

Darbandikhan Lake (IQ040)

Sulaimani – 35.144722°N 45.755°E

KBA Criteria: **V and Ia**
 IBA Criteria: **A1 and A4i**
 IPA Criteria: **A4 and B1**

Area: **36842 ha** - Altitude: **496-1350 m**
 Ecoregion: **Zagros Mountains Forest Steppe (PA0446)**
 Status: **Unprotected**



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Site Description: Darbandikhan is a large freshwater reservoir created by the Darbandikhan Dam that is fed by two main rivers, the Tanjero in the north and the Sirwan in the east, and covers (depending on the time of year) approximately 7,500 ha. Evans (1994) listed Darbandikhan, along with Dukan and Bakhma, as an Important Bird Area (IBA004). The main habitat types investigated here were mountain forest vegetation (primarily oak forests) and mountain riverine forest. The site is located in the Zagros Range and the geology is limestone with soil types of clay and sandy clay. The lake is surrounded by hills covered with grass and small shrubs and mountains (including Bashari, Zmnako and Zawaly) that are covered in oak forests.

The area as a whole supports a significant amount of bird life. The rock-filled embankment dam was constructed between 1956 and 1961 for irrigation, flood control and power generation. The lake also supports recreational uses and a fishery. Due to problems after construction there have been several slope failures upstream and repairs required of the dam. Water levels decline in summer after the spring melt due to dam release and rise again when winter rains return in the late fall. The agricultural lands around the lake are used for field crops especially wheat and barley.

Key Biodiversity Area Criteria		Notes
V. Vulnerability Criteria: Presence of Critically Endangered and Endangered species – presence of a single individual or Vulnerable species – 30 individuals or 10 pairs.		
<i>Capoeta barroisi</i>	Endangered fish species	
<i>Luciobarbus subquincunciatus</i>	Critically Endangered fish species	
<i>Capra aegagrus</i>	No direct observation, but reliably reported by locals.	
<i>Panthera pardus saxicolor</i>	Reported by locals and one Persian Leopard was killed by a landmine near the village of Mortka in October 2008.	
Ia. Irreplaceability Sub-criterion: Restricted-range species based on global range		
<i>Rafetus euphraticus</i>	One individual was photographed in May 2009.	
Important Bird Area Criteria		Observations made 2007-2009.
A1. Globally threatened species	Breeding	Wintering/ Passage
Egyptian Vulture <i>Neophron percnopterus</i> (Summer visitor)	2-3 pairs (counts 2007-2009)	
A4i. 1% or more of biogeographical population of a congregatory waterbird species		
Slender-billed Gull <i>Chroicocephalus genei</i> (Summer visitor)	3200 pairs (count 2009)	
Important Plant Area Criteria		
A4. Site contains national endemic, near endemic, regional endemic and/or regional range-restricted species or infra-specific taxa		
Historically recorded endemics here are: <i>Onosma albo-roseum</i> var. <i>macrocalycinum</i> . and <i>Ornithogalum iraqense</i> ; one historically recorded near endemic here is: <i>Cousinia kopi-karadaghensis</i> and the nationally rare species here are: <i>Alcea sulphurea</i> , <i>Alkanna orientalis</i> , and <i>Muscari tenuiflorum</i> .		

B1. Site is a particularly species-rich example of defined habitat type

Mountain Forest Vegetation-Mountain Riverine Forest habitat type and Mountain Forest Vegetation-Oak Forest-Medium habitat type

Additional Important Bird Observations: During the surveys 56 species were recorded. The site also held breeding populations of three Irano-Turanian, one Mediterranean and one Sahara-Sindian Desert biome-restricted species but these did not trigger inclusion under criterion A3. European Roller *Coracias garrulous*, a Near Threatened species was also recorded.

Other Important Fauna: Mammal surveys were conducted in 2007 and 2010. In addition to those listed in the table, important species present at the site include the Near Threatened Eurasian otter *Lutra lutra*, Golden Jackal *Canis aureus* and one local fisherman reported seeing a Eurasian Lynx *Lynx lynx* in 2006. No significant reptiles or amphibians were observed on the survey.

Fish: Data were collected in 2007 and 2008, when 26 species were observed. In addition to the species listed in the table the following significant species according to Coad (2010) were: *Acanthobrama marmid*, *Alburnus mossulensis*, *Barbus grypus*, *Carassius auratus*, *Cyprinus carpio*, *Cyprinion macrostomum*, *C.kais*, *Heteropneustes fossilis*, *Hypophthalmichthys molitrix*, *H. nobilis*, *Leuciscus vorax*, *Luciobarbus esocinus*, *L. xanthopterus*, and *Silurus triostegus*.

Additional Plant & Habitat Information: This site contains a good population of pistachio *Pistacia eurycarpa*, an economically and culturally important species. In addition, some species important for traditional foods included: and *Anchusa italica*, *Arum conophalloides*, and *Gundelia tournefortii*. Also, species important as genetic resources included: *Hordeum vulgare* ssp. *spontaneum*, *H. bulbosum*, *Lens culinaris* and *Triticum aestivum*.

Conservation Issues: Very high threats include livestock production/grazing, hunting and fishing, tourism (mainly along the Sirwan River, which people from Sulaimani City, Darbandikhan and Kalar District visit for picnicking), and pollution. Though the presence of the dam attracts birds and other fauna, natural systems modification was considered a very high threat because of how water in the reservoir is being managed (with environmental impacts downstream and the widely fluctuating level of the reservoir from year to year leave a wide belt of unvegetated land above the waters' edge). Pollution due to sewage and garbage were assessed as very high threats to the area. Parts of the lake see regular fish kills (several large enough to receive attention in the local media in 2008, 2009 & 2011, but locals report that they are a yearly occurrence in summer). These are most likely caused by untreated sewage from Suliamani and other towns polluting the Tanjero River.

Also there are gravel mines throughout the Tanjero basin and along the Sirwan River that have a very high impact. Another critical threat is the Iranian state-built dam on the Sirwan River, which restricts water feeding into the lake. This has lowered the water level and impacted the biodiversity of the lake and river. Previous water quality surveys (Mahir et al 2009) indicate that there is heavy metal contamination in the lake with lead, zinc, cadmium and nickel often above Iraqi standards for many survey areas within the sites.

Recommendations: Several ecologically important plants and birds occur here, highlighting the urgent need to both raise awareness of and address the conservation needs of this area. Further work should be done in the Darbandikhan Basin in general to follow the track of pollution through the basin and pinpoint all contamination sources. These issues were examined further in additional Nature

Iraq survey efforts following a fish kill that occurred on the lake at the end of July 2008, culminating in a State of the Environment Report on the basin (Nature Iraq & Twin Rivers Institute, 2009). The report outlined a roadmap to fill gaps in information and take steps to address a wide-range of environmental issues that threaten the basin. To date, no action has been taken by local, regional or national authorities on the recommendations of this report.

