Danube Delta

SITE INFORMATION

Country:
Romania
Inscribed in: 1991
Criteria:
(vii) (x)

Site description:
The waters of the Danube, which flow into the Black Sea, form the largest and best preserved of Europe's deltas. The Danube delta hosts over 300 species of birds as well as 45 freshwater fish species in its numerous lakes and marshes. © UNESCO
SUMMARY

2017 Conservation Outlook

Good with some concerns

The site’s unique features as the largest continuous marshland in Europe and the second-largest delta remain well-preserved overall, but the current status of its biodiversity values (particularly avifauna) is unclear. Concerns exist about populations of some species and ongoing high threats from pollution, infrastructure development, illegal human activities and invasive species. Potential threats include those related to climate change. Overall, the management of the site is mostly effective. However, some concerns remain with regards to sustainable long-term financing, as well as enforcement, prevention of illegal activities and some other management areas.

Current state and trend of VALUES

Low Concern
Trend: Data Deficient

The site’s unique features as the largest continuous marshland in Europe and the second-largest delta remain well-preserved overall, with low concern. The site’s biodiversity appears to be relatively intact, but systematic monitoring data to assess its conservation state are unavailable.

Overall THREATS

High Threat

Water pollution, illegal fishing, changes of the hydrological regime, infrastructure development and disturbance by unsuitable tourism activities, as well as associated intensification of navigation routes, all represent high threats to the integrity of the Danube Delta. They might be exacerbated by additional potential threats, which are however not fully understood and in need of further study.
Overall PROTECTION and MANAGEMENT
Mostly Effective

Of the 15 aspects of management assessed, two were considered highly effective, six mostly effective, and for seven there was some concern. Therefore, the management of the site is assessed narrowly as effective overall. However, concerns remain with regards to the identified areas of some concern, i.e. integration into regional and national planning systems, staff training, monitoring, sustainable use, education and awareness raising programmes, tourism management, and general enforcement. More sustainable financing is needed to underpin all these aspects.
FULL ASSESSMENT

Description of values

Values

World Heritage values

► The largest continuous marshland of Europe and the second-largest delta
  
  Criterion:(vii)
  
  The Danube Delta is a uniquely dynamic relatively wild ecosystem with a rich diversity of wetland habitats. It is the largest continuous marshland of Europe and it is the second-largest and best preserved delta, which probably includes the greatest stretch of reedbeds in the world. The marsh vegetation is dominated by reeds, which form floating or fixed islands of decaying vegetation. Reeds cover some 1,700 km² and the floating reed islands (plaur) 1,000 km², whereas the total area not inundated is only 148 km² (UNEP-WCMC, 2012, IUCN 2014).

► Rare and threatened fauna, particularly avifauna
  
  Criterion:(x)
  
  The Danube Delta is a dynamic, relatively wild ecosystem with a rich diversity of wetland habitats, as well as numerous lakes, ponds and marshes, which attract over 300 species of birds and 45 species of freshwater fish. It is the major remaining wetland on the flyway between central and Eastern Europe and the Mediterranean and Middle East and Africa. Of the ca. 312 species of bird that have been recorded, over 176 species breed, the most important being Cormorant (Phalacrocorax carbo), Pygmy Cormorant (Microcarbo pygmeus), White Pelican (Pelecanus onocrotalus), which has 50% of the palaeartic breeding population there, and the globally vulnerable
Dalmatian Pelican (Pelecanus crispus) (UNEP-WCMC 2012, IUCN 2017). There are numerous multi-species heron colonies and raptor species, including the globally endangered Saker Falcon (Falco cherrug) and White-tailed Eagle (Haliaeetus albicilla). It is possible that White-headed duck still breed in the area (UNEP-WCMC 2012). Among migratory birds, notable species include several species of swans, both Greater and Lesser White-fronted Geese (Anser albifrons and A. erythropus, the latter globally vulnerable), and large populations of various ducks. The critically endangered Slender-billed Curlew (Numenius tenuirostris) was last recorded there in 1989 (Green 1990). A large part of the wintering population of the globally vulnerable Red-breasted Goose (Branta ruficollis) is found in the Danube Delta (IUCN 2017). There are also important populations of threatened mammals, such as the critically endangered European Mink (Mustela lutreola) and the globally near-threatened Eurasian Otter (Lutra lutra), as well as of herpetofauna, such as the globally vulnerable Meadow viper (Vipera ursinii); the property harbours some 75 fish species, including Russian sturgeon (Acipenser gueldenstaedtii), spiny sturgeon (Acipenser nudiventris) and European sturgeon (Huso huso), which are all critically endangered (UNEP-WCMC 2012, IUCN 2017).

Other important biodiversity values

▶ Wetland, river and coastal ecosystems underpinning World Heritage values

The Danube Delta is inscribed on the World Heritage list under World Heritage criteria vii and x only, not under World Heritage criterion ix. However, its World Heritage values are underpinned by the functioning of wetland, river and coastal ecosystems, which therefore constitute important additional biodiversity values of the property.

Assessment information

Threats
Current Threats

High Threat

Water pollution, illegal fishing, changes of the hydrological regime, infrastructure development and disturbance by unsuitable tourism activities, as well as associated intensification of navigation routes, all represent high threats which justify an overall assessment of current threats as “High Threat.”

► Water Pollution

High Threat

Inside site, widespread (15-50%)
Outside site

Pollution carried downstream in the Danube represents a high threat with high levels of pesticides, herbicides fertilizers and nutrients, salt, heavy metals and other pollutants (UNEP-WCMC 2012). Water pollution and the resulting algal blooms have had significant negative impact on the ecosystem (Euronews 2013) and a number of fish species, as well as the numbers of migratory fish. This may also affect piscivorous birds.

► Tourism/ Recreation Areas

High Threat

Inside site, localised (<5%)
Outside site

Growing tourism in the region has been associated with development of accommodation facilities and navigation routes. The number of hotels and associated infrastructure in the area has been increasing in recent years, and unsuitable types of tourism have been promoted (WHC2007, IUCN Consultation 2017a, b, UNEP-WCMC 2012)

► Fishing / Harvesting Aquatic Resources

Data Deficient

Inside site, extent of threat not known
Outside site

Fishing represents one of the main sources of income for many of the local communities. infringement of regulations on fishing still occurs despite actions jointly undertaken by various authorities (WHC 2007, IUCN
Consultation 2017a, b). Its magnitude and impact is not documented, however, which is why this threat is considered Data Deficient. There is also poaching for birds (IUCN Consultation 2017a).

**Shipping Lanes**

- **High Threat**
  - Inside site, scattered(5-15%)
  - Outside site

Past canalization work along the relatively untouched river landscape of the Sf Gheorghe branch bypassed river meanders and reduced use of lateral channels. The straightening accelerated the water flow, increased pollution and sedimentation, radically altering the pattern of alluvial deposition (UNEP-WCMC 2012). This and upstream works which change the discharge dynamics of the Danube river are still affecting the functionality of the overall system. There are erosion and siltation problems (IUCN Consultation 2017b).

**Utility / Service Lines**

- **Low Threat**
  - Inside site, localised(<5%)
  - Outside site

Certain species (pelicans and raptors) are at risk from collision with the many kilometres of electricity powerlines in the delta (UNEP-WCMC, 2012), which also affect the aesthetic impression of the landscape.

**Tourism/ visitors/ recreation**

- **High Threat**
  - Inside site, scattered(5-15%)
  - Outside site

Growing visitor numbers have also resulted in increased number of motors boats, which often do not observe the navigation rules and restrictions. To prevent the negative impacts, the Danube Delta Biosphere Reserve Authority has developed Rules for navigation in the Danube Delta which introduced access and speed restrictions (WHC 2007, 2014, IUCN Consultation 2017a, UNEP-WCMC 2012).

**Invasive Non-Native/ Alien Species**

- **High Threat**
A number of invasive species have been observed in the Danube, including the Zebra Mussel (Dreissena polymorpha), the river nerite (Theodoxus fluviatilis), and the Asian Clam (Corbicula flumines), the spread of which is mainly caused by the increasing interconnection of various European water bodies by canals and other waterways (ICDPR 2014). There have also been reports of introduced, invasive fish species (UNEP-WCMC 2012), and of the crayfish plague, caused by the oomycete Aphanomyces astaci (Schrimpf et al. 2012). Further introductions or invasions would in addition pose a significant potential threat.

**Potential Threats**

**Data Deficient**

Climate change is one of the most serious threats to the site’s biodiversity, together with invasive species whose further spread would pose a serious threat to the native fauna of the Danube Delta. Further uncontrolled development of tourism infrastructure and intensification of navigation – together with alterations of the flow regime - also represent potential threats to the site’s integrity. However, it is currently impossible to precisely predict the magnitude of these threats including their interactions, which is why they are overall rated as “Data Deficient”.

**Tourism/ Recreation Areas**

**High Threat**

*Inside site, extent of threat not known*  
*Outside site*

Further tourism development would result in further development of tourism infrastructure and intensification of navigation.

**Habitat Shifting/ Alteration, Droughts, Temperature extremes**

**Data Deficient**

*Inside site, extent of threat not known*  
*Outside site*

Possible consequences of climate change - frequent floods, long periods of drought, deteriorating water quality can have significant impact on the site’s
biodiversity (WWF, 2013). However, in the absence in localized projections of climate change and its likely impacts, the threat level cannot be exactly determined.

▶ **Invasive Non-Native/ Alien Species**
  - **High Threat**
  - **Inside site, extent of threat not known**
  - **Outside site**

With increasing navigation and travel, there is always a significant but difficult to quantify risk that additional invasive species might be introduced.

▶ **Shipping Lanes**
  - **Data Deficient**
  - **Inside site, extent of threat not known**
  - **Outside site**

There is a potential threat from planned or proposed construction projects to ease navigation along the lower Danube, such as the Bystroe Canal, which was discussed heavily in the 2003-2008 period (UNEP-WCMC 2012). These might alter the hydrological regime and the functioning of the ecosystem on which the World Heritage values of the property depend.

**Protection and management**

**Assessing Protection and Management**

▶ **Relationships with local people**
  - **Mostly Effective**

According to the recent Periodic Report, local communities have some input into discussions relating to management but no direct role in management (State Party of Romania, 2014). This seems to be the traditional way of managing this property, but may need to be reconsidered. A need for more adequate consultation with main stakeholders has been noted (IUCN Consultation 2017a).
Legal framework
Mostly Effective

The legal framework governing the management of the Danube Delta is effective, according to the State Party (2014), and at the same time complex: The existing legal framework includes Law 82/1993, completed by Law 454/2001, regarding the establishment of the Danube Delta Biosphere Reserve, as well as Governmental Decision 248/1994, completed by the Governmental Decision 367/2002, regarding the implementation of the Law 82/1993, including zonation of the reserve, the Statute of the Danube Delta Biosphere Reserve and the Danube Delta Biosphere Reserve Authority. The Danube Delta Biosphere Reserve is divided into strictly protected areas, surrounded by buffer zones. These two types of zones (with a total area of 273,900 ha) are part of the World Heritage property. The existence of a dedicated legal basis has been highlighted as a strength of the management of the property (IUCN Consultation 2017a).

Enforcement
Mostly Effective

While the capacity to enforce legislation and regulations in the World Heritage property was positively evaluated in the most recent Periodic Report (State Party of Romania 2014), a more effective implementation of laws and management plans in Danube delta is needed together with a clarification of institutional responsibilities (IUCN Consultation 2017).

Integration into regional and national planning systems
Data Deficient

No specific information is available on the property’s integration into regional and national planning systems, including sea/landscape connectivity.

Management system
Mostly Effective

The World Heritage property is managed by the Danube Delta Biosphere Reserve Authority under the coordination of the Ministry of Environment and Forests (State Party of Romania 2014). A new management plan was
approved in 2015 (IUCN Consultation 2017b). There has apparently been cooperation with the management authorities of neighbouring and ecologically connected reserves in Ukraine, but not in Moldova (UNEP-WCMC 2012). While the management system of the property appears adequate and is being implemented (State Party of Romania 2014), certain improvements of its governance system would further strengthen it, including a change of the decision making process for the entire Danube Delta, including the clarification of the roles and responsibilities of different authorities and adequate consultation with main stakeholders (IUCN Consultation 2017).

▶ **Management effectiveness**

**Mostly Effective**

The recent Periodic Report considered that management was effective (State Party of Romania 2014). However, concerns remain with regards to sustainable long-term financing and staffing, capacity development among staff, as well as the effectiveness of enforcement and prevention of illegal activities (IUCN Consultation 2017a, b, Euronews 2013).

▶ **Implementation of Committee decisions and recommendations**

**Highly Effective**

No decisions or recommendations to be implemented by the State Party have been taken since 2009 (WHC 2017).

▶ **Boundaries**

**Highly Effective**

The boundaries of the site are adequate (State Party of Romania 2014). While extensive areas previously forming part of the Danube Delta were lost or degraded in the 1970s and 1980s (UNEP-WCMC 2012), no concerns in this regard have been expressed in the more recent past.

▶ **Sustainable finance**

**Mostly Effective**

The available levels of funding were assessed as "acceptable" by the 2014 Periodic Report (State Party of Romania 2014). The funding mainly comes from governmental sources, with some additional income from individual
visitor charges and international projects (State Party of Romania 2014). A further increase in funding is needed to fully meet management needs, particularly adequate financial allocations directly for conservation measures in the delta (including the wetland restoration) (IUCN Consultation 2017a, b).

► **Staff training and development**  
**Some Concern**

Available human resources were assessed as "below optimum" by the most recent Periodic Report, which rated staff availability as “fair” for most competence areas, but as “good” for conservation and administration and as “poor” for tourism (State Party of Romania 2014). The overall need for improved staff training has been confirmed by the IUCN Consultation (2017a).

► **Sustainable use**  
**Some Concern**

The main current benefits of the property are related to tourism income (IUCN Consultation 2017b). However, concerns have been expressed regarding the extent of tourism impacts (WHC 2007). More rigorous regulation of tourism development in the area is needed to ensure its sustainability There is also use of fish for food and reed as a building material (IUCN Consultation 2017). It is unclear how sustainable this use is currently (Euronews 2013).

► **Education and interpretation programs**  
**Some Concern**

A number of education and interpretation programmes exist, but further improvements need to be made to ensure better presentation and interpretation of the Outstanding Universal Value of the property (State Party of Romania 2014).

► **Tourism and visitation management**  
**Some Concern**

According to the recent Periodic Report, there is only “some” visitor management at the property (State Party of Romania 2014). An overarching strategy for sustainable tourism development is needed to help prevent
impacts from inappropriate tourism infrastructure development and uncontrolled tourism activities (IUCN Consultation 2017b).

▶ Monitoring

Some Concern

The existing monitoring system is adequate (State Party of Romania 2014). However, the information about the Danube delta's key values is not communicated to the public (IUCN Consultation 2017a). The most recent monitoring report on the Danube Delta Biosphere Reserve’s website (in Romanian) is from 2015 (Danube Delta Biosphere Reserve 2015). However, this report does not include detailed information on the status of bird populations and it is not clear to what extent this reports critical information on the state of World Heritage values, threats and management.

▶ Research

Mostly Effective

According to the State Party, scientific knowledge about the values of the World Heritage property is sufficient for most key areas but there are gaps; there is considerable research but it is usually not directed towards management needs and/or improving understanding of Outstanding Universal Value (State Party of Romania 2014). The 2014 Periodic Report lists a number of relevant scientific publications from this work, some of them in English.

Overall assessment of protection and management

Mostly Effective

Of the 15 aspects of management assessed, two were considered highly effective, six mostly effective, and for seven there was some concern. Therefore, the management of the site is assessed narrowly as effective overall. However, concerns remain with regards to the identified areas of some concern, i.e. integration into regional and national planning systems, staff training, monitoring, sustainable use, education and awareness raising programmes, tourism management, and general enforcement. More sustainable financing is needed to underpin all these aspects.
Assessment of the effectiveness of protection and management in addressing threats outside the site
Data Deficient

The ability of the property’s management authority to deal with threats originating outside the site cannot be fully assessed based on the available information.

Best practice examples

The legal framework with the experience of managing the Danube Delta based on a dedicated law for more than 20 years is a considerable strength and possibly a good practice example for other sites. The results of the research studies done by the Danube Delta Research Institute (an institute with main objective to research the entire complexity of Danube Delta) are another good practice example.

State and trend of values

Assessing the current state and trend of values

World Heritage values

The largest continuous marshland of Europe and the second-largest delta
Low Concern
Trend: Stable

The site’s unique features as the largest continuous marshland in Europe and the second-largest delta remain well-preserved in general, but the continued impact of a number of threats is cause for some (low) concern.

Rare and threatened fauna, particularly avifauna
Data Deficient
Trend: Data Deficient

No significant changes in populations of main species have been reported since the site’s inscription on the World Heritage List. However, this may be a
result of a lack of systematic monitoring, as monitoring reports of the Danube Delta biosphere reserve do not report trends in bird abundance and species richness. The “Saving Pelecanus crispus in the Danube Delta” LIFE Project has led to some positive results, including stabilized breeding populations in some sites (Project layman report, 2009). However, a mass mortality event due to H5N1 avian influenza killed 108 Dalmatian pelicans in 2015 (Kiss et al. 2016). A new breeding species (Ruddy Shelduck, Tadorna ferruginea) was reported by the same authors, and some other locally rare species were reconfirmed as breeders. As for freshwater fish species, industrial fishing has had a dramatic impact on certain species, such as sturgeon. Despite the introduced fishing ban for this species, it remains under threat, but again detailed information is not available (UNEP-WCMC 2012, Euronews 2013).

Summary of the Values

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

Low Concern
Trend: Data Deficient

The site’s unique features as the largest continuous marshland in Europe and the second-largest delta remain well-preserved overall, with low concern. The site’s biodiversity appears to be relatively intact, but systematic monitoring data to assess its conservation state are unavailable.

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

Low Concern
Trend: Stable

The wetland, river and coastal ecosystems underpinning World Heritage values of the Danube Delta appear in acceptable state generally, but there are some concerns regarding impaired ecosystem function as a result of pollution, erosion and siltation.
Additional information

Benefits

Understanding Benefits

▶ **Fishing areas and conservation of fish stocks**

Fishing represents an important source of income for local communities. However, better enforcement of fishing regulations is needed (IUCN Consultation 2017a, b).

▶ **Outdoor recreation and tourism**

The site is major tourism destination for national and international tourists (WHC 2014, IUCN Consultation 2017a, b).

▶ **Sustainable extraction of materials (e.g. coral, shells, resin, rubber, grass, rattan, etc)**

Reed as building material is an important benefit for local and national beneficiaries (IUCN Consultation 2017a).

▶ **Wilderness and iconic features, Cultural identity and sense of belonging**

The Danube Delta provides ample cultural services and has supported the production of numerous works of art (IUCN Consultation 2017a).

▶ **Importance for research**

The delta also is a pilot area for research and education (IUCN Consultation 2017b).
Carbon sequestration, Water provision (importance for water quantity and quality)

The Danube Delta contributes to purification of water, carbon sequestration and climate regulation (IUCN Consultation 2017a)

Summary of benefits

The landscapes and ecosystems of the Danube Delta provide a wide range of supporting, provisioning, regulatory and cultural ecosystem services, which offer ample benefits to local and national inhabitants as well as international visitors, in terms of food and building materials, tourism and recreation, the production and dissemination of art and knowledge, as well as the maintenance of a healthy living environment.

Projects

Compilation of active conservation projects

<table>
<thead>
<tr>
<th>No</th>
<th>Organization/ individuals</th>
<th>Project duration</th>
<th>Brief description of Active Projects</th>
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<tbody>
<tr>
<td>1</td>
<td>Danube Delta National Institute for Research and Development</td>
<td>Data Deficient</td>
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<td>2</td>
<td>Romanian Ornithological Society</td>
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<td>3</td>
<td>Association Ivan Patzaichin-Mila 23</td>
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<td>4</td>
<td>WWF Romania</td>
<td>Data Deficient</td>
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Compilation of potential site needs

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<thead>
<tr>
<th>No</th>
<th>Site need title</th>
<th>Brief description of potential site needs</th>
<th>Support needed for following years</th>
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IUCN World Heritage Outlook: https://worldheritageoutlook.iucn.org/
Danube Delta - 2017 Conservation Outlook Assessment (archived)
<table>
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<tr>
<th></th>
<th>PA Management effectiveness assessment</th>
<th>A standard management effectiveness assessment using either appraisal methods such as METT (WWF 2007) or “Enhancing our Heritage” (Hockings et al. 2008) or - better – a systematic analysis using the Open Standards for the Practice of Conservation (CMP 2013) would be a useful basis for further improvement of the management of the site.</th>
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<tr>
<td>2</td>
<td>Capacity building</td>
<td>Creating targeted capacity building programs for continuous staff training (for financial planning, monitoring, species conservation actions, visitor management etc.).</td>
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<td>3</td>
<td>Education, communication and public awareness raising programme</td>
<td>Development and implementation of a planned education, communication and public awareness raising programme that pays particular attention to the World Heritage values and status of the site, as well as guidance on appropriate behaviour and use.</td>
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<td>4</td>
<td>Visitor management system</td>
<td>Development of a state-of-the art visitor management and information programme, as set out by WHC (2014).</td>
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<td>5</td>
<td>Monitoring of values, threats and management</td>
<td>Establishment and implementation of a monitoring programme particularly for World Heritage values and supporting ecosystem values, direct threats and their drivers, and the effectiveness of site management to address them. This could follow the Open Standards for the Practice of Conservation (CMP 2013) to ensure optimum usefulness for adaptive management.</td>
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<td>6</td>
<td>Business plan</td>
<td>Development and implementation of a detailed business plan for the Danube Delta Biosphere Reserve, to improve sustainable financing.</td>
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<tr>
<td>7</td>
<td>Conservation and ecosystem restoration activities</td>
<td>Systematic planning and implementation of additional biodiversity conservation and ecosystem restoration activities, as also proposed by national stakeholders (IUCN Consultation 2017a, b).</td>
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REFERENCES

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<td>17</td>
<td>WWF, 2013. Vulnerability of Danube Delta (Moldova, Romania, Ukraine) to climate change including scenarios and forecasts of climate change.</td>
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