

Dukan Lake (IQ023)

Sulaimani – 36.0925°N 44.935833°E

KBA Criteria: **V and Ia**

IBA Criteria: **A1, A3, and A4i**

IPA Criteria: **A4 and B1**

Area: **47253 ha** - Altitude: **506-1080**

m Ecoregion: **Zagros Mountains**

Forest Steppe (PA0446)

Status: **Unprotected**



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Site Description: This site, which was listed as an IBA by Evans (1994), is a large reservoir of about 25,000 ha that is fed by the Lesser Zab River from the northeast and the Hizop stream from the northwest. The lake is formed by the Dukan dam, built in 1959 upstream of the town of the same name. The rivers are fed by rainfall and snowmelt, leading to peak discharge in spring and low water in summer and early fall. The lake itself is divided into two parts; a larger lake to the north and a smaller lake to the south separated by a winding gorge (see map). The Rania Plain, where the lake is located, is the largest valley in the Lesser Zab Basin. Most tributaries join the Lesser Zab upstream of Dukan, the largest being the Baneh River and Qala Chwalan. A number of smaller streams join the Lesser Zab in the Rania Plain, which is now partly inundated by the lake. More than 65 villages and six towns are located around the lake, including Rania, Chwar

Qurna, and Qala Dza. Much of the land around the lake is used for agriculture and grazing is practiced extensively. There are some small mineral ponds between Rania and the lake on the north side, close to Qurago and Bemushen villages.

The main habitat surveyed was mountain riverine forest and, in some areas, cliff habitat around the reservoirs edge but about 60% of the area was non-vegetated. The site is located in the foothills of Zagros Range, where the geology is sedimentary limestone, and the soil type is sandy clay. Sara and Qarasird Mountains sit to the southeast of the lake, Assos Mountain (IQ024) is situated to the northeast, Kosrat Mountain is to the southwest, and Barda Rash Mountain is to the northwest. There are also rolling hills and lowland areas characterized by oak forests and steppe ecosystems.

Key Biodiversity Area Criteria

V. Vulnerability Criteria: Presence of Critically Endangered and Endangered species – presence of a single individual or Vulnerable species – 30 individuals or 10 pairs.

<i>Rafetus euphraticus</i>	Euphrates Softshell Turtle was observed in mineral ponds in the northern section of the site. During a 2-day survey 3 specimens were found. Based on field survey the lake provides suitable habitat for this species.
<i>Luciobarbus subquincunciatus</i>	Critically Endangered fish species

Ia. Irreplaceability Sub-criterion: Restricted-range species based on global range

<i>Rafetus euphraticus</i>	See above
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Important Bird Area Criteria

Observations made 2007-2010.

A1. Globally threatened species	Breeding	Wintering/ Passage
Egyptian Vulture <i>Neophron percnopterus</i> (Summer visitor)	3-6 pairs (counts)	
Lesser White-fronted Goose <i>Anser erythropus</i> (Winter visitor)		410-630 (counts 2009-2010)
Red-breasted Goose <i>Branta ruficollis</i> (Winter visitor)		2 (count 2010)

A3. Biome-restricted species		
Irano-Turanian biome	Breeding	Wintering/ Passage
See-see Partridge <i>Ammoperdix griseogularis</i> (Resident)	250 pairs (2008-2010)	
Upcher's Warbler <i>Hippolais languida</i> (Summer visitor)	6 pairs (2009)	
Menetries's Warbler <i>Sylvia mystacea</i> (Summer visitor)	10 pairs (2010)	
Eastern Rock Nuthatch <i>Sitta tephronota</i> (Resident)	250 pairs (2008-2010)	
White-throated Robin <i>Irania gutturalis</i> (Summer visitor)	15 pairs (2010)	
Finsch's Wheatear <i>Oenanthe finschii</i> (Resident)	30 pairs (2008-2009)	
Pale Rockfinch <i>Carpospiza brachydactyla</i> (Summer visitor)	20 pairs (2008-2011)	
A4i. 1% or more of biogeographical population of a congregatory waterbird species		
	Breeding	Wintering/ Passage
Greater White-fronted Goose <i>Anser albifrons</i> (Winter visitor)		240-552 (counts) (1.6%-3.7% of the biogeographical population)
Lesser White-fronted Goose <i>Anser erythropus</i> (Winter visitor)		410-630 (counts 2008-2010)
Slender-billed Gull <i>Chroicocephalus genei</i> (Summer visitor)	2250-2400 pairs (counts 2008-10)	
Great Cormorant <i>Phalacrocorax carbo</i> (Winter visitor)		1100-3200 (counts) (1.1%-3.2% of the biogeographical population)
Common Shelduck <i>Tadorna tadorna</i> (Winter visitor)		1200 (highest count 2008, 2010) (1.5% of the biogeographical population)
Important Plant Area Criteria		
A4. Site contains national endemic, near endemic, regional endemic and/or regional range-restricted species or infraspecific taxa		
<i>Campanula mardinisis</i> (endemic) and <i>Ornithogalum iraqense</i> Feinbrun (historically recorded endemic); <i>Centaurea gigantea</i> Schultz-Bip. ex Boiss. and <i>Verbascum alceoides</i> Boiss. & Hausskn (both historically recorded near endemics), and nationally rare species are: <i>Juncus effuses</i> , <i>Zeugandira iranica</i> , and <i>Salix babylonica</i> .		
B1. Site is a particularly species-rich example of defined habitat type		
Mountain Forest Vegetation-Mountain Riverine Forest habitat type		

Additional Important Bird Observations: During the surveys 181 species were recorded. The following were observed at levels that did not meet the IBA criteria: in winter Marbled Duck *Marmaronetta angustirostris* (Vulnerable), Ferruginous Duck *Aythya nyroca* (Near Threatened), Eastern Imperial Eagle *Aquila heliaca* (Vulnerable), Pallid Harrier *Circus macrourus* (Near Threatened) and Little Bustard *Tetrax tetrax* (Near Threatened); breeding European Roller *Coracias garrulus* (Near Threatened). The site also held breeding populations of four Mediterranean and one Sahara-Sindian Desert biome-restricted species. In winter the site also held up to 1500 (over 2%) of the *armenicus* race of Yellow-legged Gull *Larus michahellis*

Other Important Fauna: Data on mammals are only for 2008-2010, with more detailed information collected in 2010. Local fishermen reported observations of two globally Near Threatened species: Eurasian Otter *Lutra lutra* and Striped Hyaena *Hyaena hyaena*. One local reported the hunting of an Otter in the year 1996. There also have been reports of wolf attacks on local animal herds.

Fish: Data were collected for the years 2007 and 2008 only, during which 21 species were reported. According to Coad (2010), additional significant species observed were: *Acanthobrama marmid*, *Alburnus caeruleus*, *Alburnus mossulensis*, *Barbus grypus*,

Carassius auratus, *Cyprinion macrostomum*, *Cyprinus carpio*, *Hypophthalmichthys molitrix*, *Heteropneustes fossilis*, *Gambusia holbrooki*, *Luciobarbus esocinus*, *L. xanthopterus*, *Squalius cephalus*, *Silurus triostegus*. To protect fish spawning in the area the Kurdistan Ministry of Agriculture prohibits fishing from mid-May to the end of July. Fishing, when allowed, is usually done with nets whose mesh size ranges from 30 mm to 80 mm. Individual anglers are also frequently observed.

Additional Plant & Habitat Information: This site contain a good population of *Anchusa italica* and *Gundelia tournefortii*, which are important as a traditional food; as well as a good population of *Linum usitatissimum*, which is important as a genetic resource.

Conservation Issues: Hunting and fishing constitute a very significant threat to the area. Hunters were observed during winter in Dukan, especially in the northern part of the lake near the place where Lesser White-Fronted Goose was observed. In Rania district, several pools have been constructed with bird hides to attract water birds. Dukan is one of the most popular picnic sites for people coming from Sulaimani and the surrounding area, particularly during spring and summer and parts of this site are heavily impacted by picnickers and tourist activities and the trash they generate.

The road to the lake from the town of Dukan was widened in 2010/2011, which caused a high level of erosion into the lake itself. The dam continues to raise environmental concerns downstream due to fluctuating water levels, the entrapment of sediments and the low sediment transport downstream, which increases the erosion potential and decreases biodiversity below the dam.

Pollution from local industries, towns and villages and from agriculture is another very significant threat. Farmers in the northeastern part of the site near Rania were observed using poison to kill mice in their fields. In 2009, just in the Rania district alone (on the north side of the lake and containing an area important for birds, especially for raptors) farmers were provided with 120 kg of bromadiolone a rodenticide, and 997 L of malathion, another pesticide (both are slightly to moderately toxic to many birds).

There are many gravel mines along the Lesser Zab River above and one below the lake within the delineated area impacting the instream and riparian habitats. Overgrazing and urban

development also affect areas around the lake and along the Lesser Zab River.

Recommendations: In order to protect the lake fishery, the timing of fishing prohibitions may require further study to improve spawning success and the maturation of fish eggs (Ararat et al., 2008). Local fish hatcheries are releasing carp and potentially other non-native species to the lake and this process needs more research to understand its utility and affect on the biota of the lake and river. It is recommended that educational campaigns and outreach programs are focused in areas with high public use (recreational areas along the Lesser Zab River in Dukan, at tourism areas on the lower lake tourism areas and the upper lake near Rania).

