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“Development of a joint model and an assessment methodology for ecosystem services in Vaya (Burgas) and Gala (Enez) lakes”, CB005.1.12.115/S-4

## **ECOSYSTEM RESOURCES**

### **LAKE GALA**



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## ECOSYSTEM RESOURCES AND SERVICES IN GALA LAKE, ENEZ

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Lake Gala is an alluvial freshwater dam lake located between Ipsala and Enez counties, 10 km away from Enez town and 23 km away from Ipsala town, in Edirne province in Turkey, near to the delta of Maritsa River. It consists of two parts named Lake Big Gala and Lake Small Gala. It has 5.6 km<sup>2</sup> surface area and it is 2 m above the sea level. The depth varies between 0.4-2.2 m. It is fed by drainage canal (Basamaklar Stream), Kızıkan Stream, other small streams and rain. The lake is surrounded by wide reed areas (*Phragmites australis* and *Thypha* sp.). The agricultural land in the neighborhood of the lake between Enez and Ipsala is used for industrial planting of rice.

From 1991 the Gala Lake is part of nature reserve and taken under protection. In 1997 Gala lake have been declared as a wetland of international importance under the Ramsar Convention without specific area. In 2005 the lake and its surroundings have been declared as a national park and covers an area consisting of 3090 hectares of wetland (Great Gala Lake, Little Gala Lake, Cotton Lake) and 3000 hectares of forest area (Hisli Mountain).

The protected area is administered by the Directorate of Nature Protection and National Parks (Turkish: Doğa Koruma ve Milli Parklar Genel Müdürlüğü) of the Ministry of Environment and Forests.







The biodiversity in the Maritza delta, despite some losses, is considered very rich. There are 55 species of plant plankton, 31 species of animal plankton (zooplankton), 42 species of aquatic plants in Lake Gala. In the forests around 15 species of trees grow.

In Gala Lake National Park 311 plant species have been identified and 5 of them are endemic. In addition, 59 taxa are suitable for medical and ornamental usage. In the lake there are many water lilies. Unique grass, shrub and tree species are found along the shores. 29 herbs are extracted here.



About 46 of 217 bird species observed in the area are resident, 27 winter migratory and 90 summer migratory birds. The Lake Gala is important point of the north-south bird migration route Via Pontica. Best time to observe most of the bird species all together is between April and May in the spring, and September and October in the fall. The lake is home to about 45,000 birds and is located on one of the world's largest migratory bird routes.





The two Gala lakes are home to 16 fish genera, including European eel (*Anguilla anguilla*, L.), pike perch (*Stizostedion lucioperca* L.), common carp (*Cyprinus carpio* L.) and northern pike (*Esox lucius*), which are of high economic value.

The area around Lake Gala is subjected to a high anthropogenic load - intensive land use and livestock farming, aquaculture, hunting, wind power generation. Phosphate, Sulphate, Nitrite and Nitrate used in agriculture are expected to be high in the wetlands, such as Lake Gala, that are surrounded by intensive agricultural areas. However, entrance of sulphate and phosphate ions into the lake is partially limited by the dense reed fields between agricultural lands and the lake and also small channels separating it from agricultural areas. This artificial fertilization of wild water plants causes the lake surface to dwindle allowing the reed areas to develop more rapidly. If some physical-chemical parameters like pH, EC and Ca values measured in Lake Gala were compared with similar lakes in Thrace region, it is seen that these values are similar to the lagoon lakes while they are higher than the lakes located entirely within forest.

Lake Gala is mainly fed by the waters of the Maritsa River. The water level in the lake is regulated by a system of channels and locks. This avoids flooding of the farmland around or the water is used for irrigation.



There is a loose dike in the middle of the lake, which is interrupted in certain places to run the water. The plan for management of the National Park provided this dike to be removed.

Lake Gala is known as the second largest bird's lake in Turkey, and due to its proximity to a metropolis like Istanbul, it is frequently visited. In addition to bird watching and photography, the lake's activities include picnic, hiking and cycling. Visitors should be very careful not to disturb the natural habitats in the lake.





The region of the protected area was fished until 2013, and was banned. A plan is for its gradual recovery. There is fishing in the Maritsa River, in the two dams built around the Maritsa River and in the 30 km long rice paddies built next to Lake Gala. The dams were built in 1991-92 for irrigation of rice fields. The water is pumped through channels specially built by the Water and Waste Directorate of the Ministry of Waters and Forests. Channels protect the pollution of seawater from pesticides and mineral fertilizers used in rice cultivation. Rice plantations provide the main livelihood of the local population.

On the territory of the National Park hunting is prohibited. It is hunted on the territory of the rice fields / winter hunting of ducks /. Hunting is not regulated, no taxes are paid.

Given the great biodiversity in the National Park, the significance of the area as a guardian of genetic resources can be highly appreciated.

Massively along the shores of the lake, cows and sheep are grazing and camping.

Approximately  $\frac{1}{2}$  of the water surface is covered by the reed and bulrush. There is a plan to reduce the area covered by plants. It was found that the otter eat roots of reeds and bulrush.





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Because of the great opportunities for observation and study of birds today, the park is a favorite place for ornithologists. Students and scientists from Istanbul and Edirne regularly visit the National Park to study biodiversity.

The Gala Lake National Park Directorate plans to build a visitors centre and a 14-kilometer hiking trail with toilets, towers for birdwatching and other interpretive materials for displaying and studying biodiversity.

Possibilities for organizing of water sports and cycling are discussed. There are discussions also on possibilities for combining the natural and archaeological monuments and the sea tourism.

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