# Ramsar Information Sheet

Published on 11 February 2020
Update version, previously published on : 1 January 2012

# Croatia

## Neretva River Delta


| | |
|---|---|
| Designation date | 2 November 1992 |
| Site number | 585 |
| Coordinates | 43°01'31"N 17°33'31"E |
| Area | 12 742,00 ha |

## Color codes

Fields back-shaded in light blue relate to data and information required only for RIS updates.

Note that some fields concerning aspects of Part 3, the Ecological Character Description of the RIS (tinted in purple), are not expected to be completed as part of a standard RIS, but are included for completeness so as to provide the requested consistency between the RIS and the format of a 'full' Ecological Character Description, as adopted in Resolution X.15 (2008). If a Contracting Party does have information available that is relevant to these fields (for example from a national format Ecological Character Description) it may, if it wishes to, include information in these additional fields.

## 1 - Summary

Summary

Neretva River, with its 218 km long watercourse, is the largest river of the eastern Adriatic watershed. Its final section of cca 22 km stretches through Croatian territory, forming an extensive delta with large reedbeds, lakes, wet meadows, lagoons, sandbanks, sandflats and saltmarshes. Neretva Delta is the most valuable wetland on eastern Adriatic coast and one of only few wetlands remaining in the Mediterranean region of Europe. It is the only delta in Croatia and contains the largest reedbed extension in the country, covering more than 3,000 ha. Although a large part of former vast marshes of Neretva Delta have been turned into agricultural land, its remaining wetland habitats are representative and important on an international level. A number of habitat types found in the Site are threatened on European level, like the estuary, lagoons, shallow sandbanks, tidal flats and saltmarshes.
In the Neretva Delta, at least 313 bird species have been registered. Altogether, there are around 193 regularly occurring species out of which around 89 are breeding birds. The area is an important stopl over place during migrations of birds from Middle and NE Europe to Africa, situated on the route of Central European (Black Sea/Mediterranean) Flyway. It is also of great importance for wintering.
About 1/3 of the registered species are wintering birds, accompanied with residents during the winter. The river mouth with its shoals, sandbanks and saltmarshes is of greatest importance for migration of waders, the Spoonbill (Platalea leucorodia), terns and gulls as well as for breeding of the Kentish Plover (Charadrius alexandrines) and the Stilt (Himantopus himantopus). Reedbeds and water bodies shelter migrating and wintering ducks, coots and grebes. Extensive reedbeds are, along with the reedbed in Vransko jezero Nature Park, the most important breeding site in Mediterranean region of Croatia for many waterbirds.

See additional material for further information

# 2 - Data & location

## 2.1 - Formal data

### 2.1.1 - Name and address of the compiler of this RIS

#### Compiler 1

| | |
|---|---|
| Name | Ana Tutavac |
| Institution/agency | Public Institution for the Management of Protected Natural Areas of Dubrovnik-Neretva County |
| Postal address | Branitelja Dubrovnika 41<br>20000 Dubrovnik |
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### 2.1.2 - Period of collection of data and information used to compile the RIS

| | |
|---|---|
| From year | 2012 |
| To year | 2018 |

### 2.1.3 - Name of the Ramsar Site

| | |
|---|---|
| Official name (in English, French or Spanish) | Neretva River Delta |
| Unofficial name (optional) | Neretva Delta |

### 2.1.4 - Changes to the boundaries and area of the Site since its designation or earlier update

| | |
|---|---|
| (Update) A. Changes to Site boundary | Yes ◉ No ○ |
| (Update) The boundary has been delineated more accurately | ☑ |
| (Update) The boundary has been extended | ☐ |
| (Update) The boundary has been restricted | ☐ |
| (Update) B. Changes to Site area | the area has increased |
| (Update) The Site area has been calculated more accurately | ☑ |
| (Update) The Site has been delineated more accurately | ☑ |
| (Update) The Site area has increased because of a boundary extension | ☐ |
| (Update) The Site area has decreased because of a boundary restriction | ☐ |

### 2.1.5 - Changes to the ecological character of the Site

| | |
|---|---|
| (Update) 6b i. Has the ecological character of the Ramsar Site (including applicable Criteria) changed since the previous RIS? | Not evaluated |

## 2.2 - Site location

### 2.2.1 - Defining the Site boundaries

b) Digital map/image
<4 file(s) uploaded>

| | |
|---|---|
| Former maps | 0 |

Boundaries description

The boundary follows the edge of Neretva River valley on its contact with surrounding karst hills. On its NE part, between settlements Prud and Metković, it follows the state border between Croatia and Bosnia & Herzegovina. On its SW part, starting from the settlement Čeveljuša, it follows the eastern bank of the canal Vlaška that connects the lake Jezero Vlaška and the sea. The marine boundary is designed to include the large sandbank in front of the river mouth and is defined by several point coordinates. Ramsar site encompasses five areas protected by the Law on Nature Protection in Neretva Delta.

### 2.2.2 - General location

a) In which large administrative region does the site lie? Dubrovnik-Neretva County

b) What is the nearest town or population centre? Ploče, Metković, Opuzen

### 2.2.3 - For wetlands on national boundaries only

a) Does the wetland extend onto the territory of one or more other countries? Yes ◉ No ○

b) Is the site adjacent to another designated Ramsar Site on the territory of another Contracting Party? Yes ○ No ◉

### 2.2.4 - Area of the Site

Official area, in hectares (ha): 12742

Area, in hectares (ha) as calculated from GIS boundaries: 12922.381

### 2.2.5 - Biogeography

Biogeographic regions

| Regionalisation scheme(s) | Biogeographic region |
|---|---|
| EU biogeographic regionalization | Mediterranean biogeographic region of EU and Europe |

Other biogeographic regionalisation scheme

EU biogeographic regionalization, in accordance with the Habitat Directive (Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora). Reference: European Commission (2011): Map of EU biogeographic regions EU 27+1, Doc.Hab. 11 05/04

# 3 - Why is the Site important?

## 3.1 - Ramsar Criteria and their justification

☑ Criterion 1: Representative, rare or unique natural or near-natural wetland types

Other reasons: Neretva Delta contains the largest and the most valuable remnants of Mediterranean wetlands on the eastern Adriatic coast and one of only few such areas remaining in Mediterranean biogeographical region of Europe. Although the major part of the former vast marsh in the area has been mostly reclaimed, in the Neretva Delta there are still wide areas of wetland habitats that are highly representative for Mediterranean region of Europe. It is in fact the complex of wetland habitats, containing 17 Ramsar types of wetlands, including 8 marine/coastal, 6 inland and 3 human made. Extensive reedbeds in Neretva Delta are the largest ones in Croatia and along with the reedbed in Vransko jezero Nature Park represent the most valuable breeding site for a number of threatened reedbed breeding birds in Mediterranean biogeographical region. The mouth of Neretva River is characterized with habitats threatened on European level and protected by the EU Habitats Directive and the Convention on the Conservation of European Wildlife and Natural Habitats. These habitats are well represented here, like the estuary, lagoons, sandbanks, saltmarshes, sandflats and mudflats. International importance of Neretva Delta is strengthened by the fact that it is a part of the wider wetland of the Lower Neretva valley that includes Hutovo Blato Ramsar site in Bosnia & Herzegovina. These two sites are ecologically identical and should be treated as one transboundary Ramsar site.

☑ Criterion 2 : Rare species and threatened ecological communities

☑ Criterion 3 : Biological diversity

Justification: Neretva Delta is one of the most important sites regarding species richness and high biological diversity in the Mediterranean biogeographical region of Croatia. Final number of species occurring in the area is not known. So far there has been registered: 618 vascular plants, 53 mammals, 313 birds (about 193 regularly occurring), 22 reptiles, 11 amphibians, 35 freshwater fishes in the area, 29 dragonflies, 234 butterflies, 1 underground mollusk, 1 underground tubeIworm and many other underground invertebrates, including mostly endemic taxa. Neretva Delta with its surrounding carst area supports high level of endemism, especially regarding freshwater fishes (18 species endemic to the Adriatic Basin, 4 of which are Croatian endemics; 1 subspecies and 5 species restricted only to Neretva river basin); fauna of underground water habitats as well as vascular plants (more than 20 species of Illyrian – Adriatic endemics with distribution area being Eastern Adriatic coast and its Dinaric karst hinterland).

☑ Criterion 4 : Support during critical life cycle stage or in adverse conditions

☑ Criterion 7 : Significant and representative fish

Justification: Neretva Delta represents the habitat used by around 150 fish species, including marine and freshwater species as well as species of brackish waters. Out of 35 freshwater fishes, there are even 18 species endemic to the Adriatic Basin, 4 of which are Croatian endemics. One subspecies and five species inhabit only Neretva River and its tributaries (see details in 22. Noteworthy fauna).

☑ Criterion 8 : Fish spawning grounds, etc.

Justification

Many marine fishes enter into shallow sea, lagoons and brackish waters in Neretva Delta for spawning. This is also a feeding area as well as the nursery for fish fry of fishes of Mugilidae and Sparidae families, several flatfish and other species that spend the rest of their life cycle in the sea or fresh water. Neretva Delta is also important for migration of anodromous and catadromous species. The most famous and characteristic for this area is the European eel (Anguilla anguilla). Adult eels migrate in the autumn towards the sea while during the springtime juvenile 'glass eels' enter the delta to live there until their adulthood.

## 3.2 - Plant species whose presence relates to the international importance of the site

| Scientific name | Common name | Criterion 2 | Criterion 3 | Criterion 4 | IUCN Red List | CITES Appendix I | Other status | Justification |
|---|---|---|---|---|---|---|---|---|
| *Alopecurus aequalis* | Orange foxtail | ☑ | ☐ | ☐ | LC | ☐ | Croatian Red List: VU European Red List: LC | |
| *Baldellia ranunculoides* | Lesser waterplantain | ☑ | ☐ | ☐ | NT | ☐ | Croatian Red List: CR, European Red List: NT | |
| *Carex divisa* | Divided sedge | ☑ | ☐ | ☐ | LC | ☐ | Croatian Red List: EN | |
| *Carex extensa* | Longbracted sedge | ☑ | ☐ | ☐ | LC | ☐ | Croatian Red List: EN | |
| *Carex riparia* | Great pond-sedge | ☑ | ☐ | ☐ | LC | ☐ | Croatian Red List: VU European Red List: LC | |
| *Carex rostrata* | Bottle sedge | ☑ | ☐ | ☐ | LC | ☐ | Croatian Red List: VU European Red List: LC | |
| *Cynanchum acutum* | Stranglewort | ☑ | ☐ | ☐ | LC | ☐ | Croatian Red List: EN | |
| *Cyperus flavescens* | Yellow galingale | ☑ | ☐ | ☐ | LC | ☐ | Croatian Red List: VU European Red List: LC | |
| *Cyperus fuscus* | Brown galingale | ☑ | ☐ | ☐ | LC | ☐ | Croatian Red List: VU European Red List: LC | |
| *Cyperus longus* | Sweet cyperus | ☑ | ☐ | ☐ | LC | ☐ | Croatian Red List: VU European Red List: LC | |
| *Cyperus michelianus* | Michelis cyperus | ☑ | ☐ | ☐ | LC | ☐ | Croatian Red List: VU, European Red List: NT | |
| *Cyperus serotinus* | Tidalmarsh flatsedge | ☑ | ☐ | ☐ | | ☐ | Croatian Red List: VU | |
| *Dorycnium rectum* | Upright dorycnium | ☑ | ☐ | ☐ | | ☐ | Croatian Red List: CR | |
| *Echinophora spinosa* | Echinophora | ☑ | ☐ | ☐ | | ☐ | Croatian Red List: CR | |
| *Eleocharis carniolica* | Carnic spikerush | ☑ | ☐ | ☐ | LC | ☐ | Croatian Red List: EN European Red List: LC | |
| *Equisetum hyemale* | Rough horsetail | ☑ | ☐ | ☐ | LC | ☐ | Croatian Red List: VU European Red List: LC | |
| *Eriophorum angustifolium* | Common Cottongrass | ☑ | ☐ | ☐ | LC | ☐ | Croatian Red List: CR European Red List: LC | |
| *Fimbristylis bisumbellata* | Fimbry | ☑ | ☐ | ☐ | LC | ☐ | Croatian Red List: CR European Red List: LC | |
| *Fritillaria messanensis* | | ☑ | ☐ | ☐ | LC | ☐ | Croatian Red List: VU | |
| *Glaucium flavum* | Yellow Horned-poppy | ☑ | ☐ | ☐ | | ☐ | Croatian Red List: EN | |
| *Hippuris vulgaris* | Common Mare's tail | ☑ | ☐ | ☐ | LC | ☐ | Croatian Red List: EN European Red List: LC | |
| *Hordeum marinum* | Sea barley | ☑ | ☐ | ☐ | LC | ☐ | Croatian Red List: VU European Red List: LC | |

| Scientific name | Common name | Criterion 2 | Criterion 3 | Criterion 4 | IUCN Red List | CITES Appendix I | Other status | Justification |
|---|---|---|---|---|---|---|---|---|
| *Hordeum secalinum* | Meadow barley | ☑ | ☐ | ☐ | LC | ☐ | Croatian Red List: EN European Red List: LC | |
| *Hottonia palustris* | Water Violet | ☑ | ☐ | ☐ | LC | ☐ | Croatian Red list: EN European Red List: LC | |
| *Hydrocotyle vulgaris* | Marsh pennywort | ☑ | ☐ | ☐ | LC | ☐ | Croatian Red List: CR European Red List: LC | |
| *Lythrum tribracteatum* | Threebract loosestrife | ☑ | ☐ | ☐ | LC | ☐ | Croatian Red List: CR European Red List: LC | |
| *Marsilea quadrifolia* | Four Leaf Clover | ☑ | ☐ | ☐ | LC | ☐ | Croatian Red List: EN European Red List: VU | |
| *Ophrys apifera* | Bee orchid | ☑ | ☐ | ☐ | | ☐ | Croatian Red List: EN | |
| *Ophrys sphegodes* | Early Spider Orchid | ☑ | ☐ | ☐ | | ☐ | Croatian Red List: VU | |
| *Orchis italica* | Pink Man Orchid | ☑ | ☐ | ☐ | | ☐ | Croatian Red List: EN | |
| *Orchis purpurea* | Lady orchid | ☑ | ☐ | ☐ | | ☐ | Croatian Red List: VU | |
| *Orchis quadripunctata* | Four-spotted Orchid | ☑ | ☐ | ☐ | LC | ☐ | Croatian Red List: VU | |
| *Periploca graeca* | Silk vine | ☑ | ☐ | ☐ | | ☐ | Croatian Red List: EN | |
| *Ranunculus lingua* | Greater spearwort | ☑ | ☐ | ☐ | LC | ☐ | Croatian Red List: EN European Red List: LC | |
| *Ranunculus ophioglossifolius* | Adder's tongue spearwort | ☑ | ☐ | ☐ | LC | ☐ | Croatian Red List: EN | |
| *Trifolium resupinatum* | Shaftal Clover; Reversed Clover; Persian Clover | ☑ | ☐ | ☐ | | ☐ | Croatian Red List: VU | |

## 3.3 - Animal species whose presence relates to the international importance of the site

| Phylum | Scientific name | Common name | Species qualifies under criterion | | | | Species contributes under criterion | | | | Pop. Size | Period of pop. Est. | % occurrence 1) | IUCN Red List | CITES Appendix I | CMS Appendix I | Other Status | Justification |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 2 | 4 | 6 | 9 | 3 | 5 | 7 | 8 | | | | | | | | |
| **Birds** | | | | | | | | | | | | | | | | | | |
| CHORDATA/ AVES | *Anser anser* | Greylag Goose | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | 150 | | | LC | ☐ | ☐ | Croatian Red List: VU Annex 1 of the Birds Directive | |
| CHORDATA/ AVES | *Ardea purpurea* | Purple Heron | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | 20 | | | LC | ☐ | ☐ | Croatian Red List: EN Annex 1 of the Birds Directive | |
| CHORDATA/ AVES | *Botaurus stellaris* | Eurasian Bittern | ☑ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | 2 | | | LC | ☐ | ☐ | Annex 1 of the Birds Directive | Criterion 4: Out of breeding birds, the most important are species breeding in reedbeds that include many threatened species like this species. |
| CHORDATA/ AVES | *Branta ruficollis* | Red-breasted Goose | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | 7 | | | VU | ☐ | ☑ | Annex 1 of the Birds Directive | |
| CHORDATA/ AVES | *Charadrius alexandrinus* | Snowy Plover; Kentish Plover | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | 4 | | | LC | ☐ | ☐ | Croatian Red List: CR Annex 1 of the Birds Directive Anex II of the Bern Convention Annex II of the Protocol under the Barcelona Convention | |
| CHORDATA/ AVES | *Circaetus gallicus* | Short-toed Snake Eagle | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | 6 | | | LC | ☐ | ☐ | Croatian Red List: EN Annex 1 of the Birds Directive Annex II of the Bern Convention | |

| Phylum | Scientific name | Common name | Species qualifies under criterion | | | | Species contributes under criterion | | | | Pop. Size | Period of pop. Est. | % occurrence 1) | IUCN Red List | CITES Appendix I | CMS Appendix I | Other Status | Justification |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 2 | 4 | 6 | 9 | 3 | 5 | 7 | 8 | | | | | | | | |
| CHORDATA/ AVES | *Circus aeruginosus* | Western Marsh Harrier | ☑ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | 4 | | | LC | ☐ | ☐ | Annex 1 of the Birds Directive | Criterion 4: Out of breeding birds, the most important are species breeding in reedbeds that include many threatened species like this species. |
| CHORDATA/ AVES | *Grus grus* | Common Crane | ☑ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | 100 | | | LC | ☐ | ☐ | Annex 1 of the Birds Directive | Criterion 4: regularly fly over Neretva Delta in early springtime. |
| CHORDATA/ AVES | *Haliaeetus albicilla* | White-tailed Eagle | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | | | | LC | ☑ | ☑ | Croatian Red List: VU Annex 1 of the Birds Directive Annex II of the Bern Convention | |
| CHORDATA/ AVES | *Himantopus himantopus* | Black-winged Stilt | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | 30 | | | LC | ☐ | ☐ | Croatian Red List: VU Annex 1 of the Birds Directive Annex II of the Bern Convention | |
| CHORDATA/ AVES | *Ixobrychus minutus* | Little Bittern | ☑ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | 25 | | | LC | ☐ | ☐ | Annex 1 of the Birds Directive | Criterion 4: Out of breeding birds, the most important are species breeding in reedbeds that include many threatened species like this species. |
| CHORDATA/ AVES | *Microcarbo pygmeus* | Pygmy Cormorant | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | 900 | | 0.9 | | ☐ | ☐ | | Criterion 4: River mouth is also very important feeding area for the Pygmy Cormorant (Phalacrocoray pygmaeus) that breeds in Hutovo Blato in B&H. |
| CHORDATA/ AVES | *Panurus biarmicus* | Bearded Reedling | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | 23 | | | LC | ☐ | ☐ | Croatian Red List: EN Annex II of the Bern Convention | |
| CHORDATA/ AVES | *Platalea leucorodia* | Eurasian Spoonbill | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | 120 | | 0.7 | LC | ☐ | ☐ | Annex 1 of the Birds Directive | |
| CHORDATA/ AVES | *Podiceps nigricollis* | Eared Grebe; Black-necked Grebe | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | 80 | | | LC | ☐ | ☐ | Croatian Red List: EN Annex II of the Bern Convention | |
| CHORDATA/ AVES | *Porzana parva* | Little Crake | ☑ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | 3 | | | LC | ☐ | ☐ | Annex 1 of the Birds Directive | Criterion 4: Out of breeding birds, the most important are species breeding in reedbeds that include many threatened species like this species. 250I300 ind. |
| CHORDATA/ AVES | *Porzana porzana* | Spotted Crake | ☑ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | 350 | | | LC | ☐ | ☐ | Anex 1 of the Birds Directive | Criterion 4: Out of breeding birds, the most important are species breeding in reedbeds that include many threatened species like this species. 300I400 ind. |
| CHORDATA/ AVES | *Porzana pusilla* | Baillon's Crake | ☑ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | 100 | | | LC | ☐ | ☐ | Annex 1 of the Birds Directive | Criterion 4: Out of breeding birds, the most important are species breeding in reedbeds that include many threatened species like this species. up to 100 ind. in Croatia (COS, 2011; Ilić, COS, pers.com.) |
| **Fish, Mollusc and Crustacea** | | | | | | | | | | | | | | | | | | |
| CHORDATA/ ACTINOPTERYGII | *Alburnus neretvae* | Neretva Bleak | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | | | | LC | ☐ | ☐ | | Criterion 7: Law on Ecological network (O.G. 80/2019), Appendix II |
| CHORDATA/ ACTINOPTERYGII | *Alosa fallax* | Twait Shad | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | | | | LC | ☐ | ☐ | | Criterion 7: Law on Ecological network (O.G. 80/2019), Appendix II |
| CHORDATA/ ACTINOPTERYGII | *Anguilla anguilla* | Sing eel | ☑ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | | | | CR | ☐ | ☐ | Habitats Directive Annex II | Criterion 4: Neretva Delta is the most significant site on Croatian coast for globally critically endangered species the European eel (Anguilla anguilla) whose juveniles grow in this area and migrate back to the sea after reaching adulthood. |
| CHORDATA/ ACTINOPTERYGII | *Chondrostoma knerii* | Dalmation Nase | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | | | | VU | ☐ | ☐ | Habitats Directive Annex II Croatian Red List: EN | Criterion 4: Endem of Adriatic Basin |
| CHORDATA/ ACTINOPTERYGII | *Cobitis illyrica* | Illyrian Loach | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | | | | CR | ☐ | ☐ | Habitats Directive Annex II | Criterion 7: Law on Ecological network (O.G. 80/2019), Appendix II |

| Phylum | Scientific name | Common name | Species qualifies under criterion | | | | Species contributes under criterion | | | | Pop. Size | Period of pop. Est. | % occurrence 1) | IUCN Red List | CITES Appendix I | CMS Appendix I | Other Status | Justification |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 2 | 4 | 6 | 9 | 3 | 5 | 7 | 8 | | | | | | | | |
| CHORDATA / ACTINOPTERYGII | *Cobitis narentana* | Neretvan spined loach | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | | | | VU | ☐ | ☐ | Habitats Directive Annex II Croatian Red List: VU | Criterion 7: Law on Ecological network (O.G. 80/2019), Appendix II |
| MOLLUSCA / BIVALVIA | *Congeria kusceri* | Tertiary relic Dinaric cave clam | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | | | | VU | ☐ | ☐ | Croatian Red List: CR | |
| CHORDATA / ACTINOPTERYGII | *Cyprinus carpio* | Amur carp | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | | | | VU | ☐ | ☐ | | |
| CHORDATA / ACTINOPTERYGII | *Knipowitschia croatica* | Croatian Goby | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | | | | VU | ☐ | ☐ | Habitats Directive Annex II Croatian Red List: CR | Criterion 7: Law on Ecological network (O.G. 80/2019), Appendix II |
| CHORDATA / ACTINOPTERYGII | *Knipowitschia panizzae* | Adriatic dwarf goby | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | | | | LC | ☐ | ☐ | | Criterion 7: Law on Ecological network (O.G. 80/2019), Appendix II |
| CHORDATA / ACTINOPTERYGII | *Knipowitschia radovici* | Radović's goby | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | | | | VU | ☐ | ☐ | | |
| CHORDATA / CEPHALASPIDOMORPHI | *Lethenteron zanandreai* | Po brook lamprey; Lombardy brook lamprey | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | | | | LC | ☐ | ☐ | | Criterion 7: Law on Ecological network (O.G. 80/2019), Appendix II |
| CHORDATA / CEPHALASPIDOMORPHI | *Petromyzon marinus* | Lamprey eel | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | | | | LC | ☐ | ☐ | | Criterion 7: Law on Ecological network (O.G. 80/2019), Appendix II |
| CHORDATA / ACTINOPTERYGII | *Pomatoschistus canestrinii* | Canestrini's Goby | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | | | | LC | ☐ | ☐ | | Criterion 7: Law on Ecological network (O.G. 80/2019), Appendix II |
| CHORDATA / ACTINOPTERYGII | *Salmo marmoratus* | Salmon | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | | | | LC | ☐ | ☐ | | Criterion 4: Endem of Adriatic Basin; rare species |
| CHORDATA / ACTINOPTERYGII | *Salmo obtusirostris* | Adriatic trout; Adriatic salmon | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | | | | EN | ☐ | ☐ | Croatian Red List: CR | Criterion 4: Endem of Adriatic Basin |
| CHORDATA / ACTINOPTERYGII | *Squalius svallize* | Adriatic Dace | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | | | | VU | ☐ | ☐ | Croatian Red List: VU | Criterion 7: Law on Ecological network (O.G. 80/2019), Appendix II |
| **Others** | | | | | | | | | | | | | | | | | | |
| ARTHROPODA / INSECTA | *Ceriagrion tenellum* | Small Red Damsel | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | | | | LC | ☐ | ☐ | Croatian Red List: VU | |
| CHORDATA / REPTILIA | *Emys orbicularis* | European Pond Terrapin | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | | | | | ☐ | ☐ | | Criterion 4: Law on Ecological network (O.G. 80/2019), Appendix II |
| ARTHROPODA / INSECTA | *Lindenia tetraphylla* | Bladetail | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | | | | LC | ☐ | ☐ | Croatian Red List: EN Annex II of the Bern Convention | |
| CHORDATA / REPTILIA | *Mauremys rivulata* | Balkan Terrapin | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | | | | | ☐ | ☐ | | Criterion 4: Law on Ecological network (O.G. 80/2019), Appendix II |
| CHORDATA / MAMMALIA | *Miniopterus schreibersii* | Schreibers's Long-fingered Bat | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | | | | NT | ☐ | ☐ | Croatian Red List: EN | |
| CHORDATA / MAMMALIA | *Myotis capaccinii* | long-fingered bat; Long-fingered Myotis | ☑ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | | | | VU | ☐ | ☐ | Croatian Red List: EN | Criterion 7: Law on Ecological network (O.G. 80/2019), Appendix II |
| CHORDATA / MAMMALIA | *Myotis emarginatus* | Geoffroy's bat; Geoffroy's Myotis | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | | | | LC | ☐ | ☐ | | Criterion 4: Law on Ecological network (O.G. 80/2019), Appendix II |
| CHORDATA / AMPHIBIA | *Proteus anguinus* | Olm | ☑ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | | | | VU | ☐ | ☐ | Croatian Red List: VU | Criterion 7: Law on Ecological network (O.G. 80/2019), Appendix II |
| CHORDATA / MAMMALIA | *Rhinolophus euryale* | Mediterranean Horseshoe Bat | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | | | | NT | ☐ | ☐ | | Criterion 4: Law on Ecological network (O.G. 80/2019), Appendix II |

| Phylum | Scientific name | Common name | Species qualifies under criterion | | | | Species contributes under criterion | | | | Pop. Size | Period of pop. Est. | % occurrence 1) | IUCN Red List | CITES Appendix I | CMS Appendix I | Other Status | Justification |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 2 | 4 | 6 | 9 | 3 | 5 | 7 | 8 | | | | | | | | |
| CHORDATA/ MAMMALIA | *Rhinolophus ferrumequinum* | Greater Horseshoe Bat | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | | | | LC | ☐ | ☐ | | Criterion 4: Law on Ecological network (O.G. 80/2019), Appendix II |
| CHORDATA/ MAMMALIA | *Rhinolophus hipposideros* | Lesser Horseshoe Bat | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | | | | LC | ☐ | ☐ | | Criterion 4: Law on Ecological network (O.G. 80/2019), Appendix II |
| CHORDATA/ REPTILIA | *Testudo hermanni* | Hermann's tortoise | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | | | | NT | ☐ | ☐ | | Criterion 4: Law on Ecological network (O.G. 80/2019), Appendix II |

*1) Percentage of the total biogeographic population at the site*

Species listed under Criterion biological components which are not yet included in the Catalogue of Life:
Calopteryx balcanica, Dalmatian demoiselle I CRL/DD

## 3.4 - Ecological communities whose presence relates to the international importance of the site

| Name of ecological community | Community qualifies under Criterion 2? | Description | Justification |
|---|---|---|---|
| Hard oligo-mesotrophic waters with benthic vegetation of Chara spp. | ☑ | | Low on Ecological network (O.G. 80/2019), Appendix II, Ordinance on the list of habitat types, habitat map and endangered and rare habitat types (O.G. 88/214), Appendix III |
| Coastal lagoons | ☑ | | Low on Ecological network (O.G.80/2019), Appendix II, Ordinance on the list of habitat types, habitat map and endangered and rare habitat types (O.G. 88/214), Appendix III |
| Salicornia and other annuals colonizing mud and sand | ☑ | | Low on Ecological network (O.G. 80/2019), Appendix II, Ordinance on the list of habitat types, habitat map and endangered and rare habitat types (O.G. 88/214), Appendix III |
| Caves not open to the public | ☑ | | Low on Ecological network (O.G. 80/2019), Appendix II, Ordinance on the list of habitat types, habitat map and endangered and rare habitat types (O.G. 88/214), Appendix III |
| Mediterranean and thermo-Atlantic halophilous scrubs (Sarcocornetea fruticosi) | ☑ | | Low on Ecological network (O.G. 80/2019), Appendix II, Ordinance on the list of habitat types, habitat map and endangered and rare habitat types (O.G. 88/214), Appendix III |
| Mediterranean salt meadows (Juncetalia maritimi) | ☑ | | Low on Ecological network (O.G. 80/2019), Appendix II, Ordinance on the list of habitat types, habitat map and endangered and rare habitat types (O.G. 88/214), Appendix III |
| Embryonic shifting dunes | ☑ | | Low on Ecological network (O.G. 80/2019), Appendix II, Ordinance on the list of habitat types, habitat map and endangered and rare habitat types (O.G. 88/214), Appendix III |

| Name of ecological community | Community qualifies under Criterion 2? | Description | Justification |
|---|---|---|---|
| Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation | ☑ | | Low on Ecological network (O.G. 80/2019), Appendix II, Ordinance on the list of habitat types, habitat map and endangered and rare habitat types (O.G. 88/214), Appendix III |
| Pseudo-steppe with grasses and annuals of the Thero-Brachypodietea | ☑ | | Low on Ecological network (O.G. 80/2019), Appendix II,Ordinance on the list of habitat types, habitat map and endangered and rare habitat types (O.G. 88/214), Appendix III |
| Eastern sub-Mediterranean dry grasslands (Scorzoneratalia villosae) | ☑ | | Low on Ecological network (O.G. 80/2019), Appendix II, Ordinance on the list of habitat types, habitat map and endangered and rare habitat types (O.G. 88/214), Appendix III |
| Estuaries | ☑ | It is the complex of different habitat types on the river mouth, including associations: Zosterelletum noltii, Cymodoceetum nodosae and Coleogeto‌l Zannichellietum martimae. | Low on Ecological network (O.G. 80/2019), Appendix II, Ordinance on the list of habitat types, habitat map and endangered and rare habitat types (O.G. 88/214), Appendix III |
| Mudflats and sandflats not covered by seawater at low tide | ☑ | This habitat type represents important feeding ground for many waterbirds, especially waders. It includes salt ponds covered with As. Zosterelletum noltii. | Low on Ecological network (O.G. 80/2019), Appendix II, Ordinance on the list of habitat types, habitat map and endangered and rare habitat types (O.G. 88/214), Appendix III |
| Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or of the Isoëto-Nanojunc | ☑ | | Low on Ecological network (O.G. 80/2019), Appendix II, Ordinance on the list of habitat types, habitat map and endangered and rare habitat types (O.G. 88/214), Appendix III |
| Sandbanks which are slightly covered by sea water all the time | ☑ | Shallow sea of Neretva estuary with sandbanks, including diverse vegetation of photophilous algae and seagrass beds, predominantly of the Lesser Neptun grass (Cymodocea nodosa) (As. Cymodoceetum nodosae). | Low on Ecological network (O.G. 80/2019), Appendix II, Ordinance on the list of habitat types, habitat map and endangered and rare habitat types (O.G. 88/214), Appendix III |
| Southern riparian galleries and thickets (Nerio-Tamaricetea and Securinegion tinctoriae) | ☑ | | Low on Ecological network (O.G. 80/2019), Appendix II, Ordinance on the list of habitat types, habitat map and endangered and rare habitat types (O.G. 88/214), Appendix III |

# 4 - What is the Site like? (Ecological character description)

## 4.1 - Ecological character

One of the main characteristics of the Neretva Delta is its great diversity of habitat types. Apart from artificial habitats (settlements and agricultural land covered with orchards and greenhouses), there are three groups of valuable natural habitat types: the river mouth with its shallow marine waters, tidal flats and salt marshes; the wide delta valley with inland wetland habitats; and habitats of the karst hills that surround the delta, including underground waters and springs. Such a complex of habitat types, especially the combination of Mediterranean wetland and karst habitats, is unique, not only for the Croatian coast but also on an international level.
The most representative areas of halophylous marsh vegetation in Croatia can be found in the Site (annuals, scrubs, salt meadows). The Delta represents the largest area of brackish waters in the country. The two lagoons in the estuary (Parila and Vlaška) are the only large lagoons in Croatia – apart from them, just a few small sites can be found along the coast. Extensive mudflats and sandflats, including a large sandbank, spread over the river mouth. As the Croatian coast is predominantly rocky, these habitats are very rare. Neretva Delta contains the largest reedbeds in Croatia, with rich communities of breeding birds, unique for the Mediterranean region of Croatia. Freshwater habitats include Neretva River, Norin River and other smaller watercourses; permanent (Kuti, Desansko jezero) and temporary lakes; many springs with water coming out from surrounding karst hills; large number of artificial canals along the agricultural land, containing marsh vegetation significant for some species of waterbirds. Karst hills in and around the delta are covered with Mediterranean and subMediterranean grasslands, Illyrian garrigues as well as with macchia and thickets of the Holm oak (Quercus ilex) and the Pubescent oak (Quercus pubescens). Very important karst habitats are numerous caves rich with underground fauna, including endemic taxa.
Due to this diversity of habitats, Neretva Delta contains rich fish and birdlife that supported the survival of local people through history. Nowadays agriculture is predominant over fishing, hunting loses its importance too. Natural values are more and more regarded as a valuable resource for the development of tourism.
Neretva Delta contains 12 habitat types important on the European level, listed in Annex I of the EU Habitats Directive (NATURA classification) and on Resolution 4 of the Bern Convention (EUNIS classification – in brackets).

See additional material for further information.

## 4.2 - What wetland type(s) are in the site?

Marine or coastal wetlands

| Wetland types (code and name) | Local name | Ranking of extent (1: greatest - 4: least) | Area (ha) of wetland type | Justification of Criterion 1 |
|---|---|---|---|---|
| A: Permanent shallow marine waters | | 4 | | Representative |
| B: Marine subtidal aquatic beds (Underwater vegetation) | | 4 | | Representative |
| E: Sand, shingle or pebble shores | | 4 | | Representative |
| F: Estuarine waters | | 2 | | Representative |
| G: Intertidal mud, sand or salt flats | | 4 | | Representative |
| H: Intertidal marshes | | 3 | | Representative |
| J: Coastal brackish / saline lagoons | | 3 | | Representative |
| Zk(a): Karst and other subterranean hydrological systems | | 2 | | Representative |

Inland wetlands

| Wetland types (code and name) | Local name | Ranking of extent (1: greatest - 4: least) | Area (ha) of wetland type | Justification of Criterion 1 |
|---|---|---|---|---|
| Fresh water > Flowing water >> M: Permanent rivers/ streams/ creeks | | 2 | | Representative |
| Fresh water > Flowing water >> N: Seasonal/ intermittent/ irregular rivers/ streams/ creeks | | 3 | | Representative |
| Fresh water > Lakes and pools >> O: Permanent freshwater lakes | | 3 | | Representative |
| Fresh water > Lakes and pools >> P: Seasonal/ intermittent freshwater lakes | | 4 | | Representative |
| Fresh water > Lakes and pools >> Tp: Permanent freshwater marshes/ pools | | 3 | | Representative |
| Fresh water > Marshes on inorganic soils >> Ts: Seasonal/ intermittent freshwater marshes/ pools on inorganic soils | | 3 | | Representative |

Human-made wetlands

| Wetland types (code and name) | Local name | Ranking of extent (1: greatest - 4: least) | Area (ha) of wetland type | Justification of Criterion 1 |
|---|---|---|---|---|
| 3: Irrigated land | | 3 | | Rare |
| 4: Seasonally flooded agricultural land | | 3 | | Rare |
| 9: Canals and drainage channels or ditches | | 1 | | Unique |

## 4.3 - Biological components

### 4.3.1 - Plant species

Invasive alien plant species

| Scientific name | Common name | Impacts | Changes at RIS update |
|---|---|---|---|
| *Ailanthus altissima* | Tree of heaven | Actually (major impacts) | No change |
| *Amaranthus retroflexus* | Redroot pigweed | Actually (major impacts) | No change |
| *Ambrosia artemisiifolia* | Short ragweed | Actually (major impacts) | No change |
| *Amorpha fruticosa* | Bastard Indigo;False Indigo;Indigobush Amorpha | Actually (major impacts) | No change |
| *Artemisia annua* | Sweet wormwood | Actually (major impacts) | No change |
| *Broussonetia papyrifera* | Paper mulberry | Actually (major impacts) | No change |
| *Paspalum distichum* | Creeping perennial joint grass | No impacts | No change |
| *Rudbeckia hirta* | Black-eyed Susan | Actually (major impacts) | No change |

### 4.3.2 - Animal species

Other noteworthy animal species

| Phylum | Scientific name | Common name | Pop. size | Period of pop. est. | %occurrence | Position in range /endemism/other |
|---|---|---|---|---|---|---|
| CHORDATA/AVES | *Acrocephalus arundinaceus* | Great Reed Warbler | 2000 | | | >2,000 pairs |
| CHORDATA/AVES | *Acrocephalus melanopogon* | Moustached Warbler | 3000 | | | breeding in the site.> 3,000 birds (Ilić, COS – pers.com.). |
| CHORDATA/AVES | *Acrocephalus schoenobaenus* | Sedge Warbler | 15 | | | 10-20 pairs. |
| CHORDATA/AVES | *Acrocephalus scirpaceus* | Eurasian Reed Warbler | 3000 | | | >3,000 pairs (Ilić, COS – pers.com.) |
| CHORDATA/AVES | *Anser albifrons* | Greater White-fronted Goose | | | | |
| CHORDATA/AVES | *Aythya fuligula* | Tufted Duck | | | | |
| CHORDATA/AVES | *Aythya nyroca* | Ferruginous Duck | 11 | | | In 2010 and 2011 the breeding of the Ferruginous Duck (Aythya nyroca) was registered for the first time after more than 30 years, probably due to better regulation of hunting and protection of birds that was noticed during the last several years.7-15 pair |
| CHORDATA/AVES | *Bubo bubo* | Eurasian Eagle-Owl | | | | 27 registered pairs make >1% of national population |
| CHORDATA/AVES | *Cettia cetti* | Cetti's Warbler | | | | |
| CHORDATA/AVES | *Chroicocephalus ridibundus* | Black-headed Gull | 2000 | | | 2,000 ind. of the Black-headed Gull |
| CHORDATA/AVES | *Cisticola juncidis* | Zitting Cisticola | | | | |
| CHORDATA/AVES | *Fulica atra* | Eurasian Coot | | | | |
| CHORDATA/AVES | *Gallinula chloropus* | Common Moorhen | 300 | | | cca 300 pairs |
| CHORDATA/AVES | *Lanius minor* | Lesser Grey Shrike | | | | cca 4% of national population and others |
| CHORDATA/AVES | *Larus michahellis* | Yellow-legged Gull | 2000 | | | up to 2,000 ind |
| CHORDATA/AVES | *Locustella luscinioides* | Savi's Warbler | | | | |
| CHORDATA/AVES | *Pelecanus crispus* | Dalmatian Pelican | | | | |
| CHORDATA/AVES | *Phalacrocorax carbo* | Great Cormorant | 400 | | | cca 400 ind. of the Great Cormorant |
| CHORDATA/AVES | *Rallus aquaticus* | Water Rail | 500 | | | cca 500 pairs |
| CHORDATA/AVES | *Remiz pendulinus* | Eurasian Penduline Tit | | | | |
| CHORDATA/AVES | *Tachybaptus ruficollis* | Little Grebe | | | | |
| CHORDATA/AVES | *Tadorna tadorna* | Common Shelduck | | | | Interesting species |
| CHORDATA/ACTINOPTERYGII | *Carassius gibelio* | Prussian carp | | | | |
| CHORDATA/ACTINOPTERYGII | *Gambusia affinis* | Mosquito-fish | | | | |

| Phylum | Scientific name | Common name | Pop. size | Period of pop. est. | %occurrence | Position in range /endemism/other |
|---|---|---|---|---|---|---|
| CHORDATA/ACTINOPTERYGII | *Gymnocephalus cernua* | | | | | introduced into the Neretva Basin, mostly in the early or mid 20th century with fish stocking of the upper parts of the Neretva River |
| CHORDATA/ACTINOPTERYGII | *Hypophthalmichthys molitrix* | Chinese schemer | | | | |
| CHORDATA/ACTINOPTERYGII | *Hypophthalmichthys nobilis* | Bighead;Big head carp;Big head;Big head | | | | |
| CHORDATA/ACTINOPTERYGII | *Oncorhynchus mykiss* | Redband | | | | |
| CHORDATA/ACTINOPTERYGII | *Pseudorasbora parva* | Stone morokos;Stone moroko | | | | |
| CHORDATA/ACTINOPTERYGII | *Sander lucioperca* | Pikeperch;Pikeperch;Pikeperch;Pikeperch;European pike-perch | | | | introduced into the Neretva Basin, mostly in the early or mid 20th century with fish stocking of the upper parts of the Neretva River |
| CHORDATA/ACTINOPTERYGII | *Silurus glanis* | Sheatfish;Sheatfish | | | | |
| CHORDATA/ACTINOPTERYGII | *Thymallus thymallus* | European grayling;European grayling;European grayling | | | | introduced into the Neretva Basin, mostly in the early or mid 20th century with fish stocking of the upper parts of the Neretva River |
| ARTHROPODA/INSECTA | *Agrius convolvuli* | Convolvulus Hawkmoth | | | | using this area as a part of their migratory route |
| ARTHROPODA/INSECTA | *Coenagrion ornatum* | Ornate Bluet | | | | CRL/NT |
| ARTHROPODA/INSECTA | *Colias croceus* | Clouded Yellow | | | | using this area as a part of their migratory route |
| ARTHROPODA/INSECTA | *Cynthia cardui* | Painted lady | | | | using this area as a part of their migratory route |
| CHORDATA/REPTILIA | *Elaphe quatuorlineata* | Four lined snake | | | | surrounding karst area is important for two more HD Annex II species |
| CHORDATA/REPTILIA | *Emys orbicularis* | European pond turtle | | | | IUCN /NT, ERL/NT, CRL/NT inhabits the wetland |
| ARTHROPODA/INSECTA | *Lestes barbarus* | Migrant Spreadwing;Shy emerald damselfly | | | | CRL/NT |
| CHORDATA/MAMMALIA | *Lutra lutra* | European Otter | | | | – IUCN/NT, ERL/NT, CRL/DD: According to the recent survey of otters in the Mediterranean region of Croatia, it is estimated that 1 2 animals inhabit the area of Baćinska jezera lakes some 4 km far from Neretva Delta, belonging to the same watershed |
| ANNELIDA/POLYCHAETA | *Marifugia cavatica* | Dinaric tube worm | | | | CRL/DD |
| CHORDATA/MAMMALIA | *Myotis emarginatus* | Geoffroy's bat;Geoffroy's Myotis | | | | ERL/LC, CRL/NT |
| CHORDATA/MAMMALIA | *Rhinolophus ferrumequinum* | greater horseshoe bat | | | | ERL/NT, CRL/NT use it for breeding and for migration/wintering. |
| CHORDATA/MAMMALIA | *Rhinolophus hipposideros* | lesser horseshoe bat | | | | ERL/NT, CRL/NT have breeding colonies in this area |
| ARTHROPODA/INSECTA | *Selysiothemis nigra* | Black Pennant | | | | CRL/EN |
| ARTHROPODA/INSECTA | *Somatochlora flavomaculata* | Yellow-spotted Emerald | | | | CRL/NT |
| CHORDATA/REPTILIA | *Zamenis situla* | Leopard snake | | | | IUCN/LC, ERL/LC, CRL/DD (SINP, NATURA database) |
| ARTHROPODA/INSECTA | *Zerynthia polyxena* | Southern Festoon | | | | ERL/LC, CRL/NT |

Invasive alien animal species

| Phylum | Scientific name | Common name | Impacts | Changes at RIS update |
|---|---|---|---|---|
| MOLLUSCA/BIVALVIA | *Arcuatula senhousia* | | Actually (major impacts) | No change |
| ARTHROPODA/MALACOSTRACA | *Callinectes sapidus* | American blue crab;blue crab;hardshell or softshell crab;softshell crab;hardshell crab | Actually (major impacts) | No change |
| ANNELIDA/POLYCHAETA | *Ficopomatus enigmaticus* | Australian tubeworm | Actually (major impacts) | No change |
| CHORDATA/MAMMALIA | *Herpestes javanicus auropunctatus* | Small Indian Mongoose | Actually (major impacts) | No change |
| CHORDATA/REPTILIA | *Trachemys scripta elegans* | Red-eared Slider | Actually (major impacts) | No change |
| CHORDATA/REPTILIA | *Trachemys scripta scripta* | Yellowbelly Slider | Actually (major impacts) | No change |

## 4.4 - Physical components

### 4.4.1 - Climate

| Climatic region | Subregion |
|---|---|
| C: Moist Mid-Latitude climate with mild winters | Csa: Mediterranean (Mild with dry, hot summer) |

The area has Mediterranean climate with mild, rainy winters and hot, dry summers. Here are some basic climate characteristics according to data of the Meteorogical and Hydrological Service of Croatia. The air temperature has an average value of 14–15 °C. The coldest is December – February period with average temperature of cca 7°C, although temperatures can go down to –5°C or even below. The temperatures are highest in July (average cca 25°C) and August and can go over 40°C. Average annual precipitation ranges from 1,250–1,500 mm. December is the rainiest month while July is the driest one with less than 200 mm. Humidity is highest in September, December and January (average 72%) and the lowest in July and August (average 54%).

See additional material for further information.

### 4.4.2 - Geomorphic setting

a) Minimum elevation above sea level (in metres): 0

a) Maximum elevation above sea level (in metres): 135

- Entire river basin ☐
- Upper part of river basin ☐
- Middle part of river basin ☐
- Lower part of river basin ☑
- More than one river basin ☐
- Not in river basin ☐
- Coastal ☑

Please name the river basin or basins. If the site lies in a sub-basin, please also name the larger river basin. For a coastal/marine site, please name the sea or ocean.

Neretva Delta

### 4.4.3 - Soil

- Mineral ☑
  - (Update) Changes at RIS update: No change ◉ Increase ○ Decrease ○ Unknown ○
- Organic ☑
  - (Update) Changes at RIS update: No change ◉ Increase ○ Decrease ○ Unknown ○
- No available information ☐

Are soil types subject to change as a result of changing hydrological conditions (e.g., increased salinity or acidification)? Yes ○ No ◉

Please provide further information on the soil (optional)

Hydromorphic soils prevail in Neretva Delta. Narrow zones along watercourses are covered with alluvial soils (fluvisol). Amphigley soils are represented in wider area, receiving water from rainfall as well as from underground water. Surrounding carbonate hills are covered mostly with calcicambisol ('brown' soil on carbonates) and mould ('black' soil).

### 4.4.4 - Water regime

Water permanence

| Presence? | Changes at RIS update |
|---|---|
| Usually permanent water present | |

Source of water that maintains character of the site

| Presence? | Predominant water source | Changes at RIS update |
|---|---|---|
| Water inputs from surface water | ☐ | No change |

Water destination

| Presence? | Changes at RIS update |
|---|---|
| To downstream catchment | No change |

Stability of water regime

| Presence? | Changes at RIS update |
|---|---|
| Water levels largely stable | No change |

Please add any comments on the water regime and its determinants (if relevant). Use this box to explain sites with complex hydrology:

Neretva River is dominant watercourse of the area. Its main characteristics in this final section are: average annual water level of 91±13 cm (range 65–124 cm); average annual water flow of 269 m³/s (range 44– 2,179 m³/s); average annual water temperature near Metković being 11.9 °C (range 0 – 26 °C). River has a high water level in winter, while during summer there is a lack of water. This is partly due to several hydropower plants upstream in Bosnia and Herzegovina, which hold the most of Neretva waters with dams. In such situations when Neretva has a very small flow downstream of the dams, marine waters enter the river, spreading its influence upstream all the way to Metković (border with Bosnia and Herzegovina).

See additional material for further information

### 4.4.5 - Sediment regime

Sediment regime unknown ☑

### 4.4.6 - Water pH

Alkaline (pH>7.4) ☑

(Update) Changes at RIS update: No change ○ Increase ○ Decrease ○ Unknown ◉

Unknown ☐

Please provide further information on pH (optional):

pH values of Neretva river in the period from 01/01/2015 to 31/12/2017 ranges from 7.7 to 8.1

### 4.4.7 - Water salinity

Fresh (<0.5 g/l) ☑

(Update) Changes at RIS update: No change ◉ Increase ○ Decrease ○ Unknown ○

Mixohaline (brackish)/Mixosaline (0.5-30 g/l) ☑

(Update) Changes at RIS update: No change ◉ Increase ○ Decrease ○ Unknown ○

Euhaline/Eusaline (30-40 g/l) ☑

(Update) Changes at RIS update: No change ◉ Increase ○ Decrease ○ Unknown ○

Hyperhaline/Hypersaline (>40 g/l) ☑

(Update) Changes at RIS update: No change ◉ Increase ○ Decrease ○ Unknown ○

Unknown ☐

### 4.4.8 - Dissolved or suspended nutrients in water

Eutrophic ☑

(Update) Changes at RIS update: No change ◉ Increase ○ Decrease ○ Unknown ○

Unknown ☐

### 4.4.9 - Features of the surrounding area which may affect the Site

Please describe whether, and if so how, the landscape and ecological characteristics in the area surrounding the Ramsar Site differ from the site itself: i) broadly similar ○ ii) significantly different ◉

Surrounding area has greater urbanisation or development ☑

Surrounding area has higher human population density ☐

Surrounding area has more intensive agricultural use ☑

Surrounding area has significantly different land cover or habitat types ☐

Please describe other ways in which the surrounding area is different:

Surroundings of Neretva Delta are made of karst hills that are mostly covered with grasslands and macchia. There are some small settlements scattered over karst hills. Significant part of wider area is covered with numerous roads. Important national and international traffic corridors cross the Ramsar site. On the SW border of the Ramsar site there is the port Ploče – large international port for cargo ships. The port is expanding and developing its infrastructure, so wise management is needed in order not to influence negatively the Ramsar site. On SE, the Ramsar site borders with the marine reserve Malostonski zaljev, famous for shell aquaculture.

## 4.5 - Ecosystem services

### 4.5.1 - Ecosystem services/benefits

Provisioning Services

| Ecosystem service | Examples | Importance/Extent/Significance |
|---|---|---|
| Food for humans | Sustenance for humans (e.g., fish, molluscs, grains) | High |
| Fresh water | Drinking water for humans and/or livestock | Medium |

Regulating Services

| Ecosystem service | Examples | Importance/Extent/Significance |
|---|---|---|
| Maintenance of hydrological regimes | Groundwater recharge and discharge | Medium |
| Erosion protection | Soil, sediment and nutrient retention | Medium |
| Hazard reduction | Flood control, flood storage | Medium |

Cultural Services

| Ecosystem service | Examples | Importance/Extent/Significance |
|---|---|---|
| Recreation and tourism | Water sports and activities | Medium |
| Recreation and tourism | Recreational hunting and fishing | Medium |
| Recreation and tourism | Picnics, outings, touring | Medium |
| Spiritual and inspirational | Cultural heritage (historical and archaeological) | Medium |
| Scientific and educational | Major scientific study site | Medium |
| Scientific and educational | Long-term monitoring site | Medium |

Other ecosystem service(s) not included above:

Project "Reed beds - evaluation of freshwater ecosystem services" is implemented by the Ex. Croatian Agency for Environment and Nature. It is funded by EUROSTAT grants through the module "Knowledge innovation project on accounting for ecosystems". It is also one of the first practical projects on ecosystem services at the national level.
The aim of this project is to evaluate the value of a single ecosystem service in the Republic of Croatia, focusing on ecosystem accounting and testing new methods for assessing ecosystem values. The Reed beds are selected as a testing ecosystem because they are endangered and rare habitats of national and European importance and because of presence of many endangered species, especially birds. The Reed beds are extremely important as breeding grounds, rest areas and wildlife sites.
Neretva Delta (that is Kuti - wetland site) has been selected as one of the pilot project sites and the study "Using wild plant taxa for energy production" will be made by Energetic Institute "Hrvoje Požar" according all collected data on the field.
EUROSTAT project is in progress.

Have studies or assessments been made of the economic valuation of ecosystem services provided by this Ramsar Site? Yes ◉ No ○ Unknown ○

Where economic studies or assessments of economic valuation have been undertaken at the site, it would be helpful to provide information on where the results of such studies may be located (e.g. website links, citation of published literature):

Economic study is being undertaken at Kuti - wetland site.
Above mentioned project EUROSTAT is in the progress now, so results are not available yet.

### 4.5.2 - Social and cultural values

i) the site provides a model of wetland wise use, demonstrating the application of traditional knowledge and methods of management and use that maintain the ecological character of the wetland ☐

ii) the site has exceptional cultural traditions or records of former civilizations that have influenced the ecological character of the wetland ☑

Description if applicable

This area was inhabited by Illyrian tribes as far back as in the Iron Age. In the 4th century B.C., the ancient Greeks founded an emporium (the port) there, which developed into the well-known Roman market town Narona, today called Vid near the Metković town. Many monuments from the Roman times are present here, such as city walls with towers, Roman villas and mosaics. All over the delta around Narona there were suburbs and estates the remnants of which are now covered by the marsh and deposited sediments. The whole area has enormous archeological value. Systematic researches and excavations from the beginning of 20th century had sensational results. The most famous discovery was made in 1996 in the center of the village Vid where the remains of the main square (Roman forum) with the temple devoted to Augustus (Augusteum) were found. The temple that was built cca 10 years BC contained 12 marble statues among which is dominant the impressive 3 m high statue of the emperor Augustus in his imperial dress. Statues have been placed into the temple through 200 years period, and include sculptures of Roman imperial dynasties from times of emperors Augustus, Claudius, Vespasian and Severus. The other famous discovery in Narona was the torso of Livia Drusilla, the wife of Emperor Augustus. The head of Livia belonging to this torso was taken to Ashmolean museum in Oxford in 1878 while the torso is kept locally in the Opuzen town (so-called “Oxford-Opuzen Livia”). This torso probably also belongs to Augesteum. Today the group of imperial sculptures of Augusteum, together with the relief group Ara Pacis in Rome, is the most numerous group of imperial sculptures of the Old Rome in the world. Sculptures of Augestum have been restored and shown in numerous museum exhibitions throughout the Europe. Today sculptures are kept in Museum Narona in the village of Vid opened in 2007 as the only in situ museum in Croatia.
The Christianity can be traced in the Neretva Delta as far back as from the middle of the 5th century. Of the five Early Christian sacral monuments the dominant one is St Vid's Basilica with very well preserved baptistery at the place of the present church in Vid. The medieval monuments are only few. During the Turkish invasion at the end of the 15th century, the impressive fortress Norinska kula (Fortress of Norin) was built by the Otoman Empery at the mouth of the Norin River into the Neretva, serving for defense against Venetian ships.

iii) the ecological character of the wetland depends on its interaction with local communities or indigenous peoples ☑

Description if applicable

People are present in Neretva Delta for thousands of years, turning wetland into arable land and establishing transportation routes towards the hinterland. Agriculture was developing gradually through traditional way of creating land parcels in the marsh (digging channels and putting excavated soil aside, thus making small land plots). These traditional channels are called “jendeci” and form unique, specific landscape in Europe.

iv) relevant non-material values such as sacred sites are present and their existence is strongly linked with the maintenance of the ecological character of the wetland ☐

## 4.6 - Ecological processes

<no data available>

# 5 - How is the Site managed? (Conservation and management)

## 5.1 - Land tenure and responsibilities (Managers)

### 5.1.1 - Land tenure/ownership

Public ownership

| Category | Within the Ramsar Site | In the surrounding area |
|---|---|---|
| National/Federal government | ☑ | ☑ |

Private ownership

| Category | Within the Ramsar Site | In the surrounding area |
|---|---|---|
| Other types of private/individual owner(s) | ☑ | ☑ |

Other

| Category | Within the Ramsar Site | In the surrounding area |
|---|---|---|
| Unspecified mixed ownership | ☑ | ☑ |

Provide further information on the land tenure / ownership regime (optional):

within the Ramsar site:

Land ownership is one of the most significant issues related to land use and management in Neretva Delta. Situation with property rights in the area is very complex and the status of the most of agricultural land is not clear (state vs. private ownership). A part of the Stateowned agricultural land is being leased to local people.

### 5.1.2 - Management authority

Please list the local office / offices of any agency or organization responsible for managing the site: Public Institution for the Management of Protected Natural Areas of Dubrovnik-Neretva County

Provide the name and title of the person or people with responsibility for the wetland: Marijana Miljas Đuračić, Director

Postal address:
Branitelja Dubrovnika 41
20000 Dubrovnik
Croatia

tel: +385 20 411 534
web: zastitaprirodednz.hr

E-mail address: info@prirodadnz.hr

## 5.2 - Ecological character threats and responses (Management)

### 5.2.1 - Factors (actual or likely) adversely affecting the Site's ecological character

Water regulation

| Factors adversely affecting site | Actual threat | Potential threat | Within the site | Changes | In the surrounding area | Changes |
|---|---|---|---|---|---|---|
| Drainage | Medium impact | Medium impact | ☑ | No change | ☑ | No change |
| Salinisation | Medium impact | Medium impact | ☑ | No change | ☐ | No change |
| Canalisation and river regulation | Medium impact | Medium impact | ☐ | No change | ☑ | No change |

Biological resource use

| Factors adversely affecting site | Actual threat | Potential threat | Within the site | Changes | In the surrounding area | Changes |
|---|---|---|---|---|---|---|
| Hunting and collecting terrestrial animals | Medium impact | Medium impact | ☑ | No change | ☐ | No change |

Natural system modifications

| Factors adversely affecting site | Actual threat | Potential threat | Within the site | Changes | In the surrounding area | Changes |
|---|---|---|---|---|---|---|
| Dams and water management/use | Medium impact | Medium impact | ☑ | No change | ☑ | No change |
| Vegetation clearance/ land conversion | Medium impact | Medium impact | ☑ | No change | ☐ | No change |

Pollution

| Factors adversely affecting site | Actual threat | Potential threat | Within the site | Changes | In the surrounding area | Changes |
|---|---|---|---|---|---|---|
| Household sewage, urban waste water | Medium impact | Medium impact | ☑ | No change | ☐ | No change |
| Industrial and military effluents | Medium impact | Medium impact | ☑ | No change | ☐ | No change |
| Agricultural and forestry effluents | Medium impact | Medium impact | ☑ | No change | ☐ | No change |

Please describe any other threats (optional):

within the Ramsar site:
The most prominent factors in the past that adversely affected ecological character of Neretva Delta were connected to water management, including land reclamation activities with the purpose of turning wetland into agricultural land. Today the largest threats are also connected to issues of water management and agriculture sectors. As the consequence of water regulation activities in surrounding area of Croatia in Bosnia and Herzegovina, there is an obvious trend of decrease of water level and quantity in Neretva Delta that adversely affect not only wetland habitats and biological diversity of Delta but also agriculture. The less water in Neretva and its tributaries in Delta, the stronger influence of the sea and salinization of water and soil can be expected. There are different water management plans and projects currently going on in Neretva Delta. They deal with solving the problem of salinization; irrigation of agricultural land; flood control, treatment of sewage water of the town Metković and other activities. There are even plans for further meliorations of remained wetland areas. Other problems and threats to ecological character of the Ramsar site include: expansion and intensification of agriculture; excessive use of pesticides and fertilizers; fragmentation of wetland habitats; spreading of urban zones on account of wetland; water pollution with nonIpurified urban and industrial waters; unsolved land property rights; illegal taking of state owned agricultural land, including marshes; nonIregulated recreational and touristic activities, especially on the river mouth, illegal hunting and fishing; frequent fires in reedbeds.

in the surrounding area:
In the surrounding area especially problematic are issues related to transboundary water management and numerous water regulations in catchment area of the Neretva and neighboring Trebišnjica River in Bosnia and Herzegovina. Watersheds of these two rivers are connected through karst underground. RelIdirection of waters from so called Upper horizons (“Gornji horizonti”) of Trebišnjica River into the area of Lower horizons (“Donji horizonti”) with three existing hydropower plants results in loss of water in lower Neretva area, lower summer water level, drying out of water springs and strengthening of influence of the sea. There are plans to even increase these activities and to take the most of available water for additional use of hydropower plants in eastern Herzegovina.

## 5.2.2 - Legal conservation status

Regional (international) legal designations

| Designation type | Name of area | Online information url | Overlap with Ramsar Site |
|---|---|---|---|
| EU Natura 2000 | HR1000031 | http://natura2000.dzzp.hr/reportpublish/reportproxy.aspx?paramSITECODE=HR1000031 | whole |
| EU Natura 2000 | HR5000031 | http://natura2000.dzzp.hr/reportpublish/reportproxy.aspx?paramSITECODE=HR5000031 | whole |

National legal designations

| Designation type | Name of area | Online information url | Overlap with Ramsar Site |
|---|---|---|---|
| Significant landscape | Modro oko and Desne Lakes | | partly |
| Special ichtiological and ornithological reserve | Jugoistočni dio delte Neretve | | partly |
| Special ornithological reserve | Prud, Pod Gredom and Orepak | | partly |

Non-statutory designations

| Designation type | Name of area | Online information url | Overlap with Ramsar Site |
|---|---|---|---|
| Important Bird Area | | | |

## 5.2.3 - IUCN protected areas categories (2008)

Ia Strict Nature Reserve ☐

Ib Wilderness Area: protected area managed mainly for wilderness protection ☐

II National Park: protected area managed mainly for ecosystem protection and recreation ☐

III Natural Monument: protected area managed mainly for conservation of specific natural features ☐

IV Habitat/Species Management Area: protected area managed mainly for conservation through management intervention ☑

V Protected Landscape/Seascape: protected area managed mainly for landscape/seascape conservation and recreation ☑

VI Managed Resource Protected Area: protected area managed mainly for the sustainable use of natural ecosystems ☐

### 5.2.4 - Key conservation measures

Legal protection

| Measures | Status |
|---|---|
| Legal protection | Implemented |

Human Activities

| Measures | Status |
|---|---|
| Regulation/management of recreational activities | Proposed |
| Communication, education, and participation and awareness activities | Proposed |

Other:

In ornithological reserves hunting is forbidden while in ichthiological ornithological reserve of Jugoistočni dio delte Neretve fishery is also forbidden. Fishery is strictly regulated in the whole marine area of Neretvanski Kanal which is proclaimed a special habitat for fish and other marine organisms according to the Marine Fishery Law.
Fishery, forestry and hunting are being implemented through sectoral management plans that are obliged to contain nature conservation measures issued by the ministry responsible for nature protection matters. The same is with water management annual programs of works and regular maintenance of waters. As Neretva Delta is the National ecological network site, all projects that could significantly influence its target features are subject to the procedure of nature impact assessment. General restrictions and procedures for issuing permits for planned projects and activities, including impact assessment, are determined by the Nature Protection Law and the Law on Environmental Protection.

In order to achieve effective conservation of Ramsar site's values in future, it would be important to:
• Proclamation of wetland "Kuti" as special ornithological reserve (the background study is already done by Ministry of Environment and Energy)
• Extension of the border of special ornithological and ichtiological reserve "Jugoistočni dio Delte Neretve" (the background study is already done by ministry of Environment and Energy)
• Modification of borders of Modro oko and Desne Lakes and their re-categorization from Significant landscape to Special ornithological reserve (the background study is already done by Ministry of Environment and Energy)
• Establish systematic cooperation between Croatia and Bosna and Hercegovina for transboundary management of two Ramsar sites in Lower Neretva Valley (Neretva Delta and Hutovo Blato), including development of transboundary management plan
• Prepare transboundary environmental impact assessment for water management projects that influence both countries
• Adoption of Draft of Management plan of Neretva River Delta
• Prevent further degradation of wetland habitats in Neretva Delta and restore degraded parts, where appropriate and possible
• Support development of ecological agriculture and ensure the system of incentive measures (agrienvironment measures) for naturefriendly agriculture
• Develop sustainable tourism and recreation programs and activities, based on biological diversity, landscape, cultural and traditional values
• Ensure systematic monitoring of birds and other target features of ecological network site
• Strengthen promotion of Ramsar site as well as educational and public awareness activities
• Build bird watching hides and towers; ensure educational trails and other facilities for visitors and researchers

### 5.2.5 - Management planning

Is there a site-specific management plan for the site? In preparation

Has a management effectiveness assessment been undertaken for the site? Yes ◉ No ○

If the site is a formal transboundary site as indicated in section Data and location > Site location, are there shared management planning processes with another Contracting Party? Yes ○ No ◉

Please indicate if a Ramsar centre, other educational or visitor facility, or an educational or visitor programme is associated with the site:

Public Institution for the Management of Protected Natural Areas of Dubrovnik-Neretva County built two Observatory for birds by means of the loan of World Bank. Both observatories are situated in EU NATURA 2000 site. One observatory is situated on the Galičak hill near the mouth of Neretva River and the other is situated in special reserve "Pod Gredom".

Through the project named: "Promoting the sustainable development of the natural heritage of the Neretva Valley" the series of educational and visitor facilities and programmes will be built and conducted by the end of 2020. The coordinator of this project is Dubrovnik-Neretva County.

URL of site-related webpage (if relevant): https://zastita-prirode-dnz.hr/

### 5.2.6 - Planning for restoration

Is there a site-specific restoration plan? No, but restoration is needed

### 5.2.7 - Monitoring implemented or proposed

| Monitoring | Status |
|---|---|
| Birds | Implemented |
| Animal species (please specify) | Implemented |
| Plant species | Proposed |
| Water regime monitoring | Implemented |
| Water quality | Implemented |

Croatian Ornithological Society and Brkata sjenica Association have been conducting a long time monitoring for wintering, migration and nesting birds. More than 150 species of birds have been monitored in this Ramsar site.

According to Managament Plan of Neretva delta 2018-2027 (in preparation), following monitoring of species and habitats is planned for ten-years period:
• Monitoring of connection of coastal lagoons with the sea
• Monitoring of Embryonic shifting dunes (NATURA 2000 Code: 2110)
• Monitoring of bladetail (Lyndenia tetraphillia)
• Monitoring of European Pond Turtle (Emys orbicularis) and Balkan Terrapin (Mauremys rivulata)
• Monitoring of Hermann's tortoise (Testudo hermanni)
• Monitoring of snakes - Four-lined Snake (Elaphe quatuorlineata) and European ratsnake (Elephe situla)
• Monitoring of the structure of the fish fry at the mouth of Neretva river
• Monitoring of target fish species (Sea lamprey (Petromyzon marinus), Po brook lamprey (Lethenteron zanandreai), Mediterranean shad (Alosa fallax), White bleak (Alburnus albidus), Dalmatian soiffe (Chondrostoma knerii), Neretvan spined loach (Cobitis narentana), Imotzki spined loach (Cobitis illyrica), Spotted minnow (Phoxinellus adspersus), Adriatic Dace (Leuciscus svallizae), Croatian goby (Knipowitschia croatica), Adriatic dwarf goby (Knipowitschia panizzae), Canestrini's Goby (Ninnigobius canestrinii), Marble trout (Salmo marmoratus), Adriatic trout (Salmothymus obtusirostris))
• Monitoring of target bat species (Schreibers' Bat (Miniopterus schreibersii), Long-fingered Bat (Myotis capaccinii), Geoffroy's bat (Myotis emarginatus), Mediterranean Horseshoe Bat (Rhinolophus euryale), Lesser Horseshoe Bat (Rhinolophus hipposideros), Greater Horseshoe Bat (Rhinolophus ferrumequinum))
• Monitoring of Eurasian Otter (Lutra lutra)
• Monitoring of invasive species
• Monitoring of alochtone hunding bird species – chukar (Alectoris chukar) and controle and prevent its introducing
• Monitoring of wintering birds population (International Waterbird Census) with particular emphasis on Jack Snipe (Lymnocryptes minimus) and Merlin (Falco columbarius)
• Monitoring of certain wintering, migration and nesting bird species

# 6 - Additional material

## 6.1 - Additional reports and documents

### 6.1.1 - Bibliographical references


• Antolović, J., Frković, A., Grubešić, M., Holcer, D., Vuković, M., Flajšman, E., Grgurev, M., Hamidović, D., Pavlinić, I. i Tvrtković, N.: Crvena knjiga sisavaca Hrvatske, Ministarstvo kulture, Državni zavod za zaštitu prirode, Zagreb, 2006
• Barun A, Simberloff D, Tvrtković N, Pascal M (2011) Impact of the introduced small Indian mongoose (Herpestes auropunctatus) on abundance and activity time of the introduced ship rat (Rattus rattus) and the small mammal community on Adriatic islands, Croatia. NeoBiota 11: 51–61. doi: 10.3897/neobiota.11.1819
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• Jasprica, N.: Flora delte Neretve, Regionalni centar zaštite okoliša za Srednju i Istočnu Europu, Udruga za zaštitu prirode i okoliša Eleonora, Zagreb, 2007
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• Koren i suradnici: Prilog poznavanju herpetofaune Amphibia & Reptilia donjeg dijela rijeke Neretve (Hrvatska i BiH), Hyla, Zagreb, 2012
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• Nikolić, T. i Topić, J. (urednici): Crvena knjiga vaskularne flore Hrvatske, Ministarstvo kulture, Državni zavod za zaštitu prirode, Zagreb, 2005
• Nacrt Plana upravljanja Delte Neretve 2018-2027, Javna ustanova za upravljanje zaštićenim dijelovima prirode Dubrovačko-neretvanske županije, Dubrovnik, 2018
• Strategija i akcijski plan zaštite biološke i krajobrazne raznolikosti Republike Hrvatske (NN 72/17)
• Tutiš, V., Kralj, J., Radović, D., Ćiković, D., Barišić, S. (ur.): Crvena knjiga ptica Hrvatske. Ministarstvo zaštite okoliša i prirode, Državni zavod za zaštitu prirode, Zagreb, 2013
• Standard form for Natura 2000 sites HR5000031 i HR1000031, 2018, www.bioportal.hr/gis/ and http://natura2000.dzzp.hr/
• www.invazivnevrste.hr


### 6.1.2 - Additional reports and documents

i. taxonomic lists of plant and animal species occurring in the site (see section 4.3)
<no file available>

ii. a detailed Ecological Character Description (ECD) (in a national format)
<no file available>

iii. a description of the site in a national or regional wetland inventory
<no file available>

iv. relevant Article 3.2 reports
<no file available>

v. site management plan
<no file available>

vi. other published literature
<3 file(s) uploaded>

### 6.1.3 - Photograph(s) of the Site

Please provide at least one photograph of the site:


Kuti Lake ( *Ana Tutavac, 22-05-2018* )


Delta Neretva ( *Ana Tutavac, 16-01-2018* )


Baćinska Lakes ( *Ana Tutavac, 16-01-2018* )


Desne Lake ( *Ana Tutavac, 16-01-2018* )


Modro oko Lake ( *Ana Tutavac, 16-01-2018* )


Delta Neretva, Sea ( *Ana Tutavac, 16-01-2018* )


Delta Neretva ( *Ana Tutavac, 16-01-2018* )


Parila Lagoon ( *Ana Tutavac, 21-05-2018* )


Delta Neretva ( *Ana Tutavac, 21-05-2018* )


Delta Neretva ( *Ana Tutavac, 21-05-2018* )


Blace Bay - Salicornia europea ( *Ana Tutavac , 11-09-2018* )


Laeflet - preserve wetland habitats from fire in the Neretva River Delta ( *Marijana Miljas Đuračić, 09-07-2015* )


Anas platyrhynchos ( *Archives of Public Institution, 20-10-2016* )


Emys orbicularis ( *Archives of Public Institution, 20-10-2016* )


Mauremys rivulata ( *Archives of Public Institution, 20-10-2016* )


Nymphaea alba L. ( *Archives of Public Institution, 17-08-2017* )


Egretta garzetta ( *Archives of Public Institution, 08-11-2017* )


Egretta alba ( *Archives of Public Institution, 08-11-2017* )


Numenius arquata ( *Archives of Public Institution, 08-11-2017* )


Himantopus himantopus ( *Archives of Public Institution, 08-11-2017* )

Panurus biarmicus (
*Archives of Public Institution, 08-11-2017* )

## 6.1.4 - Designation letter and related data

Designation letter
<1 file(s) uploaded>

Date of Designation 1992-11-02