Natural and Cultural Heritage of the Ohrid region

SITE INFORMATION

Country:
Macedonia (The Former Yugoslav Republic of)
Inscribed in: 1979
Criteria:
(i) (iii) (iv) (vii)

Site description:

Situated on the shores of Lake Ohrid, the town of Ohrid is one of the oldest human settlements in Europe. Built mainly between the 7th and 19th centuries, it has the oldest Slav monastery (St Pantelejmon) and more than 800 Byzantine-style icons dating from the 11th to the end of the 14th century. After those of the Tretiakov Gallery in Moscow, this is considered to be the most important collection of icons in the world © UNESCO
SUMMARY

2014 Conservation Outlook

Significant concern

The natural values of the site are under pressure from unsustainable use of resources, especially fishing, but also from unsustainable tourism development in the entire region, accompanied by low awareness among the decision makers and lack of integrated urban planning. Uncontrolled constructions along the lake shore have negative impact on the lake and the landscape. Introduced alien species and increasing pollution by organic and inorganic sewage is threatening vulnerable aquatic fauna and flora. The existing management institutions suffer from low levels of staff and insufficient budget and therefore have little capacity to ensure effective protection of the site’s natural values.

Current state and trend of VALUES

High Concern

Trend: Deteriorating

Uncontrolled constructions along the lake shore have negative impact on the lake and the landscape. Introduced alien species and increasing pollution by organic and inorganic sewage is threatening vulnerable aquatic fauna and flora. Aquatic ecosystems have also experienced negative impact due to toxic substances. Both endemic salmonid fish species of the Ohrid lake have been subject of restocking in the past and a moratorium of fishing created favorable conditions for both species. Nevertheless recent studies imply that illegal fishing pertains and additionally alien fish species are endangering the native fish species.

Overall THREATS

High Threat

Currently the main threat is uncontrolled construction of buildings along the lake’s shore on both sides of the littoral countries. This goes in line with
increasing amount of waste water and solid waste. The current reactivated commercial fishing still has to be proven as sustainable. Tourism development and associated infrastructure development is not sustainable and has a high potential to negatively impact on the natural values of the site.

**Overall PROTECTION and MANAGEMENT**

**Some Concern**

The main institutions responsible for nature conservation in the area are the administration of the Galicica National Park and the Hydrobiological Institute in Ohrid. However, both institutions are extremely underfinanced. A Commission for managing the natural and cultural heritage in the Ohrid region has been established by the Government of the Former Yugoslav Republic of Macedonia. And the establishment of a bilateral Ohrid Watershed committee between FYROM and Albania is an important step to ensure effective management of Lake Ohrid. However, more staff and more operational budget are required.
FULL ASSESSMENT

Description of values

Values

World Heritage values

- **A unique lake of tectonic origin supporting high diversity of endemic and relict freshwater species**
  
  Criterion:(vii)

  The Ohrid Lake is classified as a mountainous clear water lake of tectonic origin. The lake’s fish fauna include 17 native species, of which 10 are endemic (two of which belongs to Salmonide family). The benthic fauna of Lake Ohrid are characterized by a high degree of richness and diversity of archaic, endemic and relics forms that origin from Tertiary period. The rounded sponge Ochridospongia rotunda is a famous endemorelict form that is only found in Lake Ohrid. The highest diversity and the highest percentage of endemism are present in class Gastropoda; about 86% of the 50 known species of gastropods are endemic. Other classes with high degree of endemism include Tricladida (80.5%), Oligochaeta (47.2%), Hirunidea (52.4%), Ostracoda (71.4%), Amphipoda (60%), Isopoda (75%). Endemism is present also in the microalgae species. About 90 species of the 550 species of diatoms are rare, tertiary relict, or endemic species. 146 endemic species have been identified. Endemism among these species is 90% of snails, 88% of parasitic infusoria, 71% of flat worms, 66% of small crustaceans and 60% of fish. (R4, R14) Ten of the lake’s 17 fish species are endemic. They include the salmonid Ohrid trout Salmo letnica (VU – Vulnerable according to the IUCN Red List of Threatened Species) and belvica Acantolingua ohridana (VU). (R4, R14)
Other important biodiversity values

► Rare and endangered mammals

For the National Park Galicica 27 mammal species are described from which 24 are listed in the annexes of the EU habitat directive. 12 Species are categorized as near threatened or vulnerable. From the 27 mammals species 17 species belong to the bat group, among them is Myotis capaccinii (VU). Six species are Balkan ‘endemics’ like the Balkan Snow Mole (Dinaromys bogdanovi), the Balkan Chamois (Rupicapra r. balcanica) or the Balkan Lynx (Lynx l. martinoi). Brown Bears (Ursus arctos), Wolves (Canis lupus), the Wild Cat (Felis silvestris) and Otter (Lutra lutra) are present in the National Park Galicica (R18)

► Important Bird Area

The highest number of individual birds was observed in 1999, with 64,948 birds of 23 species on Lake Ohrid. The avifauna of the lake includes among others Great Cormorant (Phalacrocorax carbo sinensis), Small Cormorant (Phalacrocorax pygmaeus), Mute Swan (Cygnus olor), Black-necked Grebe (Podiceps nigricollis), Little Grebe (Tachybaptus ruficollis), Red-crested Pochard (Netta rufina), Common Pochard (Aythya ferina), White-eyed Duck (Aythya ferruginea), Tufted Duck (Aythya fuligula) and Corncrake (Crex crex). The shoreline between Pogradec and the border of the former Yugoslav Republic of Macedonia is the richest habitat for shorebirds on the Albanian side of Lake Ohrid. (R4)

► Diversity of habitats

A high diversity of habitats reaching from the Ohrid lake at 650 m a.s.l up to the highest mountain tops (Peak Magaro 2254m a.s.l.) consisting of aquatic habitats, fresh water springs, wetlands, reed belts, broad leave forests and alpine pastures on carstic soils, rocks, cliffs and caves.(R18)

► Rare and endemic flora

There are 19 taxa on Mount Galicica from World’s Red List of Threatened
Plants of IUCN which have the status of „rare“ (R – rare) and which are found in all parts of the mountain, from its lowest parts, and all the way to its subalpine strip. These include the following: Ramonda serbica Pančić, Alkanna noneiformis Griseb., Acer heldreichii Orph. ex Boiss., Ajuga piskoi Degen & Bald., Cynoglottis barrelieri (All.) Vur. & Tan subsp. serpentinicola (Rech. f.) Vur. & Tan, Astragalus baldaccii Degen, Centaurea soskae Hayek ex Košanin, Erodium guicciardi Heldr. ex Boiss., Eryngium serbicurn Pančić, Fritillaria gussichiae (Degen & Dörfl.) Rix, Jurinea taygetea Halácsy, Malus florentina (Zuccagni) C.K.Schneid, Melampyrum heracleoticum Boiss. & Orph., Oxytropis purpurea (Baldacci) Markgraf, Pinus heldreichii H. Christ var. leucodermis (Ant.) Markgraf ex Fitschen, Pinus peuce Griseb., Rindera graeca (A. DC.) Boiss. & Heldr., Solenanthus scardicus Bornm. и Viola eximia Form. Floral research conducted on Mount Galicica throughout a longer period of time showed that the mountain, i.e. Park’s boundaries, is the only habitat to many plant taxons, belonging to various floral elements from various parts of the Balkan Peninsula and from Europe. These have, so far, not been found in other parts of the Republic of Macedonia, and their presence on Mount Galicica speaks of the ecological capacity of this mountain as well. Such is the case with the following taxons: Alyssum subvirescens Form., Astragalus gremlii Burnat, Celtis glabrata Steven ex Planchon, Cephalaria setulifera Boiss. & Heldr., Coronilla vaginalis Lam., Crepis vesicaria L., Cytisus procumbens (W.K.) Spr., Damasonium bourgaei Cass., Euphorbia characias L. subsp. wulfenii (Hoppe ex W. Koch) A.R. Smith var. sibthorpii (Boiss.) E.S.Boiss., Gnaphalium hoppeanum Koch., Haplophyllum patavinum (L.) Don f., Hesperis rechingeri Dvořák, Jurinea taygetea Halácsy, Lilium chalcedonicum L., Marubium anisodon C. Koch, Prunus prostrata Labill., Sedum laconicum Boiss., Sibbaldia parviflora Willd., Silene chromodonta Boiss. et Reuter var. vandasii Neum, Thymus perinus (Hal.) Stoj., Stef. & Kit. and Trifolium sebastiani (R18)

► Important wintering site of palaearctic waterbirds

The Ohrid lake is considered as a Wetland of international importance due to the high number of wintering palaearctic waterbirds on the lake. (R19)
Assessment information

Threats

Current Threats

High Threat

Currently the main threat is uncontrolled construction of buildings along the lake’s shore on both sides of the littoral countries. This goes in line with increasing amount of waste water and solid waste. A waste water treatment plant in Pogradec is in operation but needs further extension components. Effective urban planning with consequent implementation is missing. The treatment of the wooden beams of the historical museum in Gradishte with fish poisonous substances is threatening the aquatic fauna.

▸ Fishing / Harvesting Aquatic Resources

Low Threat

Inside site

Outside site

Fishing is legally allowed. However, monitoring and control measures are required to determine if the fishing practices can be considered as sustainable (R22)

▸ Housing/ Urban Areas

High Threat

Inside site

More construction along the shore of the lake means more disturbance of littoral habitats and by this a deterioration of the calm wintering sites for winter water birds. In summer more leisure activities can be observed along the shore line with potentials of negative impact of the shallow parts of the Ohrid Lake. (R22)

▸ Other

Very High Threat
Inside site

During the construction of the museum in Gradishte toxic impregnation was used for wooden beams. These pollutants are highly toxic for fish. (R16)

▶ Tourism/ visitors/ recreation
  High Threat
  Inside site

Organic pollution is endangering the endemic fauna and flora of the lakes, which still is characterized as oligotrophic clear water lake. (R22)

▶ Invasive Non-Native/ Alien Species
  Low Threat
  Inside site
  Outside site

Non-native fish species such as rainbow trout or silver carp are competitors of the native fish population. The rainbow trout is of particular concern, since it might displace the native Ohrid trout. (R22)

Potential Threats

High Threat

The current reactivated commercial fishing still has to be proven as sustainable. Plans for creation of ski infrastructure in the National Park Galicica could significantly impact on the park’s natural values. A planned hotel complex could have significant negative impact on the lake.

▶ Fire/ Fire Suppression
  Low Threat
  Inside site
  Outside site

Forest fires are altering the forested habitats (R22)

▶ Tourism/ Recreation Areas
  High Threat
  Inside site

A plan exists to construct a larger hotel complex close to Sveti Naum. This
could severely affect the water quality and the habitat quality of the areas as fish spawning ground. It is intended to place parts of the hotel in the lake. (recent press articles)

▶ Shipping Lanes
  High Threat
  Inside site

Noise, disturbance of aquatic fauna and pollution associated with motorboats are factors deteriorating the habitat quality of the Lake (R22)

▶ Other
  Very High Threat
  Inside site

The intention to create down-hill skiing centers with the necessary infrastructure could affect directly the biodiversity values of the Galicica National Park and devalues the habitat quality of the area as a refuge for wildlife and rare endemic plant species. The snow cover throughout the last years seems not sufficient. Therefore it can be assumed that the active skiing season will be extended with artificial snowing. This would affect directly the valuable flora of the area and changes the vegetation. Extended skiing seasons are leading to erosion of the vegetation and to irreversible deterioration. (R21)

▶ Roads/ Railroads
  Low Threat
  Inside site
  Outside site

The planned road along the foothills of the Galicica mountain will cut off relevant areas of the National Park Galicica. These areas close to the lake shore contribute to the landscape diversity of the entire area and the beauty of the landscape. The construction of the road might devaluate the outstanding beauty of the composition of the lake and the mountain.
Other

High Threat
Inside site

The road rehabilitation on the Albanian side is already impacting on sensitive areas along the lake. Concrete walls to secure the road are built in the lake and are negatively impacting on littoral habitats. (pers. observation)

Solid Waste

High Threat
Inside site

It is reported that the pumps of the collector system are not always operating well and surplus sewage water is poured into the lake. Organic and anorganic waste water and solid waste is polluting the lake. (R22)

Protection and management

Assessing Protection and Management

Relationships with local people

Effective

The Commission for managing the natural and cultural heritage in the Ohrid region is formed by the Government of the Former Yugoslav Republic of Macedonia as an advisory body for the performance of the works (hereinafter referred to as: The Commission). The Commission is composed of 21 members, appointed based upon the mutual proposal submitted by the Minister of Environment and Physical Planning and the Minister of Culture. (R14, R15)

The representatives of the local communes have a seat on the bilateral Ohrid Watershed commission and this way can influence the development. Plans for the creation of a transboundary biosphere reserve including the WHS found broad support among local stakeholders and decision makers.

Legal framework and enforcement

Effective
A bilateral agreement on the conservation of the Ohrid Watershed between FYROM and Albania was signed and ratified in 2006. Ohrid Watershed Committee was created and enacted. The Committee is operated by a bilateral secretariat, which will also function as governing body for the ‘Transboundary Biosphere Reserve Ohrid Prespa Watershed’ (R20)

▶ Integration into regional and national planning systems  
   Effective

According to the recently prepared Management Plan for the WHS (R14) the integration of regional and national planning seems to be appropriate.

▶ Management system  
   Some Concern

A Management Plan for the WHS was prepared in 2010. It foresees as an administrative body a commission with 21 seats (R14). A professional administration body for the WHS with sufficient staff is still to be established. Based on the agreement between both littoral countries a Watershed Commission for the Ohrid Watershed is enacted and organized by a bilateral secretariat. (R20)

▶ Management effectiveness  
   Data Deficient

▶ Implementation of Committee decisions and recommendations  
   Data Deficient

▶ Boundaries  
   Some Concern

The boundaries of the WHS are following the national border between Albania and Former Yugoslav Republic of Macedonia crossing the lake. An extension of the WHS including aquatic and terrestrial parts in Albania is foreseen. The border in the northern part is not well justified. Also the
original border to the east followed the ridge of mountain Galicica cutting the National Park and the mountainous ecosystem into two parts. Suggestions have been made to revise these eastern boundaries in order to include the entire Galicica NP. (R11)

- **Sustainable finance**
  - Serious Concern

  The participating municipalities and the central Government are supposed to bear the financial burden of the operational costs. Investments into the socio-economic sector in order to promote sustainable land use, are lacking. The nature conservation institution in the region, the Galicia National Park is completely lacking of financial support from the Government (R18)

- **Staff training and development**
  - Data Deficient

- **Sustainable use**
  - Some Concern

  The fishery sector could potentially become sustainable. However, recent reports state still unsustainable catch (R22).

- **Education and interpretation programs**
  - Some Concern

  The National Park Galicica has recently opened visitor centers. Necessary financing of education and interpretation programs are not available. (R18)

- **Tourism and interpretation**
  - Serious Concern

  The Tourism development at the Ohrid Lake has already a visible tendency to overstretch the thresholds of sustainability. Further plans to expand tourism infrastructure could have a negative impact on the WHS. The Protected Areas in the entire area could play a key role in the development of sustainable
Monitoring
Highly Effective

The aquatic ecosystems are monitored by the Hydrobiological Institute, whereas the terrestrial ecosystems of the NP are monitored by the administration of the National Park Galicica. (R23)

Research
Some Concern

In spite of the fact that Ohrid has an old university, ecological research is underrepresented. (R23)

Overall assessment of protection and management
Some Concern

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Assessment of the effectiveness of protection and management in addressing threats outside the site
Effective

The intended enlargement of the WHS and the planned Biosphere Reserve Ohrid-Prespa Watershed are addressing these issues. There are several protected areas in the area. (R23)

Best practice examples

The National Park Galicica has been recently restructured and improved by external support. A detailed management plan was prepared for the park’s
territory and is being implemented by the park administration.

State and trend of values

Assessing the current state and trend of values

World Heritage values

▶ A unique lake of tectonic origin supporting high diversity of endemic and relict freshwater species

High Concern
Trend:Deteriorating

Uncontrolled constructions along the lake shore have negative impact on the lake and the landscape (R22). Introduced alien species and increasing pollution by organic and inorganic sewage is threatening vulnerable aquatic fauna and flora (R22). Aquatic ecosystems have also experienced negative impact due to toxic substances. (R16, R21, R22)

Other important biodiversity values

▶ Rare and endangered mammals

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▶ Diversity of habitats

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Summary of the Values

▶ Assessment of the current state and trend of World Heritage values

**High Concern**

**Trend: Deteriorating**

Uncontrolled constructions along the lake shore have negative impact on the lake and the landscape. Introduced alien species and increasing pollution by organic and inorganic sewage is threatening vulnerable aquatic fauna and flora. Aquatic ecosystems have also experienced negative impact due to toxic substances. Both endemic salmonid fish species of the Ohrid lake have been subject of restocking in the past and a moratorium of fishing created favorable conditions for both species. Nevertheless recent studies imply that illegal fishing pertains and additionally alien fish species are endangering the native fish species.

▶ Assessment of the current state and trend of other important biodiversity values

**High Concern**

**Trend: Data Deficient**

Due to increasing poaching of waterbirds on the Albanian side there is a negative trend for wintering waterbirds (R4) Recent unpublished records on
wintering waterbirds underline this assessment. In 1999: 64,948 birds of 23 species were counted. In 2012: 39,974 birds of 23 species were counted (MES, Bino, Fremuth et al., unpublished Data)

There are potential threats described in the previous sections, which could lead to negative trends in the terrestrial ecosystems.

**Additional information**

**Key conservation issues**

- **Global climate change**
  
  **Global**

  Increasing of average temperatures: reduction of climate relevant emissions

- **Watershed impacts**
  
  **Local**

  Nutrient input: Significant reduction of nutrient load
  Increased sediment load
  Waste Water: Implementation of effective waste water collection and treatment systems
  Metal contamination: Stop of further contamination related to active and former mining and other industrial facilities

- **Agriculture and forestry**
  
  **Local**

  Intensified agriculture: Extensive and organic agriculture
  Irrigation: effective Water Management plan
  Logging: sustainable forestry practices
  Water abstraction (Prespa basin): reduction of water abstraction
  Fire events: Reduction of fire events by better monitoring and early warning systems

- **Tourism and population growth**
  
  **Local**
Construction of houses and facilities: Strict regulations and enforcement, establishment of Coastal Zone Management Areas (CZM) and of Core Conservation Areas (CCA)

Speed boats and water scooters: Partial ban, regulation of any traffic, allowance of electro engines only.

Pollution: Implementation of effective waste water treatment systems.

► Non-indigenous species

Local

Competition with native species: Stop intentional introduction, stricter control system for fishing activities

Fish community changes: Establish CZM and CCA

► Habitat alteration or loss

Local

Destruction of coastal habitats: Cessation of any new construction along pristine shorelines, restoration of habitats such as former adjacent wetlands

Fragmentation of macrophytic littoral plant communities: Establishment of CZM and CCA

Spring conversion and capture of the Ohrid basin: restoration of captured springs, strict prohibition of further spring use, conversion and capture.

Eutrophication: reduction of pollution, particularly with phosphorus, water management system (Prespa basin)

► Unsustainable exploitation of fisheries

Local

Overfishing and release of non-native fish: stricter control and enforcement systems for fishing activities (Including Prespa basin)

Benefits

Understanding Benefits

► Water provision (importance for water quantity and quality)
The water resource and its endemic fish species are a special service provided to the local population, but also the downstream population along the Drin basin has a wider benefit of the ecosystems and their services. The biodiversity with its high number of endemism qualifies the areas as biodiversity hotspot and give the region a global significance.

► Outdoor recreation and tourism

The landscape beauty, the clean water and air as well as the attractions by national parks generates tourism into the region, which provide benefit not only to the local population but also to a wider community.

► History and tradition

The area is a very ancient habitation of human beings. Evidence from the early stone age can be found and the Mediterranean cultures left their traces in the region. The entire region was and still is a spiritual center as well as a scientific importance as Ohrid hosts still one of the oldest universities.

Summary of benefits

All in all conservation of the entire area provides a wide range of. A wise use of the natural resources is the ultimate solution in order to conserve the natural capital of the Ohrid lake basin.

Projects

Compilation of active conservation projects

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### Compilation of potential site needs

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<td>Boris Erg, (IUCN) and Luisa De Marco (ICOMOS), April 2012, Pilot Upstream Project “Natural and Cultural Heritage of the Ohrid Region” Lake Ohrid Scoping Mission</td>
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<td>Decisions of the twenty-second extraordinary session of the Bureau of the World Heritage Committee (Kyoto, 28-29 November 1998) with regards to the state of conservation of properties inscribed on the World Heritage List, noted by the Committee</td>
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<td>23</td>
<td>WHC-33COM 8B.40 Mixed properties – Examination of minor boundary modifications – Natural and Cultural Heritage of the Ohrid Region (Former Yugoslav Republic of Macedonia) in combination with documents WHC-09/33-COM/8b, WHC-09/33.COM/INF.8B1.Add and WHC-09/33.COM/INF.8B2</td>
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<td>24</td>
<td>WHC-98-Conf 203-8reve</td>
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