

Template for Submission of Scientific Information to Describe Areas Meeting Scientific Criteria for Ecologically or Biologically Significant Marine Areas

Title/Name of the area:

Ropotamo

Abstract The proposed area represents the largest marine space protected within Natura 2000 ecological network in the Bulgarian Black Sea, namely the Special Area of Conservation Ropotamo BG0001001, designated under the Habitats Directive. It comprises coastal and marine part in the Bulgarian Black Sea. The terrestrial part includes Ramsar sites, CORINE biotopes sites, protected areas at national level. The marine area is stretching over 881.91 km² (89.9 % of the total area). It comprises a unique and rare for the Bulgarian Black Sea biotopes in terms of biodiversity, status, scope and of high conservation status - the "Lower infralittoral with sciophilic *Phyllophora crispa* association", communities of photophilic brown macroalgae, mussel banks on sediment with high diversity of the accompanying invertebrate fauna and fishes. The aquatory is an important habitat of the shad fishes for migration routes to the spawning grounds as well as significant for the protection of cetacean populations.

Introduction

Water depths range from 0 m along the shoreline to 75 m at the eastern boundary of the protected site. The area of conservation comprises a variety of marine habitats of national and European conservation importance including sandbanks, rocky reefs, seagrass meadows and biogenic reefs. SAC Ropotamo contains the largest shares of the national area of the Habitats Directive Annex I listed habitat types 1170 Reefs and 1110 Sandbanks which are slightly covered by sea water all the time, 15 % and 13 % respectively, which ranks the site first of importance for the maintenance and restoration of the favourable conservation status of these habitat types.

The seafloor shows a rather complex and variable morphology. In the coastal area down to water depths of 30-35 m the seafloor morphology is dominated by scattered rocky reefs build up by volcanic rocks. Substrate is dominated by sandy mud in the offshore area, while the coastal area substrates are very heterogeneous, composed of rocky reefs, sands with different grain size and shelly gravel. Sedimentary biotopes represent national subtypes of the habitat type 1110 "Sandbanks which are slightly covered by sea water all the time", listed in Annex I of the EU Habitats Directive as well as and 1170 Reefs. Although the muds are not a qualifying feature of SAC Ropotamo, their good ecological status is essential in order to ensure the continuity and the food base of the demersal fishes, such as turbot and sturgeons, listed as "important species" at the site.

Part of the data for this proposal is provided by a study „Benthic Habitat Mapping in the Bulgarian Black Sea”, aiming to produce benthic habitats maps in the site by integrating acoustic, geological and biological data, using digital terrain models, acoustic survey and modeling. Source of information are also scientific studies and terrain surveys carried out in terms of NATURA 2000 designation of the site, cited in the NATURA 2000 Standard Data From.

Location

Longitude: 27.9343

Latitude: 42.3019

Area [ha]: 98099.76

Marine area [%]: 89.9

Within national jurisdiction

BG0001001 РОПОТАМО

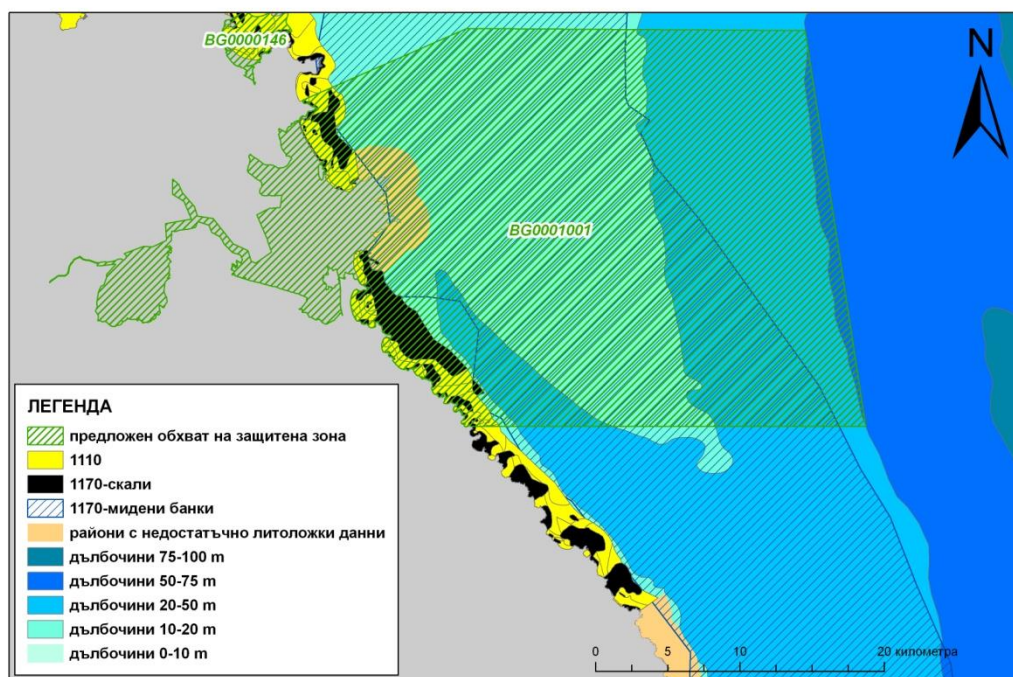


Figure 1. Scope and boundaries of Ropotamo SAC NATURA 2000 site.

Feature description of the proposed area

The site comprises the low and not steep lateral branches of Strandja mountain chain with its outskirts sliding into the Black Sea. The site includes vast areas covered with dunes and with patches of forested dunes between them. The inland is mostly forested. The Ropotamo River forms beautiful preserved estuary. The cliffy coast prevails with an average height 11-13 m and consists of magmatic rocks and metamorphosed sedimentary rocks, calcareous sandstone and limestone. The cliffy coast prevails with an average height 11-13 m. Accumulative coast is situated in the central parts of the small bays and is of two types: type firth - Ropotamo beach and type lagoon - Dyuni beach and Arkutino beach. On the seabed are observed rocky banks, made of igneous rocks, at a distance of 600 m to 2200 m from the coastline and with relative height of 5 m to 12.5 m. Accumulative coast covers: the firth type - the beaches of Primorsko, Kiten and Atliman and the lagoon type the Stomoplo beach. The rocky bottom, formed of calcareous sandstone and marl-limestone complex, reveals just before the shore for the abrasive coast type and reaches 600 m to 2200 m from the shoreline. The rocky banks have a height above the seabed of 3 m to 10-15 m and reach a depth down to -40 m. On the beach and the underwater coastal slope the medium sands prevail.

On the rocky reefs in the area was discovered and explored unique in terms of biodiversity, status and scope for Bulgarian Black Sea biotope of sciophilic macroalgae "Lower infralittoral with sciophilic *Phyllophora crispa* association", classified as a subtype of habitat 1170. This is a rare biotope, occurring only in clean and transparent waters at depths more than -10 m, and therefore of high conservation significance at national and regional level. In the area there are favorable morphological and physico-geographical conditions for extensive development of *Phyllophora crispa*: large area of the rocky substrate in optimal depth horizons, low levels of eutrophication, high transparency of the water column and favorable light climate underpinning the development of the sciophilic macroalgae. All along the rocky reefs in the area at depths of 0 to -10 ÷ 12 m was found massive presence of biotopes of high conservation value - communities of the photophilic brown macroalgae *Cystoseira crinita* and *Cystoseira barbata*, classified as subtype of habitat 1170. The greater depth of penetration of *C. barbata* (-12 ÷ 13 m), species and quantitative composition of the macroalgae communities are typical of oligotrophic conditions.

The marine area includes mussel banks on sediment (subtype of habitat 1170) with significant area, coverage and biomass of the habitat-forming species *Mytilus galloprovincialis*, a relatively large average size and good dimensional structure of the black mussels, high diversity of the accompanying

invertebrate fauna and fishes. The prospects for maintaining the mussel banks are good given the low levels of anthropogenic pressure. The marine area includes 14% of the national coverage of mussel banks. Although the muds are not a qualifying feature of SAC Ropotamo, their good ecological status is essential in order to ensure the continuity and the food base of the demersal fishes, such as turbot and sturgeons, listed as “important species” at the site. The aquatory is habitat of the shad fishes of the genus *Alosa*, and in spring through there pass the migration routes of the shoals to the spawning grounds in the rivers, and upon completion of the reproductive process, the representatives of the genus inhabit the aquatory, where they actively nurture. The aquatory preserves about 7% of the national population of *Alosa immaculata*, calculated on the basis of the potential habitat of the species in the productive shelf zone. The marine part of the site is a permanent habitat for both target cetacean species. As a potential habitat for cetaceans it is of the highest class in terms of abundant trophic base, preserved ecosystems with rich biodiversity and relatively low levels of contamination with petroleum products. The significance of the marine area for the conservation of the populations of the target species of cetaceans is: for Harbor Porpoise the aquatory of the site protects 11% of the national population, and for the Bottlenose Dolphin 8%, calculated on the basis of potential habitats for the species in the productive shelf zone.

The area is designated at international level as a Ramsar site, namely the Ropotamo Complex. Its water areas include the estuary of the river, the adjacent Reserve Velyov vir (Vodnite lilii) and three coastal lagoons: Arkutino, Alepu and Stamopolu. Ropotamo Reserve and Alepu are CORINE biotopes sites as well. Apart from that, the coastal area consists of several protected areas at national level, incl. the Ropotamo Reserve (with the aim protection of the unique flora and fauna along the coast) and natural monuments „Alepu Marsh” (with the aim conservation of the natural habitats of protected and rare waterfowl birds and the only locality of devil walnut on the Black Sea coast), „Pyasachni dyuni - Mestnost Alepu”, „Skalnite Obrazovania, Fiordite I Tyulenovata Peshtera V Mestnost Maslen Nos”.

There are almost no agricultural lands in the site. The main anthropogenic impact is from the existing road which cuts important ecotones. Relatively low extend of petroleum pollution.

Feature condition and future outlook of the proposed area

(Description of the current condition of the area – is this static, declining, improving, what are the particular vulnerabilities? Any planned research/programmes/investigations?)

Assessment of the area against CBD EBSA Criteria

CBD EBSA Criteria (Annex I to decision IX/20)	Description (Annex I to decision IX/20)	Ranking of criterion relevance (please mark one column with an X)			
		No information	Low	Medium	High
Uniqueness or rarity	Area contains either (i) unique (“the only one of its kind”), rare (occurs only in few locations) or endemic species, populations or communities, and/or (ii) unique, rare or distinct, habitats or ecosystems; and/or (iii) unique or unusual geomorphological or oceanographic features.				X
<i>Explanation for ranking</i>					
Area shelters a rare biotope of sciophilic macroalgae "Lower infralittoral with sciophilic <i>Phyllophora crispa</i> association", classified as a subtype of habitat 1170, occurring only in clean and transparent waters at depths more than -10 m, and therefore of high conservation significance at national and regional level. All along the rocky reefs in the area at depths of 0 to -10 ÷ 12 m was found massive presence of biotopes of high conservation value - communities of the photophilic brown macroalgae <i>Cystoseira crinita</i> and <i>Cystoseira barbata</i> , classified as subtype of habitat 1170.					

The small secluded bays between **Tsarevo and Lozenets** possess unique charm and attractiveness. Preserved naturalness and very good ecological conditions, highly varied representative habitats and occurrence of rare and threatened species, undoubted value for research and monitoring and aesthetic attractiveness qualify the area as priority site for conservation.

In this area we came across the rare red alga *Phyllophora nervosa*, a species which loss has become a symbol of the Black Sea ecological degradation during the second half of the 20th century. The area harbours a number of other rare species. In the sandy bottom we found the rare bivalve *Loripes lacteus*. We also encountered the rare fishes *Pomatoschistus minutus*, *Coryphoblennius galerita* and *Symphodus ocellatus*.

The region of the Bulgarian Black Sea coast in the area of **Cape Maslen nos – Ropotamo river estuary** is distinguished by extraordinary variety of coastal and marine habitats. The coasts are characterized by indented fjords and small sheltered bays, delineated by numerous peninsulas ending with unapproachable capes with steep volcanic cliffs. Underwater habitats are equally varied and remarkable. The rocky bottom slopes down vertically to invisible depths at some places. The rose-coloured turfs of the calcareous red alga *Corallina officinalis* overgrow the shallow bedrock and boulders making them look like coral reefs. A rare rocky habitat established in the area is limestone punctured by the rock-boring bivalve *Petricola lithophaga*. Another unique, remarkable unknown habitat found in this area is a huge biogenic reefs built by the native flat oyster *Ostrea edulis* (Micu and Todorova, 2007), tube-building serpulid polychaetes also contributing in the reef structure as cementing element. “Ostrak” – this is how those reefs are called by the local fishermen. Different interpretations about its name – originating from Bulgarian word “ostar”, meaning sharp, associating it with the edges of oyster shells sticking out from the reef or most probably originating from the Greek word “Ostrakon” meaning oyster shell and has probably been given to the oyster reefs by the ancient Greeks, who first witnessed their existence thousands of years ago.

Unlike the flat oyster beds commonly known from the intertidal of Western Europe and North America, Black Sea ostrak are massive, towering biogenic structures, dwarfing the human observer. Ostrak reefs occur in clear marine waters with no freshwater input, forming a belt between 7 and 23 m depth, parallel to rocky coasts.

Special importance for life-history stages of species	Areas that are required for a population to survive and thrive.				X
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Explanation for ranking

In the area there are favorable morphological and physico-geographical conditions for extensive development of *Phyllophora crispa*: large area of the rocky substrate in optimal depth horizons, low levels of eutrophication, high transparency of the water column and favorable light climate underpinning the development of the sciophilic macroalgae.

Although the muds are not a qualifying feature of SAC Ropotamo, their good ecological status is essential in order to ensure the continuity and the food base of the demersal fishes, such as turbot and sturgeons, listed as “important species” at the site. The aquatory is habitat of the shad fishes of the genus *Alosa*, and in spring through there pass the migration routes of the shoals to the spawning grounds in the rivers, and upon completion of the reproductive process, the representatives of the genus inhabit the aquatory, where they actively nurture. The aquatory preserves about 7% of the national population of *Alosa immaculata*, calculated on the basis of the potential habitat of the species in the productive shelf zone. Ground surveys carried out in terms of NATURA 2000 site designation shows highest number of *Alosa* sp. in the depth range 50 – 75 m. Young individuals prevailing in the size structure determines the area as an important site for feeding and nursery /growth. Historical data of fisheries statistics (through realized catches data in the period 1925 – 2011) prove a permanent habitation of *Alosa* fishes.

Importance for threatened,	Area containing habitat for the survival and recovery of endangered, threatened, declining species or area with significant assemblages of				X
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endangered or declining species and/or habitats	such species.				
<i>Explanation for ranking</i>					
<p>In the area of Tsarevo – Lozenets, the huge previous stocks in the North-western shelf of the rare red alga <i>Phyllophora nervosa</i> (symbol of the Black Sea ecological degradation during the second half of the 20th century) are now depleted.</p> <p>In the area of Cape Maslen nos – Ropotamo river estuary sedimentary bottom provides a variety of habitats. Habitats of high conservation interest are seagrass meadows of <i>Zostera marina</i>, <i>Zannichellia pedicellata</i> and <i>Potamogeton pectinatus</i>, which are representative of shallow sheltered locations with fine sand. In front of Ropotamo river estuary <i>Z. marina</i> shoots attain the extreme length of 2.5-3 m. Among seagrasses we chanced upon the rare goby <i>Zosterisessor ophiocephalus</i>, which is included in the IUCN world list of threatened species. Other important habitats are sediments inhabited by Thalassinid crustaceans: fine sands with <i>Pestarella candida</i> and sandy silts with <i>Upogebia pusilla</i>, the former being a rare species. Ample trophic resources carried by Ropotamo river determine particularly high diversity of gastropods (<i>Cyclope neritea</i>, <i>Nassarius nitidus</i>, <i>Rissoa splendida</i>, <i>Bittium reticulatum</i>) and bivalves (<i>Loripes lacteus</i>, <i>Lentidium mediterraneum</i>, <i>Chamelea gallina</i>, <i>Donax trunculus</i>, <i>Tellina tenuis</i>, <i>Cerastoderma glaucum</i>) that inhabit the sands in front of the estuary. The huge biogenic reef “Ostrak” built by the native flat oyster <i>Ostrea edulis</i> most probably is declining thus records of abundant oysters date back decades ago.</p> <p>Regarding abundant trophic base, preserved ecosystems with high biodiversity and relatively low levels of contamination with petroleum products, the area is a permanent habitat of a significant importance for both cetacean species 1349 Tursiops truncatus и 1351 Phocoena phocoena. The significance of the marine area for the conservation of the populations of the target species of cetaceans is: for Harbor Porpoise the aquatory of the site protects 11% of the national population, and for the Bottlenose Dolphin 8%, calculated on the basis of potential habitats for the species in the productive shelf zone.</p>					
Vulnerability, fragility, sensitivity, or slow recovery	Areas that contain a relatively high proportion of sensitive habitats, biotopes or species that are functionally fragile (highly susceptible to degradation or depletion by human activity or by natural events) or with slow recovery.				X
<i>Explanation for ranking</i>					
<p>The marine area includes mussel banks on sediment (subtype of habitat 1170) with significant area, coverage and biomass of the habitat-forming species <i>Mytilus galloprovincialis</i>, a relatively large average size and good dimensional structure of the black mussels, high diversity of the accompanying invertebrate fauna and fishes. The prospects for maintaining the mussel banks are good given the low levels of anthropogenic pressure. The marine area includes 14% of the national coverage of mussel banks.</p> <p>Fishes of the genus <i>Alosa</i> are at considerable stage sensitive to anthropogenic impact, especially regarding human access to reproduction and spawning areas as well as regarding ecological status of their environment.</p>					
Biological productivity	Area containing species, populations or communities with comparatively higher natural biological productivity.	X			
<i>Explanation for ranking</i>					
Biological diversity	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.				X

Explanation for ranking

The Ropotamo river estuary is considered to be a referent point regarding sea grasses.

On the rocky reefs in the area was discovered and explored unique in terms of biodiversity, status and scope for Bulgarian Black Sea biotope of sciophilic macroalgae "Lower infralittoral with sciophilic *Phyllophora crispa* association", classified as a subtype of habitat 1170. This is a rare biotope, occurring only in clean and transparent waters at depths more than -10 m, and therefore of high conservation significance at national and regional level. In the area there are favorable morphological and physico-geographical conditions for extensive development of *Phyllophora crispa*: large area of the rocky substrate in optimal depth horizons, low levels of eutrophication, high transparency of the water column and favorable light climate underpinning the development of the sciophilic macroalgae. All along the rocky reefs in the area at depths of 0 to -10 ÷ 12 m was found massive presence of biotopes of high conservation value - communities of the photophilic brown macroalgae *Cystoseira crinita* and *Cystoseira barbata*, classified as subtype of habitat 1170. The greater depth of penetration of *C. barbata* (-12 ÷ 13 m), species and quantitative composition of the macroalgae communities are typical of oligotrophic conditions.

Ample trophic resources carried by Ropotamo river determine particularly high diversity of gastropods (*Cyclope neritea*, *Nassarius nitidus*, *Rissoa splendida*, *Bittium reticulatum*) and bivalves (*Loripes lacteus*, *Lentidium mediterraneum*, *Chamelea gallina*, *Donax trunculus*, *Tellina tenuis*, *Cerastoderma glaucum*) that inhabit the sands in front of the estuary.

The marine area includes mussel banks on sediment (subtype of habitat 1170) with significant area, coverage and biomass of the habitat-forming species *Mytilus galloprovincialis*, a relatively large average size and good dimensional structure of the black mussels, high diversity of the accompanying invertebrate fauna and fishes.

Regarding abundant trophic base, preserved ecosystems with high biodiversity and relatively low levels of contamination with petroleum products, the area is a permanent habitat of a significant importance for both cetacean species 1349 *Tursiops truncatus* и 1351 *Phocoena phocoena*. The significance of the marine area for the conservation of the populations of the target species of cetaceans is: for Harbor Porpoise the aquatory of the site protects 11% of the national population, and for the Bottlenose Dolphin 8%, calculated on the basis of potential habitats for the species in the productive shelf zone.

In addition, a list of Species referred to in Article 4 of Directive 2009/147/EC and listed in Annex II of Directive 92/43/EEC and site evaluation for them is provided in the NATURA 2000 Standard Data Form.

Naturalness	Area with a comparatively higher degree of naturalness as a result of the lack of or low level of human-induced disturbance or degradation.				X
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Explanation for ranking

The site comprises the low and not steep lateral branches of Strandja mountain chain with its outskirts sliding into the Black Sea. The site includes vast areas covered with dunes and with patches of forested dunes between them. The inland is mostly forested. The Ropotamo River forms beautiful preserved estuary.

The small secluded bays between **Tsarevo and Lozenets** possess unique charm and attractiveness. Preserved naturalness and very good ecological conditions, highly varied representative habitats and occurrence of rare and threatened species, undoubted value for research and monitoring and aesthetic attractiveness qualify the area as priority site for conservation.

During diving surveys the coasts of **cape Maslen nos**, in the summer of 2007, in terms of the edition **MARINE PROTECTED AREAS IN BULGARIA – PRESENT AND PROSPECTS** authors share the finding of a remarkable unknown habitat: Amazingly, in the 21st century the Black Sea still keeps undiscovered secrets - a huge biogenic reefs built by the native flat oyster *Ostrea edulis* (Micu and Todorova, 2007).

Sharing experiences and information applying other criteria (Optional)

Other Criteria	Description	Ranking of criterion relevance (please mark one column with an X)			
		Don't Know	Low	Medium	High
Add relevant criteria					
Explanation for ranking					

References

- NATURA 2000 - STANDARD DATA FORM

http://natura2000.moew.government.bg/PublicDownloads/Auto/PS_SCI/BG0001001/BG0001001_PS_16.pdf

- **REPORT in comply with Contract N 7976 / 04.04.2011** between The Enterprise for management of environmental activities in Ministry of environment and water and The Oceanology Institute in Bulgarian Academy of Science on Project „Разширяване на екологичната мрежа НАТУРА 2000 в българската черноморска акватория за преодоляване на средната недостатъчност по отношение на морските местообитания 1110 „Постоянно покрити от морска вода пясъчни и тинести плитчини” и 1170 „Рифове”, и видовете 4125 *Alosa immaculata*, 1349 *Tursiops truncatus* и 1351 *Phocoena phocoena* и частично попълване на научни резерви за местообитание 1180 „Подводни структури, образували се под действието на просмукващи се газове” и вид 1349 *Tursiops truncatus* в съответствие със заключенията на европейския тематичен център по биоразнообразие от Биоеографския семинар за Черно море, 15 юни 2010 г., Бриндизи”, edited June 2012.

- MARINE PROTECTED AREAS IN BULGARIA – PRESENT AND PROSPECTS

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- BENTHIC HABITAT MAPPING IN THE BULGARIAN BLACK SEA

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Maps and Figures

Figure 1. Scope and boundaries of Ropotamo SAC NATURA 2000 site.

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