

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/updated:
20 January 2003

2. Country: The Republic of Uzbekistan

3. Name of wetland: Lake Dengizkul

4. Geographical coordinates: N 39.07 E 64.10

5. Elevation: (average and/or max. & min.) average 183.1 m

6. Area: (in hectares) 31,300 ha

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

This largest saline wastewater closed waterbody in SW part of the Kysylkum desert lies in a natural depression 70 km SSW of the city the Bukhara and 35 km SE of Alat town on the border of Uzbekistan and Turkmenistan, with typical ecological conditions of natural lakes situated in the deserts of Central Asia. This lake is of special value as a site of concentration on the route of migrating birds and wintering of hydrophilous birds. It is also notable for high biodiversity and large number of endemic fishes. There is a significant fish stock in this lake. Besides, this area is the habitat of same rare animal spices.

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 • 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)

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

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.)

1 • 2 • 3 • 4 • 5 • 6 • 7 • 8

Please specify the most significant criterion applicable to the site: 3

10. Map of site included? Please tick *yes* or *no*

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

Map scale: 1:200000

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

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DD MM YY

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Designation date

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Site Reference Number

Please provide additional information on each of the following categories by attaching extra pages (please limit extra pages to no more than 10):

12. Justification of the criteria selected under point 9, on previous page. (Please refer to the *Criteria for Identifying Wetlands of International Importance* appended to this document)

Criterion 1.

This Lake is the largest saline wastewater closed waterbody in SW part of the Kysylkum desert, with typical ecological conditions of natural lakes situated in the deserts of Central Asia.

Criterion 2:

Wetland supports endangered and vulnerable species as follows:

- endangered species: Bastard Sturgeon (*Acipenser nudiventris*), Large Amu-dar Shovelnose (*Pseudoscaphirhynchus kaufmanni*), White headed Duck (*Oxyura leucocephala Scop.*)
- vulnerable species: Central Asian tortoise *Agrionemys horsfieldi Gray*, Central Asian desert monitor *Varanus griseus Daud*, Geoffroy's Bat (*Myotis emarginatus E.G.*), Marbled Teal (*Marmaronetta angustirostris Menetr.*)

Criterion 3:

The lake is important for maintaining a biodiversity of wetland-dependent species in an otherwise largely arid region, including twenty-four fish species having been recorded in Lake Dengizkul, which constitutes 28,9% of the total fish fauna of Uzbekistan; 2 amphibian species (Marsh Frog, *Rana ridibunda Pall* and Green Toad, *Bufo viridis Laurenti*); 24 reptile species inhabiting in the vicinity of Lake Dengizkul; 35 mammal species (35,7% of the total species composition in Uzbekistan); all the *Felidae* species presenting to be included with Annex II of CITES and 120 bird species.

(Details of the species are presented under No.18.)

Criterion 4:

Lake Dengizkul is of crucial importance for migrating and wintering waterfowl, as it is situated on the route of bird migrations from Western Siberia and Kazakhstan to Indo-Pakistani wintering ground. It is a resting site for many waterbirds, and a wintering site for over 27 bird species. Coot *Fulica atra* and Red-crested Pochard *Netta rufina* . dominate in winter and Mallard *Anas platyrhynchos* and Teal *Anas crecca* are common. Of rare birds, Mute Swan *Cygnus olor*, White-headed Duck *Oxiura leucocephala*, Pygmy Cormorant *Phalacrocorax pygmeus*, and White-tailed Eagle *Haliaeetus albicilla* winter there. Among many migrating bird species staying on Dengizkul, the most important are White Pelican *Pelecanus onocrotalus*, Common Crane *Grus grus* and Demoiselle Crane *Anthropoides virgo*, Dalmatian Pelican *Pelecanus crispus* is rare.

Criterion 5:

It regularly maintains over 20,000 waterfowl (up to 500,000 in autumn and 47-286,000 in winter). 54.5-92.9% are Coots and about 6.5-42.6% are bay ducks.

Annual survey of autumn numbers are 114,604(1986), 499,359(1987) and 139,287(1988). In winter, total number varied between 47,729 and 286,634 in few years between 1997 and 2000.

Criterion 6:

The lake supports more than 1% of the world population of the endangered White-headed Duck. The population of the White-headed Duck was 1,107 (9.6%) in January 2000 and 185 (1.6%) in March 2000. Coot also regularly exceed the 1% threshold for the population.

Criterion 7:

Twenty-four fish species have been recorded in Lake Dengizkul, which constitutes 28,9% of the total fish fauna of Uzbekistan. Of them, 14 species (58,3%) are indigenous forms:

<i>Acipenser nudiventris</i>	Bastard Sturgeon
<i>Pseudoscaphirhynchus kaufmanni</i>	Big Amu-dar Shovelnose
<i>Carassius auratus</i>	Goldfish
<i>Cyprinus carpio</i>	Carp
<i>Pelecus cultratus</i>	Sabrefish
<i>Abramis. brama orientalis</i>	Bream
<i>Chalcalburnus chalcoides aralensis</i>	Shemaya
<i>Aspius aspius taeniatus</i>	Aral Asp
<i>Rutilus rutilus aralensis</i>	Roach
<i>Varicorhinus capoeta heratensis</i>	Khramulya
<i>Barbus brachicephalus</i>	Aral Barbel
<i>B. capito conocephalus</i>	Barbel
<i>Silurus glanis</i>	European catfish
<i>Stizostedion lucioperca</i>	Sander

Criterion 8:

The lake is closed basin lake and support at least 14 fish species which are totally dependent on this lake for the food, spawning ground and nursery.

13. General location: (include the nearest large town and its administrative region)

Lake Dengizkul is located in south-west periphery of the Bukhara oasis; it is one of the three largest irrigational wastewater lakes in the basin of the Aral Sea. The largest saline wastewater closed waterbody in SW part of the Kyzylkum desert lies in a natural depression 70 km south-south-west of the city of Bukhara and 35 km south-east of Alat town on the border of Uzbekistan and Turkmenistan, with typical ecological conditions of natural lakes situated in the deserts of Central Asia.

14. Physical features: (e.g., geology, geomorphology; origins - natural or artificial; hydrology; soil type; water quality; water depth, water permanence; fluctuations in water level; tidal variations; catchment area; downstream area; climate)

In the past, this lake was a terminal reservoir on the River Zaravshan. On a map made in 1914 the area of this lake was 120 km². However, by mid-1950s, the lake had completely dried up and turned into a big solonchak because of the withdrawal of its waters for irrigation.

The construction of the Dengizkul collector and the Amu-Bukhara canal in 1966 resulted in an intensive filling of the lake. In the past 25 years, this lake has turned into the biggest irrigation-wastewater lake out of periodically drying solonchak. Now its area reaches 313 km² and the volume 3,3 km³.

Morphometric characteristics of Lake Dengizkul

Morphometric characteristics	Units of measurement	
water level	m	183,1
area	km ²	313,0
volume	mln m ³	3,347
length	km	43,5
the widest part	km	9
average width	km	7,2
the deepest point	m	23,0
average depth	m	10,69
shoreline length	km	267,8

The lake is 43,5 km long stretching from southeast to northwest. At its widest it is 9 km with an average width of 7,2 km. North-eastern shore in most part is steep, formed of soils with high content of gypsum, sands, marl and gypsum. The southern shore is low, covered with the desert vegetation. The coastline is stable. The depth in the central part is 23 m. North-eastern and south-western reaches of the lake are separated from the central part by underwater elevations which handicap the interwater exchange between the reaches. Above-water vegetation is restricted to northwestern part of the lake consisting mainly of reeds. About 4% of the lake area are overgrown with vegetation.

The soil types are typical for the region. They are as follows: desert sandy soils and sands; grey-brown solonchak soils on the eluvium of sandstone with hilly sands; solonchaks on the eluvium of primary rock; marsh-meadow and meadow soils of the arid zone, loamy soils on allusion.

The climate is extremely continental, dry, with high fluctuations in temperatures. An average temperature in January is 0 - 2⁰ C, the absolute minimum - 27⁰ C. An average t⁰ in July - +27-30⁰ C, but it can be as high as +45+48⁰C.

In cold seasons the wind is of northeastern and northwestern directions, in the warm seasons it is of north and northwestern directions.

Wind-induced lowering and raising of the water level may reach 0,3-0,4 m upon the wind blowing along the main axis of Lake Dengizkul.

Precipitation usually takes place in March-April. Annual precipitation reaches 150-250 mm, in separate years only 100 mm.

An increase in water t⁰ above 4⁰C usually takes place in the first 10 days of March. The highest water t⁰ (27-27,5⁰C) is usually in late July and early August. The water t⁰ is quite homogeneous in the lake aquarium owing to winds. The autumn decrease in water t⁰ below 4⁰C usually takes place in December. Depending on synoptic peculiarities in different years, the duration of the freeze-up may range between 0 and 30 days. In cold winters the freeze-up is observed on the whole aquatorium of the lake.

The most intensive growth in the water level reaching 2 m a year took place in 1973 to 1976 during the water escape from Lake Sultandag.

The growth of the water level continued for the whole year slowing down insignificantly in winter months. As the equilibrium of the water balance was maintained and the lake stretched out to the plains north-westwardly, annual water fluctuations of 0,3-0,5 m became characteristic for this lake with peaks in spring.

Lake Dengizkul has no outflow. The main inflow is through the Debgizkul collector. With the growth of irrigation and water withdrawal, the drainage inflow into Lake Dengizkul grows. However, with the increase in the area of Lake Dengizkul, the loss of water due to evaporation also increases.

Water Balance in Lake Dengizkul

Balance components	On average per year
Collector-drainage inflow from Buchara oasis	0,54
Precipitation	0,05
Lesses as a result of evaporation	0,50

The distribution of mineralization through the lake aquatorium is similar over all seasons. The lowest values are characteristic of the northwestern part of Lake Dengizkul into which flow. The difference in the levels of mineralization between eastern and western reaches 0,3-0,5 g/l. The maximum values are characteristic of shallow northwestern reaches with a slow water exchange with the main part of the lake. An average mineralization value is 13,2 g/l.

The ion content in Lake Dengizkul

Characteristic	Ca	Mg	Na+K	HCO ₃	SO ₄	Cl	E
mean value	492	844	2691	179	6338	2614	13208

Transport of bioorganic and organic matter from irrigated fields contributes to a high productivity of the lake despite of increased water mineralization. The formation of collector waters from genetically different waters (ground, filtration and wastewater) cause a higher variability in separate ion concentrations against the water mass of Lake Dengizkul. Sulphate-sodium type of salinization is characteristic of this lake.

The transport of mineralized drainage waters under conditions of high rate of evaporation results in a constant growth in mineralization which reaches 0,3 to 0,4 g/l per year.

15. Hydrological values: (groundwater recharge, flood control, sediment trapping, shoreline stabilization, etc.)

The relation of Lake Dengizkul to underground water has not been studied to a sufficient degree. However, in specialists' opinion, the lake is fed by groundwater which, however, does not disturb its water balance.

16. Ecological features: (main habitats and vegetation types)

The relief is a plain with absolute heights of 200-250 m above sea level. The major components of the relief are mound sands and saucer-like hollows of various shapes.

These are largely predetermined by extremely continental dry desert climate, availability of a large salt waterbody and the spread of aquatic habitats into the desert ecosystems. All the habitats can be divided into two large groups.

The first group is directly connected with Lake Dengizkul and located in the aquatorium of this lake. This group includes reeds and cat's-tail growing along the coastline in NW part of Lake Dengizkul. They grow in a strip a few meters wide and do not cover large areas. This habitat is notable for the richest species diversity of the hydrophilous complex.

Islands and smaller islands are also situated in NW shallow part of Lake Dengizkul not far from the collectors flowing into it. The islands have sloping shores. The smaller islands are located not far from the coastline and are often covered with reeds. Larger islands situated farther have, as a rule, desert bush vegetation, shrubs of karelinia and some other water-loving plants. In these site cormorants, pelicans and many duck and goose species are concentrated.

Open water space can be in turn divided into shallow bays with submerged aquatic vegetation growing as a rule not far from the shore, and a deep-water area. The formers have high biological productivity where many waterfowl and fish species forage.

The second group of habitats is restricted to the coastal part of Lake Dengizkul and is characterized with both various desert plant associations and poorly developed tugai association. The latter is only restricted to the sloping NW part of the shore and borders on the reed vegetation. The major part of the coast is covered by the desert vegetation, the nature of which is predetermined by the relief. The most part of the coastline is steep. As a result, relatively high numbers of Shelducks are characteristic for Lake Dengizkul. Besides, Eagle Owl and Kestrel are common in this area.

The vegetation is differentiated according to the features of the relief, soil type and water conditions (the list of dominating plant species is enclosed). The following plant communities are distinguished.

The formation of hornwort -- *Ceratophylleta* -- is spread and stable. An association of hornwort - ass. *Ceratophyllum demersum* + *aquiherbosum* - with other aquatic plants (*Potamogeton pectinatus*, *P. lucens*, *Miriophyllum spicatum*, *Typha angustifolia*, etc.) is encountered at the depth of 0,7 to 1,5 m in highly silted bed. Submerged weeds are highly dense.

The formation of pondweed — *Potamogeteta* — is the association of *P. pectinatus* and *P. lucens*. The former occupies more saline plots in SE part of the lake, and the latter more freshwater NW part. The formation of pondweed grows as deep as 2 to 2,5.

The formation of reed - *Phragmiteta* - is dominating among littoral vegetation. The most often encountered are the following:

- pure reed association - ass. *Phragmites communis purum*;
- reeds with heterogeneous grasses ass. *Phragmites com. + mixta herbo*
- reeds with cat's-tail - sum ass. *Phragmites com. + Typha angustifolia*.

The density of reeds alone is high, the height of reeds reaches 3 to 3,5 m. The strip of reeds begins immediately at the water edge and expands until the water depth reaches 1 or 2 m.

The association of reeds with cat's tail are distributed through the lake as strips of various widths growing at the depth as low as 1,5 m. The density of the shrubs is not high, the above water height reaching 1,5 m.

The association of reeds with motley grass grows on the shores is distributed on the shores along the water edge. Besides reeds, the vegetation consists of *Acluropus littoralis*, sedge, wood reed, karelinia, and other species. Components of tree-bush tugai are also encountered among them. They are papulus, tamarisk and silvery salt tree.

The formation *Tamariceta* comprises two associations: ass. *Tamaricetum pentandra*--mixta, the edificator of which is *Tamarix pentandra*, and ass *Tamaricetum hispedae*, the edification of which is *Tamarix hispida*. The former association is restricted to lowlands and forms dense shrubs. The floristic composition is rather poor: reeds, karelinia, *Suaeda salsa* and camel's thorn.

The association *Tamaricetum hispedae* is spread on saline meadow-takyr or loamy and sandloamy soils showing medium salinity. Ground water is mineralized. The floristic composition mainly includes of halophytes: karelinia, silvery salt tree, sea blithe, barnyard grass, and reeds.

The formation *Salsaleta richteri* is formed of saltwork, *Salsola richteri*. Two associations: ass *Haloxyton persicum* + *Salsoletum richteri* and *S.richteri* are noted. The former grows on hillock sands and is formed of *H.persicum* and *S.richteri*. The cover is of two storeys, 1 or 2 m high in the form of thinned out thicket and single bushes.

Ass. *Salsoletum richteri* is also restricted to hillock sands. Calligonum and bastard acacia can also be observed in this association.

The formation of acacia *Ammodendreta conolyi* is represented by the acacia association (ass.*Ammodendreta conolyi*). This is the most characteristic association for blown sands based on typical psammophytes: *Ammodendron condi*, calligonum, *Calligonum caput-medusae*, *Haloxyton persicum*, *Astragalus*, ephemerals and ephemeroïds.

The formation of *Varcalligoneta* is formed of *Calligonum acanthopterum* and *C. caput-medusae*. It is represented by ass. *Varcalledonetum physxodis* which differs from ass. *Acacia* + *Varcalligoneta* by the availability of *Calligonum acanthopterum*, *Salsoletum richteri* and *Tamarix hispida*.

The vegetation has undergone certain changes connected with either desertification or irrigation. The general exogenous process has been brought about by man-made impact resulting from the construction of Amu-Bukhara Canal and related processes. The irrigation of this territory has given rise to the emergence of aquatic (submerged), littoral-aquatic and coastal vegetation.

Besides succession of plant communities, also observed is a seasonal succession of plant species, which is typical for the desert zone and in which the aspect of the ephemerals and ephemeroïds is evident, whose longevity is about 30 or 40 days.

In the floristic composition, there are no strict endemics, but many species (18 out of 47) of this region are endemics to Central Asia. No introduced plant species have been recorded in the area.

Such plants as *Ceratophyllum demersum*, *Salvinia natans*, *Potamogeton lucens* and *P.pectinatus*, *Miriophyllum spicatum*, as well as young shoots of reeds and *Typha angustifolia* are the major source of food for herbivorous fishes. The same plant species are the food for musk-rats. Besides, *Potamogeton lucens* and *P.pectinatus*, *Ceratophyllum demersum* and *Salvinia natans* are the food for both resident and migrating aquatic and waterside species of waterfowl and animals.

In the past 15-20 years, the number of endemic plants has considerable decreased - they have been included with the list of rare and vanishing plant species.

The cause of their vanishing is in their low plasticity and a significant human impact on their habitats.

17. Noteworthy flora: (indicating, e.g., which species/communities are unique, rare, endangered or biogeographically important, etc.)

The List of Dominating Plant Species in the Vicinity of Lake Dengizkul

Salviniaceae

- | | |
|---|---|
| 1. <i>Salvinia natans</i>
Family <i>Ceratophyllaceae</i> | 24. <i>C. caput - medusae</i>
Family <i>Tamaricaceae</i> |
| 2. <i>Ceratophyllum demersum</i>
Family <i>Halorhagidaceae</i> | 25. <i>Tamarix hispida</i> |
| 3. <i>Miriophyllum spicatum</i>
Family <i>Lentibulariaceae</i> | 26. <i>T. pentandra</i> |
| 4. <i>Utricularia vulgaris</i>
Family <i>Potamogetonaceae</i> | 27. <i>T. laxa</i>
Family <i>Salucaceae</i> |
| 5. <i>Potamogeton lucens</i> | 28. <i>Salix songarica</i> |
| 6. <i>Potamogeton pectinatus</i>
Family <i>Cyperaceae</i> | 29. <i>Papulus ariana</i> * |
| | 30. <i>P. proinosa</i>
Family <i>Fabaceae</i> |
| | 31. <i>Alhagi psendalhagi</i> |

- | | |
|---|---|
| 7. <i>Carex physodes</i> | 32. <i>Ammondendron argenteum</i> * |
| 8. <i>Carex riparia</i> | 33. <i>A. conoli</i> |
| 9. <i>Phragmites communis</i>
Family Typhaceae | 34. <i>Astragalus amarus</i> * |
| 10. <i>Typha angustifolia</i>
Family Ranunculaceae | 35. <i>A. lemsonianus</i> * |
| 11. <i>Delphinium bucharicum</i> * | 36. <i>Halimodendron halodendron</i>
Family Peganaceae |
| 12. <i>Agriophyllum pungens</i> | 37. <i>Peganum harmala</i>
Family Apiaceae |
| 13. <i>A. Paletzianum</i> * | 38. <i>Ferula caspica</i> * |
| 14. <i>Anabasis annua</i> * | Family Convolvulaceae |
| 15. <i>Climacoptera lanata</i> | 39. <i>Convolvulus hamadae</i> * |
| 16. <i>Haloxylon persicum</i> | Family Asteraceae |
| 17. <i>H. aphyllum</i> | 40. <i>Artemisia diffusa</i> * |
| 18. <i>Suaeda salsa</i> | 41. <i>A. leucodes</i> * |
| 19. <i>Salsola arbuscula</i> * | 42. <i>A. songarica</i> * |
| 20. <i>S. Paletziana</i> * | 43. <i>Karelinia caspica</i>
Family Poaceae |
| 21. <i>S. Richteri</i> * | 44. <i>Aeluropus littoralis</i> |
| Family Polygonaceae | 45. <i>Calamagrostis dubia</i> * |
| 22. <i>Calligonum acanthopterum</i> | 46. <i>Cynodon dactylon</i> |
| 23. <i>C. aphyllum</i> | 47. <i>Aristida pennata</i> |

Note: plant species endemic to Central Asian are marked with (*)

Plants included with the Red Data Book of Uzbekistan: *Calligonum paletzianum*, *C.elegans*, *C.matteianum*, *Cousine strobulocephala*, *C. sogdiana*, *Tithymabus scerocyathium*

18. Noteworthy fauna: (indicating, e.g., which species are unique, rare, endangered, abundant or biogeographically important; include count data, etc.)

Fishes

Modern fish fauna of Uzbekistan consists of 19 families, 56 genera comprising 83 species. Of them, 23 species (33,7%) and 43 subspecies are endemic aboriginal forms. Twenty-four fish species have been recorded in Lake Dengizkul, which constitutes 28,9% of the total fish fauna of Uzbekistan. Of them, 14 species (58,3%) are aboriginal forms, 4 *spp.* are acclimatized (16,7%) and 6 are incidentally introduced (25%). Sixteen species (66,6%) are of commercial and sporting importance. *Acipenser nudiventris* and *P.kaufmanni* are extremely rare and their modern habitation should be attributed to as only probable: both the species have been included with the Red List of IUCN as threatened and with the annex II of CITES. Besides them, *Aspius aspius taeniatus*, which are the objects of captures, are included with the list of those "Data deficient". *Barbus brachicephalus*, which inhabits in Lake Dengizkul in low numbers, was included in the list of rare and vanishing fishes (1997).

The Fish Fauna of Lake Dengizkul.

Taxon	English name	Origin	Use
Class Osteichthyes			
Order Acipenseriformes			
Acipenseridae			
<i>Acipenser nudiventris</i>	Bastard Sturgeon	R	
<i>Pseudoscaphirhynchus .kaufmanni</i>	Large Amu-dar Shovelnose	R	
Order Cyprinodontiformes			
Poeciliidae			
<i>Gambusia affinis</i>	Mosquito Fish	A	
Order Cypriniformes			
Cyprinidae			
<i>Hypophthalmichthys molitrix</i>	Silver Carp	A	C
<i>Aristichthys nobilis</i>	Spotted Silver Carp	A	C
<i>Carassius auratus</i>	Goldfish	R	CS

Taxon	English name	Origin	Use
<i>Cyprinus carpio</i>	Carp	R	CS
<i>Pelecus cultratus</i>	Sabrefish	R	S
<i>Hemiculter leucisculus</i>	Common Sawbelly	I	
<i>Abramis. brama orientalis</i>	Bream	R	CS
<i>Chalcalburnus chalcoides aralensis</i>	Shemaya	R	CS
<i>Aspius aspius taeniatus</i>	Aral Asp	R	S
<i>Pseudorasbora parva</i>	Stone Morocco	I	
<i>Rutilus rutilus aralensis</i>	Roach	R	CS
<i>Ctenopharingodon idella</i>	Grass Carp	A	C
<i>Pseudogobio rivularis</i>	Amur False Gudgeon	I	
<i>Varicorhinus capoeta heratensis</i>	Khramulya	R	CS
<i>Barbus brachicephalus</i>	Aral Barbel	R	
<i>B. capito conocephalus</i>	Barbel	R	S
Order Siluriformes			
<i>Siluridae</i>			
<i>Silurus glanis</i>	European catfish	R	CS
Order Perciformes			
<i>Percidae</i>			
<i>Stizostedion lucioperca</i>	Sander	R	CS
<i>Gobiidae</i>			
<i>Rhinogobius similis</i>	Amur goby	I	
<i>Channidae</i>			
<i>Channa argus warpa- chowskii</i>	Amur Snakehead	E	C

Note: R - aboriginal species C - commercial
A - acclimatized species S - of sporting importance
I - accidentally introduced species

Amphibians and Reptiles

The complex of amphibians and reptiles inhabiting in the vicinity of Lake Dengizkul comprises 2 amphibian species (Marsh Frog, *Rana ridibunda Pall* and Green Toad, *Bufo viridis Laurenti*) and 24 reptile species. Of reptiles, Central Asian tortoise, *Agrionemys horsfieldi Gray* (threatened) and Central Asian desert monitor, *Varanus griseus Daud* are included with the IUCN Red List. Also, the latter species is in the list of Annex 1 of CITES, and Central Asian tortoise and Sand Boa, *Eryx miliaris* are in the Annex II of CITES.

In the national lists of rare and vanishing animals are the Central Asian monitor *Varanus griseus Daud*, Tree snake *Boiga trigonatum Branch* and cobra *Naja oxiana Eich*.

The numbers of Central Asian tortoise *Agrionemys horsfieldi Gray* and *E. miliaris* are relatively high, the others are rare.

The List of Amphibians and Reptiles

Latin name	English name
<i>Amphibia</i>	
<i>Bufo viridis Laurenti.</i>	Green Toad
<i>Rana ridibunda Pall.</i>	Marsh Frog
<i>Reptilia</i>	
* <i>Agrionemys horsfieldi Gray.</i>	Horsfield's tortoise
* <i>Teratoscincus scincus Schl.</i>	Turkestan Plate-tailed Gecko
* <i>Crossobamon ewersmann Wieg.</i>	--
<i>Trapelus sanguinolentis Pall.</i>	Steppe Agama
* <i>Phrynocephalus reticulatus Eich.</i>	Netted Toad Agama
<i>Phrynocephalus interscapularis Licht.</i>	--
* <i>Phrynocephalus mystaceus Pall.</i>	Toad-headed Agama
<i>Varanus griseus Daud.</i>	Desert Monitor

Latin name	English name
* <i>Eremias grammica</i> Licht.	Reticulate Racerunner
* <i>Eremias lineolata</i> Nic.	Striped Racerunner
<i>Eremias scripta</i> Str.	Sand Racerunner
<i>Eremias velox</i> Pall.	Rapid Fringe-toed Lizard
* <i>Eremias intermedia</i> Str.	Medial Racerunner
<i>Eryx miliaris</i> Pall.	Sand Boa
<i>Natrix tessellata</i> Laur.	Diced Snake
<i>Coluber Karelini</i> Bran.	Spotted Desert Racer
<i>Coluber ladacensis</i> Ander.	--
<i>Coluber rawergieri</i> Men.	Mountain Racer
<i>Spaleorosophs diadema</i> Schl..	Diadem Snake
<i>Psammophis lineolatum</i> Brand.	Steppe Ribbon Snake
<i>Boiga trigonatum</i> Sch.	Tree Snake
<i>Naja oxiana</i> Eich.	Cobra

Note: endemic animals of Uzbekistan and Central Asia are marked with (*).

Mammals

The mammals inhabiting in the vicinity of Lake Dengizkul comprise 35 species (35,7% of the total species composition in Uzbekistan), all the *Felidae* species being included with Annex II of CITES.

Geoffroy Bat *Myotis emarginatus*, Goitred Gazella *Gazella subgutturoza* and, Corsak Fox *Vulpes corsak* were included with the IUCN Red List (1996) as endangered, at lower risk and as data deficient, respectively.

Five species of mammals were included with the regional lists of rare and vanishing animals (1996).

Rhynolophus bocharicus Kast., Long Clawed Ground Squirrel *Spermophilopsis leptodactylus* Lich, and Lichtenstein's Jerboa *Eremodipus lichtensteini* Vinogr. are endemic to the area of Lake Dengizkul.

On the whole, the complex of the mammals inhabiting in the area of Lake Dengizkul is typical of the desert ecosystem.

The List of Mammals

Latin name	English name
<i>Hemiechinus auritus</i> Gm.	Long-eared Hedgehog
<i>Hemiechinus hypomelas</i> Brandt.*	Brandt's Hedgehog
<i>Crocidura suaveoleus</i> Pall.	Scilly Shrew
<i>Diplomesodon pulchellum</i> Licht.*	Piebald Shrew
<i>Rhinolophus bocharicus</i> Kast.	--
<i>Myotis blythi</i> Tomes.	Bechstein's Bat
<i>Myotis emarginatus</i> E.G.	Geoffroy's Bat
<i>Myotis mystacinus</i> Kuhl.	Whiskered Bat
<i>Pipistrellus pipistrellus</i> Sch.	Common Bat
<i>Eptesicus bottae</i> Pet.	Botta's Serotine
<i>Canus aureus</i> L.	Jackal
<i>Vulpes corsak</i> L.	Corsac Fox
<i>Vulpes</i> L.	Fox
<i>Mustela nivalis</i> L.	Weasel
<i>Mustela eversmanni</i> Less.	Russian polecat
<i>Vormela peregusna</i> Guld.*	marbled polecat
<i>Meles meles</i> L.	Eurasian Badger
<i>Felis libyca</i> Fors.	African Wild Cat
<i>Felis chaus</i> Guld.	Jungle Cat
<i>Felis margarita</i> Loche.*	Sand Cat
<i>Gazella subgutturosa</i> Guld.*	Goitred Gazelle
<i>Spermophilopsis leptodactylus</i> Lich.	Long-Clawed Ground Squirrel
<i>Spermophilus fulvus</i> Lich.	Large-Toothed Souslik

Latin name	English name
<i>Allactaga elater</i> Lich.	Little Jerboa
<i>Dipus sagitta</i> Pall.	Hairy-Footed Jerboa
<i>Eremodipus lichtensteini</i> Vinogr.	Lichtenstein's Jerboa
<i>Ondatra zibethicus</i> L.	Muskrat
<i>Ellobius tansrei</i> Blas.	Mole-Vole
<i>Meriones tamariskinus</i> Pall.	Tamarisk Gerbil
<i>Meriones lubycus</i> Lich.	Lybian Jird
<i>Meriones meridianus</i> Pall.	Midday Gerbil
<i>Rhombomus opimus</i> Lich.	Great Gerbil
<i>Mus musculus</i> L.	House Mouse
<i>Nesokia indica</i> Yrayet.	Short-Tailed Bandicoot Rat
<i>Lepus tolai</i> Pall.	Tolai Hare

Note: animal species included with the Red Data Book of the Republic of Uzbekistan are marked with (*)

Birds

The total list of birds inhabiting in the area of Lake Dengizkul comprises 120 species. The seasonal aspect of the avifauna of Lake Dengizkul differs to a considerable degree. Fifty-five bird species, of which six are residents, nest on Lake Dengizkul.

The dominants among the nesting birds are Red-crested Pochard *Netta rufina* Pall. and Coot *Fulica atra* L.; Little Grebe *Podiceps ruficollis* Pall., Cormorant *Phalacrocorax carbo* L., Gray Heron *Ardea cinerea* L., Pochard *Aythya ferina* L., Moorhen *Gallinula chloropus* L., Black-headed Gull *Larus ridibundus* L., Common Tern *Sterna hirundo* L., and Greylag Goose *Anser anser* L. are common; Pygmy Cormorant *Phalacrocorax pigmaeus* Pall., Spoonbill *Platalea leucorodia* L. and Eagle Owl *Bubo bubo* L. are low in number; Marbled Teal *Anas angustirostris* Menetr. is rare. Of special importance Lake Dengizkul is to the species included with the IUCN Red List over their nesting period. In the northwestern part of Lake Dengizkul, which is more shallow and overgrown with reeds, Marbled Teal *Anas angustirostris* Menetr. and Ferruginous Duck *Aythya nyroca* Guld. (both estimated as vulnerable), as well as Pygmy Cormorant *Phalacrocorax pigmaeus* Pall. (at low risk) are encountered. Marbled Teal *Anas angustirostris* Menetr. is rare, but it probably nests there. Pochard *Aythya ferina* L. is a common nesting species inhabiting in the reeds; however, its number is not high. Of the above birds this species is very seldom encountered in the central and southern parts of Lake Dengizkul.

The most common nesting birds in NW part of Lake Dengizkul are Red Crested Pochard *Netta rufina* Pall., Pochard *Aythya ferina* L., Mallard *Anas platyrhynchos* Mae, Coot *Fulica atra* L., Little Grebe *Podipes ruficollis* Pall., Great Crested Grebe *Podiceps cristatus* L., Moorchen *Gallinula chloropus* L., Grey Heron *Ardea cinerea* L., Greylag Goose *Anser anser* L. and Marsh Harrier *Circus aeruginosus* L.. They are distributed in habitats with above-water vegetation. Cormorant *Phalacrocorax carbo* L. and Coot *Fulica atra* L. inhabit in the open shallow bays of SW part of the lake in summer; the latter are concentrated in numbers of several hundred birds and feed on well developed submerged vegetation.

The List of Birds on Lake Dengizkul

Species		Rate of abundance	Nature of stay
<i>Podiceps nigricollis</i>	Black-necked Grebe	m	l
<i>Podiceps ruficollis</i> Pall.	Little Grebe	n	c
<i>Podiceps cristatus</i> L.	Great Crested Grebe	n,w	l
<i>Pelecanus onocrotalus</i> L.	White Pelican	m	r
<i>Pelecanus crispus</i> Bruch.*	Dalmatian Pelican	m,w	r
<i>Phalacrocorax carbo</i> L.	Cormorant	n,w	c
<i>Phalacrocorax pigmaeus</i> Pall.*	Pygmy Cormorant	n,w	r
<i>Botaurus stellaris</i> L.	Bittern	m,w	l
<i>Ixobrychus minutus</i> L.	Little Bittern	n	l
<i>Nycticorax nycticorax</i> L.	Night Heron	m	l
<i>Egretta alba</i> L.	Great Egret	n,w	l

Species		Rate of abundance	Nature of stay
<i>Podiceps nigricollis</i>	Black-necked Grebe	m	l
<i>Podiceps ruficollis</i> Pall.	Little Grebe	n	c
<i>Egretta garsetta</i> L.	Little Egret	n	l
<i>Ardea cinerea</i> L.	Grey Heron	n,w	c
<i>Ardea purpurea</i> L.	Purple Heron	n	l
<i>Platalea leucorodia</i> L.	Spoonbill	n	r
<i>Cygnus olor</i> Gm.	Mute Swan	v,w	r
<i>Anser anser</i> L.	Greylag Goose	n,w	l
<i>Tadorna tadorna</i> L.	Shelduck	n,w	l
<i>Tadorna ferruginea</i>	Ruddy Shelduck	m,w	l
<i>Anas platyrhynchos</i> L.	Mallard	n,w	c
<i>Anas crecca</i> L.	Teal	m,w	c
<i>Anas querquedula</i>	Garganey	m	c
<i>Anas strepera</i> L.	Gadwall	n,w	l
<i>Anas clypeata</i>	Shoveler	m	c
<i>Anas penelope</i> L.	Wigeon	w	l
<i>Marmaronetta angustirostris</i> Menetr. *	Marbled Teal	n	r
<i>Netta rufina</i> Pall.	Red-crested Pochard	n,w	d
<i>Aythya ferina</i> L.	Pochard	m,w	d
<i>Aythya nyroca</i> Guld. *	Ferruginous Duck	n,w	l
<i>Aythya fuligula</i> L.	Tufted Duck	w	l
<i>Bucephala clangula</i> L.	Goldeneye	w	l
<i>Oxyura leucocephala</i> Scop. *	White-headed Duck	w	l
<i>Mergus albellus</i> L.	Smew	w	l
<i>Pandion haliaetus</i> L.	Osprey	m	l
<i>Haliaeetus albicilla</i> L. *	White-tailed Eagle	w	r
<i>Circus aeruginosus</i> L.	Marsh Harrier	n	c
<i>Buteo rufinus</i>	Long-legged Buzzard	v	l
<i>Falco tinnunculus</i> L.	Kestrel	n	l
<i>Coturnix coturnix</i> L.	Quail	m	l
<i>Grus grus</i> L.	Crane	m	c
<i>Anthropoides virgo</i> L.	Demoiselle Crane	m	c
<i>Rallus aquaticus</i> L.	Water rail	n	l
<i>Gallinula chloropus</i> L.	Moorchen	n	c
<i>Fulica atra</i> L.	Coot	n,w	d
<i>Chlamidotis undulata</i> Jacg. *	Houbara Bustard	m	l
<i>Pluvialis squatarola</i> L.	Grey Plover	m	c
<i>Pluvialis apricaria</i> L.	Golden Plover	m	l
<i>Arenaria interpres</i> L.	Turnstone	m	c
<i>Burhinus oedicephalus</i> L.	Stone Curlew	n	l
<i>Charadrius dubius</i> Scop.	Little Ringed Plover	n	l
<i>Charadrius alexandrinus</i> L.	Kentish Plover	n	l
<i>Vanelloschettusia leucura</i> Linch.	White-tailed Plover	n	l
<i>Himantopus himantopus</i> L.	Black-winged Stilt	n	l
<i>Tringa totanus</i> L.	Redshank	?	r
<i>Actitis hypoleucos</i> L.	Common Sandpiper	m	l
<i>Philomachus pugnax</i> L.	Ruff	m	l
<i>Phalaropus lobatus</i>	Red-necked Phalarope	m	l
<i>Calidris alpina</i> L.	Danlin	m	c
<i>Limicola falcinellus</i> Pont.	Broad-billed sandpiper	m	r
<i>Larus cachinnans</i>	Yellow-legged Gull	n,w	l
<i>Larus ichthyaetus</i> Pall.	Great Black-headed Gull	w	r
<i>Larus genei</i> L.	Slender-billed Gull	n	l
<i>Larus ridibundus</i> L.	Black-headed Gull	n,w	c
<i>Chlidonias hybrida</i> Pall.	Whiskered Tern	n	l

Species		Rate of abundance	Nature of stay
<i>Podiceps nigricollis</i>	Black-necked Grebe	m	l
<i>Podiceps ruficollis</i> Pall.	Little Grebe	n	c
<i>Sterna hirundo</i> L.	Common Tern	n	l
<i>Sterna albifrons</i> Pall.	Little Tern	n	c
<i>Hydroprogne caspia</i> Pall.	Caspian Tern	n	l
<i>Columba livia</i> L.	Rock Dove	r	l
<i>Streptopelia turtur</i> L.	Turtle Dove	n	l
<i>Streptopelia senegalensis</i> L.	Palm Dove	r	l
<i>Pterocles orientalis</i> L.	Black-bellied Sandgrouse	v	l
<i>Cuculus canorus</i> L.	Cuckoo	n	l
<i>Bubo bubo</i> L.	Eagle Owl	r	r
<i>Caprimulgus aegyptius</i> L.	Egyptian Nightjar	n	l
<i>Apus apus</i> L.	Swift	m	c
<i>Riparia riparia</i> L.	Sand Martin	m	c
<i>Hirundo rustica</i> L.	Swallow	n	c
<i>Cecropis daurica</i> L.	Red-rumped Swallow	m	l
<i>Motacilla flava</i> L.	Yellow Wagtail	m	c
<i>Motacilla citreola</i> Pall.	Citrine Wagtail	n	l
<i>Motacilla alba</i> L.	White Wagtail	m	l
<i>Motacilla personata</i> Gould		m	l
<i>Anthus spinoletta</i> L.	Water Pipit	m	c
<i>Lanius excubitor</i> L.	Great Grey Shrike	n	l
<i>Luscinia luscinia</i> L.	Thrush nightingale	m	l
<i>Luscinia megarhynchos</i> Brehm	Nightingale	m	l
<i>Saxicola torquata</i> L.	Stonechat	m	l
<i>Oenanthe isabellina</i> Cretzshm.	Isabelline Wheater	m	l
<i>Oenanthe oenanthe</i> L.	Wheater	m	l
<i>Oenanthe deserti</i> Temm.	Desert Wheater	m	l
<i>Acrocephalus agricola</i> Jerd.	Paddy-field Warbler	n	c
<i>Acrocephalus arundinaceus</i> L.	Great Reed Warbler	m	c
<i>Acrocephalus stentoreus</i> H. et E.		n	c
<i>Hippolais caligata</i> Linch.	Booter Warbler	n	c
<i>Sylvia communis</i> L.	Whitethroat	m	l
<i>Sylvia curruca</i> L.	Lesser Whitethroat	m	l
<i>Phylloscopus collybita</i> Vieill.	Chiffchaff	m	c
<i>Scotocerca inquieta</i> Cretzschm		n	l
<i>Cercotrichas galactotes</i> L.	Rufous Warble	n	l
<i>Muscicapa striata</i> Pall.	Spotted flycatcher	m	l
<i>Parus bocharensis</i> Linch.		r	l
<i>Panurus biarmicus</i> L.	Bearded Tit	r	c
<i>Emberiza leucocephala</i> Gm.	Pine Bunting	m	l
<i>Emberiza shoeniclus</i> L.	Reed Bunting	m	c
<i>Passer indicus</i> Jard. Et Selby		n	c
<i>Passer montanus</i> L.	Tree Sparrow	r	l
<i>Corvus cornix</i> L.	Hooded Crow	w	l

Note: there are some abbreviations used in this table

- | | |
|--------------------|------------------|
| r - resident | r - rare |
| n - nesting | l - lower number |
| m - migrant | c - common |
| w - wintering | d - dominant |
| v - summer visitor | |

* - species included in the IUCN Red List

Migrations and winterings are believed to be critical periods in the life history of birds. In this connection, Lake Dengizkul is of crucial importance for waterfowl, for it is situated on the route of bird migrations from Western Siberia and Kazakhstan to Indo-Pakistani winterings and is a resting site for

many water birds, and it is itself a wintering site for over 27 bird species. Coot *Fulica atra* and Red-crested Pochard *Netta rufina* . dominate in winter, Mallard *Anas platyrhynchos* and Teal *Anas crecca* are common. Of rare birds, Mute Swan *Cygnus olor*, White-headed Duck *Oxyura leucocephala*, Pygmy Cormorant *Phalacrocorax pygmeus*, and White-tailed Eagle *Haliaeetus albicilla* winter there. The latter 3 species was included with the IUCN Red List.

The total number of migrating game waterfowl, as estimated by aerial inventory, ranged from 114.6 thousand to 499.4 thousand; 54.5-92.9% are Coots and about 6.5-42.6% are bay ducks. Among many migrating bird species staying on Dengizkul, the most important are White Pelican *Pelecanus onocrotalus*, Crane *Grus grus* and Demoiselle Crane *Anthropoides virgo*, Dalmatin Pelican *Pelecanus crispus* is rare.

Data on numbers of waterfowl of Dengizkul Lake
during the autumn migration
(aerial count, departmental materials of Gosbiocontrol)

Birds species	1986 year	1987 year	1988 year
Greylag Goose	220	5	
Bean Goose	6		
Mallard	2.808	1.177	2.901
Teal	23	288	
Gadwall	8	1.182	479
Red-crested Pochard	17.809	86	1.268
Pochard	25.687	32.247	11.105
Ferruginous Duck	5.323	164	976
Tufted Duck	50		
Goldeneye			
Smew	184		
Goosander			
Coot	62.486	464.210	122.558
Total:	114.604	499.359	139.287

Data presented in the above table witness that the numbers of migrating game birds recorded were constantly high on Lake Dengizkul. Coot was dominant (62.500-464.200 birds). Co-dominants were Pochard (11.100 to 32.200 birds) and Mallard (1.200 to 2.900 birds); in separate years up to 17.800 Pochards were recorded.

During the counts game waterfowl, 13 species were recorded. Ferruginous Duck, which was among them, is included with IUCN Red List as an endangered species. This species is constantly encountered on Lake Dengizkul during the autumn migration. There were more hydrophilous birds on Dengizkul Lake during autumn migration really. At the table 2 there are data only for game waterfowl and no data about other hydrophillous birds like grebes, cormorants, herons, waders, galls and terns, which usually present at the lake.

In September 1999 we observed southern and northern parts of lakes bank. There were about 350 feeding waders on the southern shallow bank. Among them were Grey Plover (*Pluvialis squatarola*), Golden Plover (*Pluvialis apricaria*), Turnstone (*Arenaria interpres*), Danlin (*Calidris alpina*), Broad-billed sandpiper (*Limicola falcinellus*), Common Sandpiper (*Actitis hypoleucos*). At some northern bays of lake with reed-bed we found lot of surface-feeding ducks and bay ducks concentrated for feeding and rest. Common number was about 25 thousand. There were Red-crested Pochard, Ferruginous Duck, Tufted Duck, Mallard, Gadwall, Shoveler, Teal. Red-crested Pochard, Gadwal and Shoveler were dominate. Also some Black-necked Grebes, Great Crested Grebes, Gray Herons, Greate Egrets, and Dalmatian pelicans had feeding near by those birds.

Winter aerial counts of the game waterfowl were made in 1987, 1988, 1990 and all hydrophilous birds and waterfowl in 2000. The results of these counts are presented in Table.

Materials on numbers of waterfowl of Dengizkul Lake during wintering 1987,1988, 1990 and 2000 years (aerial count, departmental materials of Gosbiocontrol)

Bird species	Years				
	1987	1988	1990	10.01.2000	3.02.2000
Great Crested Grebe					1
Grebe sp.					8
Pelican sp.				19	
Cormorant				40	40
Pygmy Cormorant				10	
Grey Heron				1	
Mute Swan				17	
Swan sp.				418	96
Greylag Goose	123	10	151		35
Shelduck	253	22	168		5
Mallard	1.230	2.928	555	9.176	4.281
Teal	1.503		1.577	288	56
Gadwall			186		267
Pintail					180
Wigeon		5			
Red-crested Pochard	432	174	270	4.550	3.329
Pochard	14.193	27.929	13.214	29.100	6.909
Ferruginous Duck	35	7.087		245	83
Pochard sp.				28	424
Tufted Duck		770	74		256
Goldeneye	3			1	2
White-headed Duck				1.107	185
Smew	12		70	350	18
Goosander			2		69
Ducks sp.				33.181	4.594
Coot	29.945	95.543	35.477	201.036	91.060
Aggregations (Coots or Pochards)				7.000	31.300
Steppe Eagle				2	
White-tailed Eagle				19	18
Marsh Harrier					1
Harrier sp.					1
Yellow-legged Gull				15	32
Black-headed Gull				31	106
Gulls sp.					75

Bird species	Years				
	1987	1988	1990	10.01.2000	3.02.2000
Total:	47.729	134.468	51.744	286.634	143.431

The total number of wintering game waterfowl, as estimated by aerial inventory, ranged from 47.7 thousand to 134.5 thousand in 1987, 1988 and 1989. In 2000 there were 286.6 thousand at the beginning of winter and 143,400 when it becomes colder and lake partly was frozen. (Please, look at the above table. Winter climatic conditions in Uzbekistan are not stable. So, in the beginning of January in 2000 the weather became very cold. Temperature in Buchara region near Lake Dengizkul was minus twelve degree and Lake Dengizkul partly was frozen, and other shallow little lakes in this region was frozen too. So, waterfowl were concentrated on the Dengizkul. But two weeks later the weather become warmer and lake was not frozen. In this time some waterfowl redistributed to the other nearest lakes.)

On Lake Dengizkul, of 14 species game birds counted in winter 1987, 1988 and 1990 most numerous were Pochards, the numbers of which reached 29,7%; 20,8%; 25,5%, and Coots (62,7%; 71%; 68,6%). Among rare species Ferruginous Duck does not wintering on Lake Dengizkul on a regular basis. In separate years its numbers can be significant. So, 7.087 ducks were recorded in 1988, only 35 in 1987, and none of them in 1990.

In 2000 26 species of hydrophilous birds were recorded there. The total numbers of birds reached 286,600 and 143,300 birds in January and February, respectively. In these months, the same species prevailed. The dominant was Coot, which constituted 70.1% in January and 63.5% in February.

On Lake Dengizkul, the highest numbers were also recorded for Pochard, Mallard, Red-crested Pochard and White-headed Duck. We, for the first time for Uzbekistan, recorded the wintering of White-headed Duck. At the beginning of wintering period we recorded 1107 White-headed Ducks, and 185 birds in February. The numbers of this bird may had decrease due to the cold spell and their movement to the other water bodies. Similar changes in numbers were recorded for Ferruginous Duck. In January and February, we recorded 245 and 83 Ferruginous Ducks, respectively. Of threatened birds included in the IUCN Red List we recorded Dalmatian Pelican, Pygmy Cormorant, Ferruginous Duck, White-headed Duck and White-tailed Eagle; of those having national importance we recorded Mute Swan and Steppe Eagle.

The availability of sufficient fish stock enables fish-eating birds to inhabit in the lake area. Cormorant *Phalacrocorax carbo* is dominates in this group, and can be observed over all seasons of the year.

Literary data (Shernazatov, Nazarov, 1991) witness wintering of such birds as grebes, pelicans, herons and swans, but without indicating specific species. Using simple mathematical calculation, we can state that during the autumn migration pelicans, cormorants, herons, swans and gulls constituted 1,26% of the total number of the birds recorded, and in winter 1987-88 — 1,45%. Really in winter 2000 number of hydrophilous birds were lower.

Of species belonging to the unique avian fauna on Lake Dengizkul, Dalmatin Pelican, White Pelican, Mute Swan, Marbled Teal, Ferruginous Duck and White-headed Duck, White-tailed Eagle, Pallas' Sea Eagle and Imperial Eagle are noted.

The results of the counts show that Lake Dengizkul as a site of concentration of migrating and wintering waterfowl and hydrophilous birds is of international importance in connection with of high number, also as site witch suppose some species of international importance and more than 1% of the world population of White-headed Duck.

19. Social and cultural values: (e.g., fisheries production, forestry, religious importance, archaeological site, etc.)

The social value of the lake consists in that it provides the part of the population with jobs such as fishery, and enriches the food of the population from nearby villages and even towns. For the needs of the local population insignificant stocks of reeds are withdrawn as construction material. The commercial mining of gas in the vicinity of and on Lake Dengizkul enabled the provision of the population with fuel and thus preserved trees and shrubs, which are important components of the desert ecosystem. An amateur fisheries are conducted by representatives of the local population, people working in mining industry, and residents of the towns Mubarek , Karakul and Gazli. The availability of a recreational zone enables the

workers of mining industry to have good recreation, and the availability of the ornithological reservation on Lake Dengizkul is of educational importance for both the social groups, and through them.

20. Land tenure/ownership of: (a) site (b) surrounding area

According to the Law of the Republic of Uzbekistan on land ("Land Codex"), all lands are ownership of the state.

The territory around Lake Dengizkul and the lake proper belong to the state and are used by the Ministry of Agriculture and Water Management of the Republic of Uzbekistan. Khokimiat of the Alat district, as State bodies, manage them on site. There are two collective agriculture enterprises ("shircat") "Alat" and "Gulistan".

21. Current land use: (a) site (b) surroundings/catchment

Lake Dengizkul, being an object of the Ramsar Convention, is a site where commercial fish captures, which reach considerable amounts, take place. According to G.K Kamilov et al. (1994), fish captures on Lake Dengizkul reached 172 tonnes in 1992.

Lands adjoining this lake are not used for agriculture. They are used as desert pastures for live-stock raising, mainly Astrakhan sheep.

The following types of pastures are distinguished:

- a) pastures with *Salsola arbuscula* and *Salsola palezkiana* are used all the year round, providing 2 metric centners of dry forage per ha, in NE part of the area adjoining the lake;
- b) calligonum pastures used all the year round (2,7 metric centners per ha) in the northern part;
- c) shrubby pastures providing low crops (1,3 metric centners/ha) in the southern part.

The total estimate of the forage from the range, hilly, fixed and mobile sands ranges between 1,3 and 2,7 metric centners of dry forage per ha. The stock of Astrakhan sheep is assessed at 20,000, which is less than 25 sheep and goats per 100 ha.

There are some enterprises of the mining industry - gas collecting points Urtaulak and Tungyzhovuzak are situated in the area adjoining the lake. There are 9 wells and derricks in the northern part of Lake Dengizkul and in the southern part, there are three. Ten km to the east of Lake Dengizkul is an oil collecting point Urtaulak. An asphalt motor-way passes along the northern shore, as well as gas pipes and power transmission line.

There are deposits of mineral water that hold promise in future use.

22. Factors (past, present or potential) adversely affecting the site's ecological character, including changes in land use and development projects: (a) at the site (b) around the site

Excessive inflow of water from the collector-drainage network, which has taken place in separate years, significantly influenced the water level in Lake Dengizkul - floods caused the death of the waterside vegetation and islands were submerged, which resulted in the destruction of some habitats.

Further intensive development of the mining industry accompanied with the construction of a large number of new wells and gas-collecting points promotes the appearing of a landscape with remnants of industrial activity of man and the development of communicational network, and will give rise to the reduction of natural habitats of the desert ecosystem.

23. Conservation measures taken: (national category and legal status of protected areas - including any boundary changes which have been made: management practices; whether an officially approved management plan exists and whether it has been implemented)

Currently, there are package of Laws on use regulation, conservation and reproduction in Uzbekistan. Uzbekistan also signed the International Convention on Biodiversity Conservation (CBD), Conventional on International Trade in Endangered Species of Wild Fauna and Flora (CITES), the Convention on the Conservation of Migratory Species of Wild Animals (CMS). Uzbekistan also signed the agreements on Slender-billed Curlew and Siberian Crain in the framework of CMS.

The National Strategy and Action Plan on Conservation of Biodiversity has been developed which was endorsed by the Government of Uzbekistan. One of the most important points in it is protection of wetlands and expansion of the network of specially protected natural areas.

All these documents are directly related to Lake Dengizkul. All activities relating to nature use are under control of the State Committee for Nature Protection. On Lake Dengizkul there is a specially protected natural area which has the status of state nature reserve and belongs to the 4th category of IUCN. This protected area is called "Ornithological Nature Reserve Dengizkul". It was set up in 1992 and occupies an area of 8,600 ha. This reserve is supervised by State Committee for Nature Protection. Hunting waterfowl and waterside birds is prohibited there.

24. Conservation measures proposed but not yet implemented: (e.g., management plan in preparation; officially proposed as a protected area, etc.)

No such proposals have been made.

25. Current scientific research and facilities: (e.g., details of current projects; existence of field station, etc.)

Bukhara University has been conducting long-term studies on the fish fauna in Lake Dengizkul. The results of these studies have been summarized in a book "Commercial Fishes in Waterbodies Situated in Lower Reaches of the River Zarafshan" (1989) and in separate articles. Tashkent State University (Kamilov et al., 1994) determined its importance in terms of fishery.

No special fundamental studies on the avifauna of Lake Dengizkul have been conducted, as yet. However, in 1987 to 1989, an aerial inventory was performed which provided some idea on the species composition and members of migrating and wintering game waterfowl. The data obtained as a result of the inventory were summarized in the report "Studies on the Numbers, Levels of Reproduction and Management of Commercial Species of Animals and Birds in Uzbek SSR" (1989) made at the Biology Faculty of Tashkent State University and published as the information report "Current State of Numbers and the Distribution of Water-Swamp Birds Inhabiting in the Basin of the River Zarafshan and Mid-Stream of the River Amu Darya (Shernazarov, Nazarov, 1991).

In June 1997, the ornithologists of the Institute of Zoology of Uzbek Academy of Sciences conducted a short-term survey of Lake Dengizkul with the aim of identifying the species composition and numbers of nesting birds (Lanovenko, 2001).

In January and February 2000 State Inspection of Flora and Fauna together with Institute of Zoology of Uzbek Academy of Sciences and National University conducted aerial censuses of waterfowl at Dengizkul Lake.

The above list of birds on Lake Dengizkul is based on these surveys and the sources mentioned above.

26. Current conservation education: (e.g., visitors centre, hides, info booklet, facilities for school visits, etc.)

This proposal on the inclusion of Lake Dengizkul in the Ramsar list is the first ever made. No other conservation or educational programs on wetlands have ever been proposed or carried out. However, the State Inspection of the Protection of Fauna < Flora and Nature Reserves, and Regional Society of Hunters and Fishermen conduct education work with the local population.

27. Current recreation and tourism: (state if wetland is used for recreation/tourism; indicate type and frequency/intensity)

No active tourist or recreational activities have been carried out on Lake Dengizkul. However, there is one recreational zone for the workers of oil and gas extracting industry where they practice sport fishing. Less than 300 men attend this zone a year.

28. Jurisdiction: (territorial, e.g. state/region, and functional, e.g. Dept of Agriculture/Dept. of Environment, etc.)

Lake Dengizkul is under jurisdiction of the local authorities of the Bukhara regional and Alat district Khokimiyats (in case of industrial and agricultural activities). State Committee for Nature Conservation realizes state control for use of natural resources of Lake Dengizkul.

29. Management authority: (name and address of local body directly responsible for managing the wetland)

The responsibility for the protection of Lake Dengizkul and surrounding territory are conferred on State Inspection for the Protection of Fauna, Flora under State Committee for Nature Protection (Gosbiocontrol)

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30. Bibliographical references: (scientific/technical only)

1. Abdullaev M.A., Urchinov D.U. 1989. Commercial Fishes Inhabiting in Waterbodies Situated in Lower Reaches of the River Zarafshan. Tashkent, Fan Publishers [in Russian].
2. Abdunazarov B.B., Vashetko E.V., Lanovenko E.N., et al. 1996. Rare and Vanishing Animals in Uzbekistan. Information bulletin. Tashkent[in Russian].
3. Bannikov A.G. et.al 1977. A Guide to Amphibians and Reptiles of the USSR. Moscow, Prosveshcheniye Publishers [in Russian].
4. Bogdanov O.P. 1960. Amphibians and Reptiles. The Fauna of Uzbek SSR. Tashkent. Published by Uzbek Academy of Sciences Press [in Russian].
5. Bogdanov O.P. 1965. The Ecology of Reptiles in Central Asia. Tashkent, Nauka Publishers [in Russian].
6. Zakhidov T.Z. 1971. The Biocenoses in the Desert Kyzyl Kum. Tashkent, Fan Publishers [in Russian].
7. Lanovenko E., Filatov A., Zagrebin S. White-headed Duck at Dengizkul Lake, Uzbekistan. TWSG News. The Bulletin of the Threatened Waterfowl Specialist Group. No.12, June 2000.p.16.
8. Studies on Numbers, Levels of Reproduction and Management of Commercial Species of Animals and Birds in Uzbek SSR. Report on Research Work, Biology Faculty, Tashkent State University, Tashkent, 1989 [in Russian].
8. Ishunin G.I. 1961. Mammal Predators and Hoofed Animals. The Fauna of Uzbek SSR, Tashkent, Fan Publishers [in Russian].
9. A Cadastre Reference Book of Commercial Animals in Uzbekistan. Tashkent, Fan Publishers, 1994 [in Russian].
10. Kamilov G.K., Hakberdiyev B., Salikhov T.V. et al. 1994. Water-bodies in Uzbekistan and their Aquacultural Importance [in Russian].
11. Kimberg N.V. 1979. Soils of the Desert Zone in Uzbekistan. Tashkent, Fan Publishers [in Russian].
12. Zakirov K.Z., Zakirov P.Z. 1969. Principles and Nomenclature of the Vegetation Typology. Uzbek Biological Journal, No 5 [in Russian].
13. Tadzhitdinov M.T., Butov K.N. 1972. The Vegetation of Contemporary Waterbodies in Karakalpakstan. Tashkent, Fan Publishers [in Russian].
14. Bakhiev A. 1985. Ecology and Vegetation Succession in Lower Reaches of the River Amu Darya. Tashkent, Fan Publishers [in Russian].
15. Taubaev T.T. 1970. The Vegetation in Waterbodies of Central Asia. Tashkent, Fan Publishers [in Russian].
16. Shernazarov E., Nazarov A.P. 1991. Current State of the Numbers and Distribution of Water-Marshy Birds in the Basin of the River Zarafshan and the Mid-Course of the River Amu Darya. Express Information of Uzbek Research Institute for Scientific Information. Tashkent, 10 p [in Russian].
17. Shcherbak N.N., 1974. Racerunners of Palaearctic. Kiev, Naukova Dumka Publishers [in Russian].
18. Scherbak N.N. Golubev M.L., 1986. Geckoes of the fauna of the USSR and Adjoining States. Kiev, Naukova Dumka Publishers [in Russian].

19. Lanovenko Yev.N. Study of Dengizkul Lake's ornithofauna. Proceedings of Uzbekistan's Protected Areas. Vol. 3, Tashkent, 2001, p. 110-120.

19. Asian Waterfowl Census. 1990. Mid-Winter Waterfowl Counts in Southern and Eastern Asia. January 1990. Compiled by Christian Perennou, Paul Rose and Colin Poole. The International Waterfowl and Wetlands Research Bureau. AWR, The Asian Wetland Bureau, 1990, Slimbridge, UK.

20. Asian Waterfowl Census 1991. Mid-Winter Waterfowl Counts, January 1991. Compiled by Christian Perennou and Taej Mundkur. IWRB, AWB, 1991, Slimbridge, UK.

21. IUCN Red Data List of Threatened Animals, 1996. IUCN, Gland, Switzerland, 368 p.



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