland.

**9. Ramsar Criteria:** (please circle the applicable Criteria; the *Criteria for Identifying Wetlands of International Importance* are reprinted beginning on page 11 of this document.)

Please specify the most significant criterion applicable to the site: 2

# 10. Map of site included? Please tick $\sqrt{yes}$ -or- no (Figures 1, 3 and 4)

(Please refer to the Explanatory Note and Guidelines document for information regarding desirable map traits).

# 11. Name and address of the compiler of this form:

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# 12. Justification of Ramsar criteria, Selected for Gomishan Wetland (Categories 9 and 12 of the RIS)

#### Criterion1:

The wetland is a coastal lagoon in the extreme southern part of Caspian Sea, which is situated in western border of Turkmen Steppe Plains. The wetland consists of 3 ecological features, each one as a ribbon north to south, close to the other one. The eastern one, with shallow water, from 0 to 0.5 meter depth (Fig. 6 and Fig. 7), is laying to the extreme western part of the Turkmen Steppe plain, with salt soil.

The geological structure of this region is from Cenozoic (Pliocene – Quaternary) and mainly consists of silty and sandy sediments, which is transported from the Caspian Sea. Deeper materials, under the sediments, are lime stone, sand and shiest. Generally the Gomishan coastal Lagoon is a low land beach with the slope less than 1%.

## Criterion2:

The Wetland supports 3 Vulnerable Waterfowls species. These birds and their Vulnerability, according to the world Red List of Threatened Animals (IUCN, 1996) are as follow: *Pelecanus crispus* (VU<sup>21</sup>C2<sub>a</sub>), *Aythya nyroca* (VU<sup>21</sup>A2<sub>acd</sub>), *Vanellus gregarious* (VU<sup>21</sup>A1<sub>ac</sub>C1+2<sub>a</sub>). The Vulnerable mammal: *Phoca (Pusa) caspica* (VU<sup>152</sup>B1+2<sub>c</sub>) is also seen in the Wetland.

#### Criterion 5:

According to the recent 13 years mid winter Water birds censuses, the Wetland has regularly supported more than 20000 waterbirds (Fig.5). The number of waterbirds counted in each year is as follow:

#### Criterion 6:

According to table No. 1, 20 species of waterbirds are recorded to have more than 1% of the individuals in the populations.

## **Criterion 8:**

The Wetland is an important source of food for 15 fish species that are listed in table No.2. The Wetland is also an important migratory path on which the fish subs-species Rutilus rutilus caspicus depends.

#### 13.General location

Gomishan Wetland is situated in the extreme southern part of eastern coast of Caspian Sea and also is in the western border of the Turkmen Steppe plains. It is located in the northern part of Iran, in the Golestan province and in the fortifications of Bandar Turkmen city. This city is 9 km. to the south from the Wetland. The small town of Gomishan is located 4 km. from the Wetland, to the east (Fig. 1).

# 14.Physical features

- 14.1 Geology and geomorphology: The geological structure of this region is from Cenozoic (Pliocene Quaternary) and mainly consists of silty and sandy sediments, which is transported from the Caspian Sea. Deeper materials, under the sediments, are lime stone, sand and shiest. Generally the Gomishan coastal Lagoon is a low land beach with the slope less than 1%.
- 14.2 Origins: The Wetland is totally natural coastal lagoon and no part of it, is artificial.
- 14.3 Hydrology: The wetland is connected to the Caspian Sea, so its hydrological features are directly generated from the sea.
- 14.4 Soil type: The vast low land plain that the wetland is located in the western part of it is called the «Coastal lowland» physiographic unit. Its soils are Solonchak with medium to slow water penetration, heavy structure and high salinity.
- 14.5 Water quality: The average physical and chemical characteristics of the wetland's water are given in table No 3. The numerals are calculated according to a whole year samplings from 5 permanent stations in the wetland. The exact location of the stations is shown in Fig. 2, as it is printed from memory of the GPS.
- 14.6 Water depth and water permanence: The average water depth of the wetland is one meter. The maximum depth of it is measured 2.5 meters, which is in the northwestern part of the wetland, close to the international border. Because of the connection of the wetland with the Sea, the water permanence is quit as it is for Caspian Sea. Water depth of the wetland is shown in three categories on the enclosed map (Fig. 3).

- 14.7 Fluctuations in water level: It is exactly the same as with Caspian Sea. The shoreline changes, according to the fluctuations in water level of the lagoon, during the last two decades, are seen in Fig. 4.
- 14.8 Tidal variations: There is not seen any tidal variations.
- 14.9 Catchments area: The catchments area of the wetland which is located in the eastern, north- eastern and south eastern parts of it, consists of 2 river basins. Atrak catchments area is 28 thousand square kilometers. The river finally inflows to a small bay in the name of Hassan- Gholi, in the vicinity of the northern part of Gomishan wetland, in the rep. of Turkmenistan. Actually the river in that point is dry or with very low water. Gorgan River catchments area is 10.2 thousand square kilometers, at the south of the Atrak catchments area. Gorgan River, finally inflows into the Caspian Sea, in a place south to the Gomishan wetland, between the wetland and Gorgan bay (Miankaleh). These rivers have not any meaningful contribution in supplying the water of the wetland.
- 14.10 Downstream area: There is not any downstream area for the wetland.
- 14.11 Climate: The wetland's climate, according to de Martin's system is temperate semi arid, with aridity index of 10 to 20. The climate according to Silianinov's system is medium semi arid, and with hydrothermal index of 0.7 to 1. The average annual rainfall of the Wetland is 431 mm. The maximum rainfall occurs in December with average of %13.4 of the annual precipitation's and the minimum, with average of %3.3, occurs in July. The average daily temperature of the wetland is from 6.6% in January to in August. The wetland 's climate from south to north gets gradually dryer and warmer.

## 15. Hydrological values

The Wetland is a coastal lagoon, therefore it has not values of ground water recharge, or flood control. But it has the values of shoreline stabilization and limited value of sediment trapping.

# 16. Ecological features

The wetland consists of 3 ecological features, each one as a ribbon north to south, close to the other one. The eastern one, with shallow water, from 0 to 0.5 meter depth (Fig. 6 and Fig. 7), is laying to the extreme western part of the Turkmen Steppe plain, with salt soil, which is dominated by the plant species of *Salicornia auropaea* and other salt tolerant herbs (Fig. 8). The beach of this eastern part of the Lagoon is a suitable habitat for the wader's waterbirds.

The middle open water ecosystem consists of the vast part of the Lagoon, with the depth between 0.5 to 2.5 meters (Fig. 3). Because of the heavy waves that some times are seen in this part, there is not growing any vegetation. It is an ideal habitat for cormorants and the diving ducks. The western part ecological feature of the Lagoon is close to the Caspian Sea coastline. It is separated from the sea by a very narrow sandy barrier, which in some parts is too low to make the water of the lagoon quite separate from the Sea. This ecosystem is covered by stands of reedbeds from the species *Phragmites australis* (Fig. 9), and is a good habitat for different water birds.

The aquatic plant species of Gomishan Lagoon are submitted in table No 4. The arrangement of the species in the table is from dominant to rare, in the Lagoon, respectively.

# 17. Noteworthy flora

The aquatic plant species of Gomishan Lagoon are submitted in table No 4.The arrangement of the species in the table is from dominant to rare, in the Lagoon, respectively.

# 18. Noteworthy fauna

The names of the fishes of the lagoon are given in table No.2, with the arrangement of relatively dominance, from abundance to rare. The scientific names of the reptiles, living around the lagoon and specially in the eastern coast of the wetland are seen in table No.5.

The list of 81 waterbirds species that are seen in the wetland is enclosed in table No 6. Three species of the list (*Pelecanus crispus*, *Aytha nyroca* and *Venellus gregarius*) are vulnerable, according to the global IUCN red list. *Haliaeetus albicilla* is in the category of «lower risk » according to the threatened red list.

Table No 7 contains the list of the mammals living in Gomishan wetland or in the neighboring lands. From these mammals *Phoca (Pusa) caspica* is vulnerable, according to the IUCN red list and *Miniopterus shreibersii* is in the lower risk category. The average individual invertebrate benthos in each square meter of the bottom of the Lagoon, for each station and also the maximum and minimum of them, with 95% confidence, are presented in table 8. The average zooplankton and the maximum and the minimum numbers of them in each liter of water of the Lagoon, with 95% confidence, are submitted in table 9.

#### 19. Social and cultural values

Regarding to insufficient fertile soil and fresh water in the region, the people are depended on the fisheries production and also shooting the waterfowls of the lagoon. The most important fish for the people is *Rutilus rutilus caspicus* that migrates into the lagoon from Caspian Sea during winter and spring seasons.

# 20. Land tenure / ownership

All the lands of the lagoon and surrounding area are governmental.

## 21. Current land use

The human population in the area, which mainly belongs to the Gomishan district, is almost 40000. The principal activities is fishing and hunting. The main from of land use, at the vast eastern flood plain of the wetland, is livestock grazing. In the catchments, the principal human activity is livestock grazing and after that, the main land use is agriculture.

# 22. Factors adversely affecting the site's ecological character, including changes in land use and development projects

The most important potential factor, which has had a detrimental effect on the natural ecological character of the wetland, is the Caspian Sea fluctuation. Because of this factor, in the year 1978, when the Sea surface was at the lowest level, the large Gomishan Lagoon of today consisted of only a chain of narrow, small lagoons behind the Caspian Sea

beach. The most important adverse human activates at the site are excessive human disturbance, hunting and fishing, which are existing factors. In the catchments overgrazing is the most adverse factors. As the Lagoon is connected to the Caspian Sea, all the introduced exotic species of the Sea may affect to the site.

#### 23. Conservation measures taken

Nearly the northern half of the wetland is a «no- hunting and no- fishing» which means hunting and fishing in the northern half of the Lagoon is forbidden.

# 24. Conservation measures proposed but not yet implemented.

There is not any proposed conservation measure yet.

#### 25. Current scientific research and facilities

A two years study about the wetland has just been finished. The study is done with the useful help from Ramsar Small Grants Fund (SGF) for Wetland Conservation and Wise Use, different facilities from Department of the Environment and professional helps from some Iranian universities. In the study a whole year (12 times, each at the beginning of one month) water birds census was undertaken throughout the wetland. Five permanent field stations were appointed in the site (Figures 1 and 2). During one year (12 continuous months) Physical, chemical and biological characteristics of the wetland 's water and sediment were surveyed. Benthos invertebrates, Zooplanktons and phytoplanktons were also sampled from the field stations.

#### 26. Current Conservation Education

There is not any existing conservation education programmed.

#### 27. Current recreation and tourism

There is not any present use of the wetland for recreation and tourism or even any planned facilities.

#### 28.Jurisdiction

The name of the government authority with territorial jurisdiction over the wetland is Golestan State. The name of the authority with functional Jurisdiction for conservation purpose is Department of the Environment.

## 29. Management authority

The name and address of the body responsible for the direct local conservation and management of the wetland is: Mr. Mohajer, Director of Department of the Environment of the Golestan province.

#### 30.Refernces

- 1- Ramsar Convention Bureau. 1997, The Ramsar Convention Manual, A Guide to the Convention on Wetlands (Ramsar, Iran, 1971), 2nd edition, Gland, Switzerland, 166 pp.
- **2-** CITES, 1999, Appendices I and II, Convention on International Trade in Endangered Species of Wild Fauna and Flora.
- **3-** Baillie, J. and B.Groombridge, 1996. IUCN Red List of Threatened Animals, IUCN, Switzerland.

- **4-** Delaney, S. et al. 1999. Results from the International Waterbird Census in the Western Palearctic and Southwest Asia 1995 and 1996. Wetlands International Publication No.54.
- 5- Rose, P.M.& D.A. Scott .1994. Waterfowl population estimates. IWRB Publication.

**Table No1**- Numbers of the individuals of wintering waterbirds, in Gomishan Lagoon, at the midwinters of some years, which have been more than 1% of their populations.

%1 of global*	Second Max. Max. Counted		ounted	Species Name	
population	Year	No	Year	No	
100	1993	350	1995	740	Podiceps cristaus
120	1995	185	1991	334	Pelecanus crispus
1000	1995	3500	1993	4500	Phalacrocorax carbo
800	1994	800	1991	1120	Egretta alba
500	1996	560	1991	1120	Ardea cinerea
5000	1995	30000	1992	55000	Phoenicopterus ruber
1000	1997	4100	1998	4850	Anser anser
200	1989	256	1996	400	Cygnus cygnus
8000	1993	20000	1991	40000	Anas platyrhynchos
15000	1993	17000	1991	30000	Anas crecca
1300	1995	7200	1991	13000	Anas strepera
2500	1993	5000	1991	16000	Anas Penelope
6500	1991	8000	1995	14200	Anas acuta
3000	1990	12000	1991	12000	Anas clypeata
3500	1994	12100	1991	17000	Aythya ferina
100	1990	180	1989	204	Mergus serrator
30000	1993	32000	1989	65200	Fulica atra
1300	1995	1500	2000	2930	Tringa tetanus
400	1997	8200	1998	8400	Limosa limosa
250	1994	1000	1991	1700	Himantopus himantopus

<sup>\*-</sup> Rose (1994) & Delaney (1999)

**Table No.2**- Fishes of Gomishan Lagoon, Listed from dominate to rare (approximately)

Family	Species
CYPRINIDAE	Rutilus rutilus caspicus
CYPRINIDAE	Cyprinus carpio
MUGILIDAE	Liza saliens
ATHERINDAE	Atherina boyeri
SYNGNATHIDAE	Syngnathus abaster
POECILIDAE	Gambusia holbrooki
GOBIIDAE	Benthopilus stellstus
GOBIIDAE	Neogobius (kessleri) gorlap
GOBIIDAE	N. melanostomus
CYPRINIDAE	Rutilus fristi kutum
GASTEROSTEIDAE	Gasterosteus aculeatus
GASTEROSTEIDAE	Pungitius platyguster
CLUPEIDAE	Alosa braschnikowii (kessleri)
CLUPEIDAE	A. caspia
PERCIDAE	Sander lucioperca

Table No.3 – The average physical and chemical characteristics of Gomishan Lagoon's water

Data of	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Averag
Samp.	1999	1999	1999	1999	1999	1999	1999	1999	1999	1999	1999	2000	e in the Lagoon
Factor													
Sampling hour	13:20	14:30	14:40	15:00	15:50	16:10	14:10	15:50	13:10	16:30	14:20	14:10	14:50
Air temp. °C	14.8	15	19.6	24.4	28.7	28.2	31.2	19.6	17	9	7.6	8.4	18.6
Water temp.°C	12.6	14.6	21.4	24	30.1	28.5	31.7	22	16.4	10.2	9	8.4	19
Depth (cm)	71	77.8	81	75.4	78	79	82.8	71.3	76.8	66.2	66.2	69.6	74.5
Secchi disk (cm)	62.5	52	32.6	35	41	32.4	32.4	25	26.4	63.7	66.2	69.6	45
РН	7.8	7.7	7.7	7.9	8.1	7.9	8.3	8.2	8.4	8.5	8.1	7.9	8
EC ms/cm	14.2	15.2	17.5	18.7	17.8	19.6	20	18	16.4	14.4	14.07	14.2	16.6
DO mg/l	9.8	9.3	8.1	8.4	7.2	7.7	7.7	7.9	9.2	8.3	9.8	10.2	8.6
BOD <sub>5</sub> <sup>20</sup> mg/l	1.4	0.8	0.2	1.2	0.3	0.2	1.2	1.1	0.3	0.4	1.3	0.4	0.7

O-Po <sup>-3</sup> mg/l	0.006	0.002	0.002	0.001	0.003	0.001	0.002	0.003	0.004	0.005	0.007	0.008	0.004
No 3 mg/l	0.04	0.03	0.1	0.1	0.2	0.1	0.2	0.08	0.09	0.09	0.05	0.04	0.09
T.A. CO3Ca mg/l	186	202	226	188	221	192	165	187	170	162	172	184	187
CO3Ca mg/l	207	203	226	190	227	195	194	199	201	191	180	188	200
CO3Ca mg/l	4224	4476	4692	4568	4928	4768	4916	4890	4718	4410	4555	4360	4625
Cl <sup>-</sup> mg/l	5977	6313	6593	6322	6169	6318	6469	6631	6422	6398	6549	5934	6341
ClNa mg/l	9862	10412	11043	10762	11493	11508	11918	11647	10866	8202	10806	9792	10692

Table No.4 list of macrophytes of Gomishan Wetland

No.	Family	Plant species
1	GRAMINEAE	Phragmites australis
2	RUPPIACEAE	Ruppia maritima
3	POTAMOGETONACEAE	Potamogeton pectinatus
4	CLADOFORACEAE	Cladophora sp.
5	ZYGNEMANTACEAE	Mougeotia sp.
6	CHARACEAE	Tolypella sp.
7	ZANNICHELLIACEAE	Zannichellia palustris
8	CERATOPHYLLACEAE	Ceratophyllum demersum
9	POTAMOGETONACEAE	Zostera noltii
10	AZOLLACEAE	Azolla filiculoides
11	ТҮРНАСЕАЕ	Typha latifolia
12	JUNCACEAE	Juncus hybridus
13	JUNCACEAE	Juncus acutus
14	JUNCACEAE	Juncus maritimus
15	CYPERACEAE	Scirpus sp.
16	CYPERACEAE	Cyperus longus
17	CALLITRICHACEAE	Callitriche palustris

Table No 5-List of reptiles around Gomishan Lagoon

Family	Scientific name
Order	TESTUDINES
EMYDIDAE	Emys arbicularis
EMYDIDAE	Mauremys caspica caspica
Order	SAURIA
AGAMIDAE	Trapelus agilis
AGAMIDAE	Phrynocephalus helioscopus
GEKKONIDAE	Cyrtopodion caspium
LACERTIDAE	Lacerta chlorogaster
LACERTIDAE	Eremias velox velox
Order	SERPENTES
TYPHLOPIDAE	Typhlops vermicularis
BOIDAE	Eryx jaculus
BOIDAE	E. miliaris
COLUBRIDAE	Coluber najadum
COLUBRIDAE	C. karelini
COLUBRIDAE	C. ravergieri
COLUBRIDAE	Elaphe dione
COLUBRIDAE	Natrix natrix
COLUBRIDAE	N. tesselata
COLUBRIDAE	Lytorhynchus ridgewayi
COLUBRIDAE	Oligodon taeniolatus
COLUBRIDAE	Psammophis schokari
ELAPIDAE	Naja oxiana

Table No 6 - List of waterbirds species of Gomishan wetland

N	Species	No	Species	No	Species
o					
1	Tachybaptus ruficollis	28	Aythya ferina	55	Tringa stagnatilis
2	Podiceps nigricollus	29	Aythya nyroca	56	Tringa nebularia
3	Podiceps auritus	30	Aythya fuligula	57	Tringa ochropus
4	Podiceps grisegena	31	Mergus albellus	58	Tringa hypoleucos
5	Podiceps cristatus	32	Mergus serrator	59	Xenus cinereus
6	Pelecanus onocrotalus	33	Haliaeetus albicilla	60	Tringa spp.
7	Pelecanus crispus	34	Buteo buteo	61	Limosa limosa
8	Palacrocorax carbo	35	Circus cyaneus	62	Limosa lapponica
9	Egretta alba	36	Circus aeruginosus	63	Numenius arquata
10	Bubulcus ibis	37	Falco peregrinus	64	Numenius phaeopus
11	Egretta garzetta	38	Falco tinnunculus	65	Recurvirostra avosetta
12	Ardea cinerea	39	Porphyrio porphyrio	66	Phalaropus lobatus
13	Ardea purpurea	40	atra Fulica	67	Glareola pratincola
14	Platalea leucorodia	41	Charadrius hiaticula	68	Larus ichthyaetus
15	Phoenicopterus ruber	42	Pluvialis dominica	69	Larus minutus
16	Anser anser	43	Charadrius dubius	70	Larus ridibundus
17	Cygnus olor	44	Charadrius alexandrinus	71	Larus genei
18	Cygnus cygnus	45	Charadrius leschenaultti	72	Larus argentatus
19	Tadorna tadorna	46	Charadrius spp.	73	Larus fuscus
20	Anas platyrhynchos	47	V anellus gregarius	74	Larus spp.
21	Anas crecca	48	Vanellus vanellus	75	Chlidonias leucopterus
22	Anas strepera	49	Arenaria interpres	76	Sterna hirundo
23	Anas penelope	50	Calidris alpina	77	Sterna caspia
24	Anas acuta	51	Calidris alba	78	Strena repressa
25	Anas clypeata	52	Calidris spp.	79	Strena anaethetus
26	Netta rufina	53	Tringa eryhthropus	80	Strena albifrons
27	Aythya marila	54	Tringa totanus	81	Alcedo atthis

**Table No 7** – List of the mammals of Gomishan Wetland and the surrounding area

ERINACEIDAE	MURIDAE	HYSTRICIDAE	PHOCIDAE							
Hemiechinus hypomelas	Cricetulus migratorius	Hystrix indica	Phoca(Pusa) caspica							
Hemiechinus auritus	Microtus arvalis	LEPORIDAE	SUIDAE							
SORICIDAE	Meriones libycus	1 Aeriones libycus Lepus capensis S				Lepus capensis Sus scrofa				
Sorex minutus	Rhombomys opimus	CANIDAE								
Crocidura russula	Rattus norvegicus	Canis aureus								
VESPERTILIONIDAE	Rattus rattus	Vulpes vulpes								
Myotis mystacinus	Mus musculus Vulpes corsac									
Pipistrellus pipistrellus	Nesokia indica	FELIDAE								
Eptesicus serotinus	DIPODIDAE	Felis chaus								
Miniopterus shreibersii	Allactaga elater	Felis silvestris								