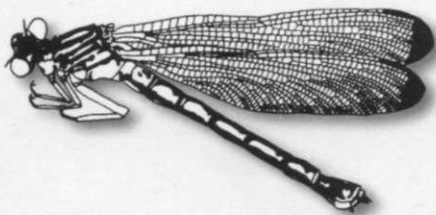
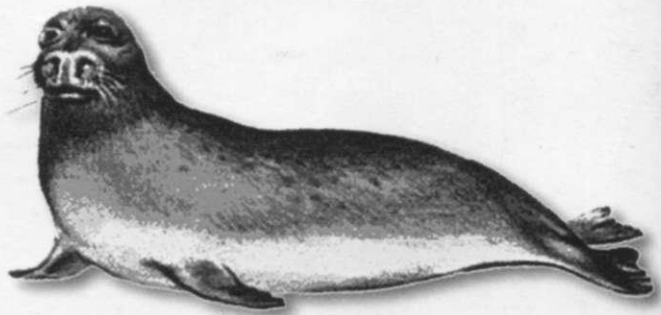
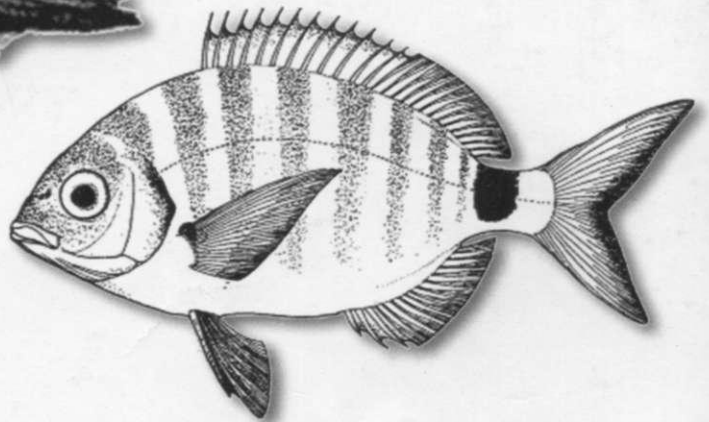
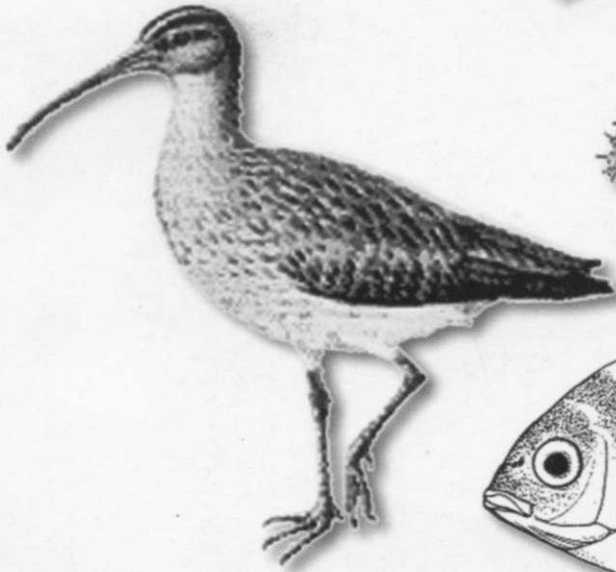
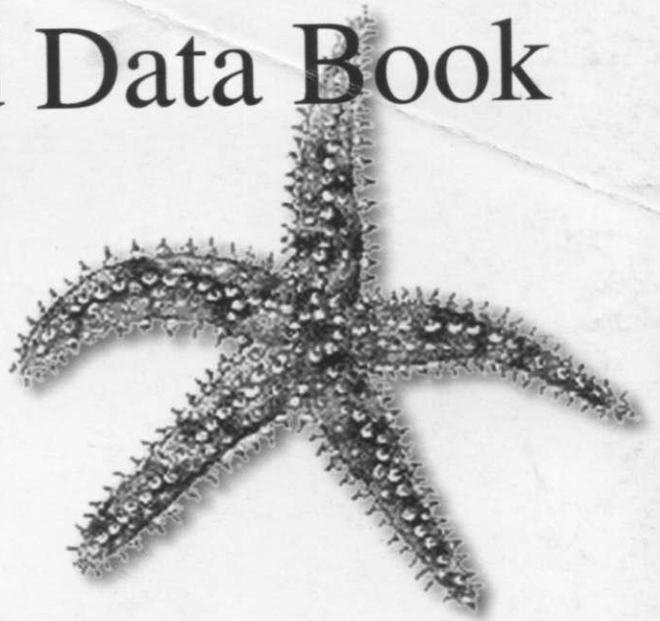
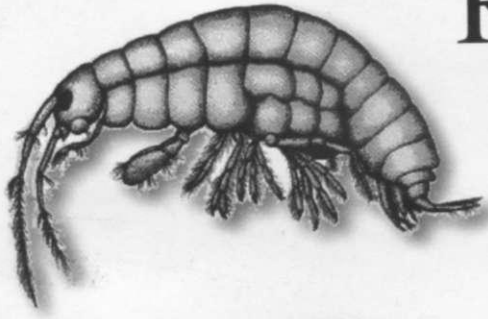


# BLACK SEA

## Red Data Book



# BLACK SEA RED DATA BOOK



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# **BLACK SEA RED DATA BOOK**

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## EDITOR'S PREFACE

This "paper form" of the Black Sea Red Data book is not an exact copy of its predecessor, the Black Sea Red Data web site. In addition to polishing the language and style, I added a number of illustrations, and some distribution maps were also redrawn.

Contentwise, I was struck by the high level of commitment of the numerous scientists associated with this project. Inevitably, there were differences in approach and in the level of thoroughness between contributions. By far the most detailed species sheets were those contributed by the ornithologists, while some of the most synthetic ones were found among the botanical entries. I tried to conserve as much of the original flavour as I could, yet also aimed at harmonising contributions as far as feasible, and this was certainly the case for such formal aspects as styling of the references, including details of punctuation. The practice of numbering was abandoned in favour of an alphabetical system.

While I welcome the initiative of including some terrestrial groups that populate the littoral fringe of the Black Sea, I did have some problems with the choice of species in certain cases. For example, it is not because a species is rare in Bulgaria or Romania, that it should also be endangered in the rest of the Black Sea fringe. In the case of the aquatic insects belonging to the Odonata, I therefore had to widen the scope of some items listed in the book to what lives along the south and east margins of the Sea, and I included a number of previously unlisted subspecies. This, the vicariance and the formation of clines with a various degree of steepness of closely related taxa around the basin, is one of the most exciting aspects of the living world of the Black Sea fringe. Even so, I regret the selection of particular species of insects and plants, and the omission of others since, in addition to the aspect I just stressed, there is a concentration of endemics in the south-east corner of the basin, where Caucasian biota with very narrow ranges occur down to sea-level. Among dragonflies, I may cite *Coenagrion ponticum* and *Cordulegaster mzyntae* as examples. I did not explicitly add them to the list, but inserted a brief note on them in the section dealing with *Calopteryx virgo feminalis*, which is yet another representative of this category. There are doubtlessly many plants in the same category, and hence, the contents of a future Red Data book of the Black Sea should be revised in light of this reality.

Finally, I encountered some problems with the taxonomic nomenclature used. Some taxa were listed under names that are widely considered to be junior synonyms or otherwise unvalid. In all instances where I stumbled upon such a case (and without claiming to have conducted an exhaustive search), I took the responsibility of replacing it by the binomen that is currently regarded as valid. For the botanical part, I was privileged to receive expert help from my colleague Prof. P. Goetghebeur, to whom I here extend my greatest thanks.

Henri J. Dumont  
Ghent, June 1999

## INTRODUCTION

This book was created within the framework of the GEF Black Sea Environment Programme, at the Data Base Laboratory of Marine Hydrophysical Institute, Sevastopol, Ukraine, but contributors came from all Black Sea countries (for a list, see further).

The GEF Black Sea Environmental Programme (BSEP) was established in June 1993 with three primary objectives: to strengthen and create regional capacities for managing the Black Sea ecosystem; to develop and implement an appropriate policy and legal framework for the assessment, control and prevention of pollution and the maintenance and enhancement of biodiversity; and to facilitate the preparation of sound environmental investments.

The BSEP is to be implemented through an interactive matrix of national coordinators, thematic regional activity centers and focal point institutions targeting: emergency response, routine pollution monitoring, special monitoring, biodiversity protection, coastal zone management, environmental legislation and economics, data management and GIS, and fisheries. The overall programme coordination was conducted by a Project Coordination Unit (PCU), based in Istanbul.

As described in the Strategic Action Plan for the Rehabilitation and Protection of the Black Sea: "A regional Black Sea Red Data Book (BSRDB), identifying and describing endangered species, will be developed because, at present, there are no Red Data Books or Lists which cover all the threatened and rare species of the entire Black Sea ecosystem. To date, no regional Red Data Book had been prepared for the marine environment anywhere in the world — the BSRDB is the first; the BSRDB includes Black Sea species which are already mentioned in national and international Red Data Books and Lists, plus other Black Sea threatened species which will be introduced to the BSRDB by specialists using accumulated data. The Black Sea Red Data Book includes: threatened and rare species of marine plants and animals; and, threatened and rare species of coastal organisms which are ecologically close to the marine environment

The BSRDB exists in two versions: as a conventional book (this version), and as a web site and CD-ROM. Both versions include an Introduction (how to use the document.), a main text with species files, and a list of references.

The preparation of the Regional List, one of the most important stages in the design of the BSRDB, required multiple cross-consultations between various specialists both from within and outside the Black Sea region. The resulting Regional List is therefore not be a simple amalgamation of national lists.

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### **Geographical Coverage of the Black Sea Red Data Book**

It was decided that the geographical scope of the BSRDB should cover the Black Sea and the Sea of Azov, and also their coasts, including wetlands connected to the sea. The geographical scope of the BSRDB does not cover the entire Black Sea basin or extend to the Sea of Marmara. The geographical scope of the BSRDB is thus not identical with the scope of the GEF BSEP.

### **International Union of Conservation of Nature Categories used in this Red DataBook.**

The IUCN Red List Categories of the IUCN Species Survival Commission (1994) to describe the status of each species were used, viz.

- Extinct (EX)
- Extinct in the Wild (EW)
- Critically Endangered (CE)
- Endangered (EN)
- Vulnerable (VU)
- Lower Risk (LR)
- Data Deficient (DD)

### **General Structure of the Black Sea Red Data Book**

This Book consists of:

- an introduction
- sheets (files) describing threatened species of plants, including Algae (part 1) and animals (part 2)
- annexes (references, indexes)

The book was written in English. The scientific names of each species are also given in Latin and in the official languages of the Black Sea countries (Bulgarian, Romanian, Russian, Turkish and Ukrainian). The species descriptions (sheets/files) are divided into sections according to plant and animal taxonomy. Each species description includes the following information:

- names: full scientific name, synonym(s), common names
- taxonomy: order, family, taxonomic comments
- picture of a species (as an aid to its identification)
- IUCN status: global status, Black Sea regional level (regional view on population status), subregional (national) levels
- distribution (including a map)
- habitat type, critical habitats, limiting factors
- notes on biology (since the 1960s, including the dynamics of species numbers)
- threats (anthropogenic impacts)
- conservation measures taken
- conservation measures proposed
- references
- the compilers' name(s)

The Scientists who contributed in compiling species descriptions for the Black Sea Red Data Book are:

### **Bulgaria**

Andreev, S.; Dencheva, K.; Filipova, M.; Konsulov, A.; Konsulova, T.; Kumanski, K.; Nankinov, D.; Prodanov, K.; Siykov, Y.; Stanev<sup>A</sup>T.

### **Georgia**

Komakhidze, A.

### **Romania**

Bayaru, A.; Bologa, A.; Dumitrache, C; Gomoiu, M.-T.; Moldoveanu, M.; Petranu, A.; Radu, G.; Stanciu, M; Tiganus, V.; Verioti, F.

### **Turkey**

Ozturk, B.

### **Ukraine**

Alexandrov, B.; Andryushchenko, Y.; Ardamatzkaia, T.;Birkun, A.; Chernichko, J.; Dyatlov, S.; Gerasimov, S.; Gorlov, P.; Gubanov, V.; Khutornoy, S.; Kinda, V.; Kolodkovskaya, E.; Krivokhizhin, S.; Minicheva, G.; Monchenko, V.; Siokhin, V.; Vakhrusheva, L.; Vasilieva, T.; Vorobyova, L.; Yena, A.; Zaitsev, Yu.

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## **SUMMARIES OF RED DATA BOOKS IN THE BLACK SEA COUNTRIES**

### **1. BULGARIA**

by Tsonka Konsulova

The "Red Data Book (RDB) of the Republic of Bulgaria" was published in 1985 in order to make the public familiar with the prevailing state of plant and animal species which were found only infrequently in the country, e.g. they were not as widespread as "ordinary ones". Three categories of deficiency were adopted:

- Category A - plant and animal species and subspecies that had disappeared or become extinct
- Category B - plant and animal species and subspecies that were threatened either because of an unfavorable change in their habitats and narrow ecological niches or because of poor self-restoration of their populations
- Category C - rare plant and animal species, which either consisted of only a very small number of specimens or were extremely limited in occurrence and which, if no urgent measures were taken for their protection, were in danger of becoming extinct.

The two-volume Bulgarian RDB provides a sound basis for a large number of initiatives and statutory acts aimed at the improvement, protection and restoration of the species included. It also serves as a basis for the adoption of measures to protect other species that are not yet included in it. The species in the Bulgarian RDB were classified according to our present level of knowledge on their "genetic fund" (= their total genetic variation or gene pool); this knowledge is rather scarce on certain groups of plants and animals. Volume 2 of the Bulgarian RDB includes information on 157 vertebrate species of the classes Cyclostomata, Osteichthyes, Amphipoda, Reptilia, Aves and Mammalia. The description of each species contains the following

information: Category of the species; Distribution; Abundance (density); Habitat characteristics; Reproduction; Factors affecting negative consequences; conservation measures taken; Conservation measures proposed; References.

The Bulgarian RDB gives the number of extinct (Category A), threatened by extinction (Category B) and rare (Category C) animals as follows:

	Fishes	Amphibia Reptilia	Birds	Mammals	Total
Category A	3	2	9	2	<b>16</b>
Category B	16	9	57	8	<b>90</b>
Category C	4	4	34	9	<b>51</b>
<b>Total</b>					<b>157</b>

Of these 157 animals, 65 are marine and brackish water species. They are subdivided as follows:

Fishes	Amphibia Reptilia	Birds	Mammals	Total
19	2	39	5	<b>65</b>

The RDB of Bulgaria (animals) consists of the following chapters: Preface, Maps of the Existing and Projected Protected Faunistic Areas of National and International Importance, List of Extinct (A), Threatened (B) and Rare (C) Animals in Bulgaria as of 1 January, 1982, Fishes (Cyclostomata, Osteichthyes), Amphibia, Reptilia, Birds, Mammals, References, Index of Bulgarian names of animal species and subspecies, Index of Latin names of animal species and subspecies, Index of Bulgarian RDB authors, Summary in Russian, Summary in English, Legend of the chronological species maps in Bulgaria

## 2. GEORGIA

by Akaki Komakhidze

The following publications are available in Georgia: The Red Data Book of the USSR, 1984. Vol. 1 and 2, Moscow, Lesnaya promysh-lennost Publ. (in Russian); and the Red Data Book of the Georgian Republic. 1982, Tbilisi, Sabchota Sakartvelo Publ. (in Georgian).

The Red Data Book (RDB) of the USSR uses five different status categories:

- 1st category. Endangered species which cannot be saved without special measures.
- 2nd category. Species with respectively high numbers, but declining so dramatically that they could quickly become endangered.

- 3rd category. Rare species which are not endangered at the moment, but occur in such low numbers or in such limited areas that they could become extinct if there were unfavorable changes in their habitat due to natural or anthropogenic impacts.
- 4th category. Species whose biology has been insufficiently studied or whose number or condition causes concern, but for which the data is insufficient to assign them to any of above categories.
- 5th category. Rehabilitated species which are no longer in danger and whose future has been secured by protective measures but which are not exploited industrially and whose numbers need to be constantly controlled.

The following species of Black Sea fauna and flora are included in the RDB of the USSR: the sturgeon (*Acipenser sturio*), the monk seal (*Monachus monachus*); and the Black Sea bottlenose dolphin (*Tursiops truncatus ponticus*).

The RDB of Georgia contains status categories, namely:

- 1st category. Species which are almost extinct or whose habitats are difficult to access
- 2nd category. Endangered species
- 3rd category. Rare species

The following species of Black Sea fauna and flora are included in the RDB of Georgia:

- the sturgeon *Acipenser sturio* Linnaeus, 1758;
- the monk seal *Monachus monachus* Hermann, 1779.

The compilation of a Black Sea RDB necessitates a consistent approach to classification in all the littoral states. It is suggested that the classification adopted in 1994 by the International Union on the Conservation of Nature (IUCN) be taken as a basis, namely:

- Extinct (EX) - a taxon is considered extinct when the last individual dies.
- Extinct in the wild (EW) - when a taxon can be saved in cultivation, captivity or when research cannot locate an individual at the time (daily, seasonally, annually) which corresponds to the life cycle of the taxon concerned.
- Taxon crucially endangered (CR) - when a taxon is endangered under certain conditions.



-Taxon endangered (EN) - a taxon which is not threatened with extinction at the moment, but faces high risks and may disappear in the near future.

-Vulnerable (VU) - a taxon is considered vulnerable when does not come under any of the above categories, but may become endangered under certain conditions.

-Taxon with low risk (LR) - all remaining taxa. They can be divided into three subcategories:

-Dependent on conservation.

-Close to danger.

-With the lowest risk.

-Category with deficient data (DD) - includes taxa on which information is inadequate to evaluate the risk of extinction. IUCN adopted criteria for each category taking into account the number, distribution, habitat and existing potential level of exploitation.

-Non-evaluated (NE) - includes taxa which cannot be included in any of the above categories.

However, we believe that for the marine hydrobionts such classification is so detailed and complicated as to make it impossible to use practically. The issue should be studied by relevant experts and an acceptable classification adopted according to their recommendations. All the littoral states should set up national expert teams to assist with the compilation of a Black Sea RDB. These teams will identify the geographical areas (swamps, estuaries, adjacent lakes, etc.) connected with the Black Sea and decide whether they should be included in the Black Sea RDB. Only after the geographical scope of the book has been finalized can other issues connected with the Red Book be discussed.

### **3. ROMANIA**

by Adriana Petranu

There is no national Red Data Book (RDB) in Romania. The preparation of a Danube Delta RDB is one of the tasks of the Strategic Plan for the Management of Danube Delta, and considerable information concerning the marine sector of the delta is already stored in its database. In addition, some Romanian marine biologists have published lists of rare and threatened species, including a Red List of extinct, endangered, rare and insufficiently known benthic macrophytes in the Romanian

Black Sea. An inventory of marine algae was prepared on the basis of categories proposed by the International Union on the Conservation of Nature (IUCN). Field studies covering the last three decades identified 143 macrophytes in Romanian maritime waters, including: 20 extinct and endangered species (6 Chlorophyta, 4 Phaeophyta, 10 Rhodophyta), 34 rare species (6 Chlorophyta, 2 Xanthophyta, 9 Phaeophyta, 17 Rhodophyta), and four insufficiently known species (1 Phaeophyta, 3 Rhodophyta).

<b>Extinct and Endangered Species of Marine Macrophytes in Romania</b>		
<b>Chlorophyta</b>	<b>Phaeophyta</b>	<b>Rhodophyta</b>
<i>Cladophora rupestris</i>	<i>Myrionema strangulans</i>	<i>Corallina elongata</i>
<i>Cladophora hatchinsiae</i>	<i>Petalonia zosterifolia</i>	<i>Dasya baillouriana</i>
<i>Enteromorpha kylinii</i>	<i>Pilayella littoralis</i>	<i>Erythrocladia irregularis</i>
<i>Enteromorpha torta</i>	<i>Stictyosiphon adriaticus</i>	<i>Gelidium latifolium</i>
<i>Entocladia viridis</i>	<i>Gelidiella antipai</i>	
<i>Pseudopringsheimia confluens</i>	<i>Laurencia ortusa</i>	
	<i>Lophosiphonia reptarunda</i>	
	<i>Polysiphonia riolacea</i>	
	<i>Spermothamnion strictum</i>	
	<i>Stylonema alsidii</i>	

Five species of Natantia and three species of Reptantia decapods have disappeared from Romanian Black Sea coastal waters:

<b>Extinct Species of Decapods in Romania</b>	
<b>Natantia</b>	<b>Reptantia</b>
<i>Hippolyte inermis</i> Leach, 1815	<i>Callianassa pontica</i> Czern, 1884
<i>Lysemata seticaudata</i> Risso, 1816	<i>Callianassa truncata</i> Giard-Bonnier, 1890
<i>Pontophylus fasciatus</i> Hailst, 1835	<i>Macropodia aegyptia</i> Milne-Edov, 1834
<i>Pontophylus trispinosus</i> Hailst, 1835	
<i>Processa pontica</i> Sorinsky, 1885	

#### 4. RUSSIA

by Stanislav Volovik

The Red Data Book of the USSR (1984) and the Red Data Book of the RSFSR (1983) were published in Russia. The following Black Sea/Azov Sea Basin animal species are included in the Red Data Book (RDB) of the USSR:

- Mammals - .....15 species (9 species in Russia);
- Birds - .....22 species (15 in Russia)
- Amphibians and Reptiles -15 species (4 in Russia)
- Fish - .....1 species (1 in Russia)
- Arthropods - .....66 species (55 in Russia)
- Crustaceans - .....1 species (1 in Russia)
- Molluscs - .....1 species (1 in Russia)

The RDB of the RSFSR contains less species than the RDB of the USSR, particularly as regards aquatic organisms. For example, the RSFSR RDB does not include any species of Black Sea/Azov Sea fish or molluscs.

In 1996 a two-volume book of the rare and endangered plants and animals in the Rostov-on-Don region was published. It includes some representatives of Black Sea/Azov Sea ecosystems, but the data presented pertains to the early and mid 1980s. During the preparation of Russian National Report on Black Sea Biodiversity it was found that in recent years the population status of many species in the Rostov-Don region has deteriorated. It is possible that a similar situation exists in the Krasnodar region, although data has yet to be published. Support should be provided for the publication of a RDB for the Black Sea/Azov Sea Basin. The State Committee of Fisheries of the Russian Federation promised to provide some financial support for the preparation of the book, but only for the section on aquatic organisms.

All the threatened and rare organisms in the marine and coastal ecosystems (including wetlands) should be included in the Black Sea RDB. A source of funding should be sought for specialists who will compile data on plants (excluding algae), amphibians, reptiles, birds and mammals.

## 5. TURKEY

by Bay ram Ozturk

No Red Data Book (RDB) has yet been published in Turkey. After the Turkish Ministry of the Environment signed the Rio Declaration in 1992, it decided to prepare a Turkish RDB. The book will include both aquatic and terrestrial organisms. Even though Turkey has no RDB, some threatened species are nevertheless under legal protection. For example, all catching of *Huso huso*, *Monachus monachus*, and three cetacean species in the Black Sea is forbidden. DHKD, a Turkish NGO, recently compiled a Turkish RDB for birds.

## **STATUS OF THE MONK SEAL (*M.monachus*) ON THE BLACK SEA COASTS OF TURKEY**

By Cem Kirac

The existence of the Monk Seals was mentioned by Mursalaglu (1964), Berkes (1978), Ozturk (1996) and Kirac & Savas(1996). Two monk seals were recorded on the Turkish Black Sea coast in 1991 -1994, swimming along the coast between Cide, Gatalzeytin, Inebow, Abana and Doganyurt (Ozturk, 1996). Meanwhile, studies of AFAG between Akcakoca and Zonguldak (74 km of coastline) performed between 1989 and 1994 revealed that monk seal is extinct in this zone, with the last regular sighting dating back to December 1987 (Kirac & Savas, 1996). SAD/AFAG made two expeditions along these coasts in 1993 and 1994, respectively. Our studies included interviews with professional fishermen who spend more hours and days at sea than scientists and conservationists can afford. Also, amateur fishermen, sailors, divers and other interested people were interviewed. A standard inquiry form of AFAG for "Monk Seal Sightings" was used in collecting data; each sighting sheet is stored in a Dbase Program. In contrast to our studies made on the western coasts (between Akcakoca and Zonguldak), AFAG could not make field studies in the Central Black Sea due to limited finance. However, we could obtain preliminary data about the existence of monk seals (approximate number and approximate distribution on 350 km of coastline). The results show that minimum three monk seals survive on the Turkish Black Sea Coasts. This number is not the result of individual identifications but reflects the total number of seal sighted together. AFAG obtained 97 seal sighting data for 1960-1995, against 78 sighting data for 1990-1995 (July). There were two seals together (n=4) in three different locations in 1990-1995 and three seals together (n=3) in three different locations in 1990 - 1995. The locations having multiple seal sightings indicate higher numbers of monk seals than indicated above. Habitat degradation is minimal and there is little tourist development in this zone of Turkish Black Sea Coast. Protection of species is therefore easier than in other parts of Turkey (Kirac & Veryeri, 1996; Guclusoy, 1995,1996). There are also 17 caves, found by Ozturk (1996) in just one part of the mentioned zone.

### **6. UKRAINE**

by Boris Alexandrov

Law N2750-XU "Red Data Book of Ukraine" was signed on 29 October 1992. According to this law, 430 species of plants and 396 species of animals in Ukraine are listed as Red Data Book (RDB) organisms. They include 19 species of algae and 100 species of which are inhabitants of the Black Sea. The first volume of the Ukrainian RDB (Animals) was published in 1994. It includes pictures, maps and detailed description of extinct and endangered species. The second volume (Plants) was

published in February 1997. It is available from the Ministry for Environmental Protection and Nuclear Safety of Ukraine.

Some Ukrainian specialists recommend including in the Black Sea RDB species which do not live in the sea but have causal relations (trophic and living connections) with marine ecosystems. These include some species of birds and plants which inhabit coastal dunes, peninsulas, islands and wetlands. The following list of these organisms has been compiled by ornithologists (Dr. J. Chernichko, Ju. Andriuschenko, V. Kinda and P. Gorlov from the Azov-Black Sea Ornithological Station of Ukraine) and botanists (Dr. S. Djatlov and Dr. T. Vasiljeva-Nemertsalova from Odessa State University):

<b>Plants</b>	
<i>Eryngium maritimum</i> L.	<i>Ephedra distachya</i> L.
<i>Crambe pontica</i> Stev. Ex. Rupri.	<i>Cladium mariscus</i> (L.) R. Br.
<i>Chrysopogon gryllus</i> (L.) Trin.	<i>Eremogone cephalotes</i> (Bieb.) Fenzl.
<i>Ornithogalum refractum</i> Schlecht	<i>Pancreatium maritimum</i> L.

<b>Birds</b>		
<i>Pelecanus onocrotalus</i>	<i>Accipiter brevipes</i>	<i>Anthropoides virgo</i>
<i>Pelecanus crepus</i>	<i>Buteo rufinus</i>	<i>Otis tarda</i>
<i>Phalacrocorax aristotelis</i>	<i>Circaetus gallicus</i>	<i>Tetrax tetrax</i>
<i>Phalacrocorax pygmaeus</i>	<i>Hieraaetus pennatus</i>	<i>Burhinus oedienemus</i>
<i>Areola ralloides</i>	<i>Aquila rapax</i>	<i>Charadrius alexandrinus</i>
<i>Platalea leucorodia</i>	<i>Aquila clanga</i>	<i>Himantopus nimantopus</i>
<i>Plegadis falcinellus</i>	<i>Aquila pomarina</i>	<i>Haematopus ostralegus</i>
<i>Ciconia nigra</i>	<i>Aquila heliaca</i>	<i>Tringa stagnatilis</i>
<i>Rufibrenta rufficollis</i>	<i>Aquila chrysaetos</i>	<i>Numenius tenuirostris</i>
<i>Cygnus bewickii</i>	<i>Larus ichthyaetus</i>	<i>Numenius arquata</i>
<i>Tadorna ferruginea</i>	<i>Hydroprogne caspia</i>	<i>Numenius phaeopus</i>
<i>Bucephala clangula</i>	<i>Bubo bubo</i>	<i>Glareola pratíncola</i>
<i>Aythya myroca</i>	<i>Haliaetus albicilla</i>	<i>Glareola nordmanni</i>
<i>Somateria mollissima</i>	<i>Motacilla saxatilis</i>	<i>Emberiria melanocephala</i>
<i>Oxyura leucocephala</i>	<i>Aegyptius monochus</i>	<i>Sturnus roseus</i>
<i>Mergus serrator</i>	<i>Gyps fulvus</i>	<i>Neophron percnopterus</i>
<i>Pandion haliaetus</i>	<i>Falco cherrug</i>	<i>Tyto alba</i>
<i>Milvus milvus</i>	<i>Falco peregrinus</i>	<i>Lanius senator</i>
<i>Circus cyaneus</i>	<i>Falco naumanni</i>	
<i>Circus macrourus</i>	<i>Grus grus</i>	

## SPECIES SHEETS

# PART I. PLANTS (INCLUDING ALGAE)

### *Aegilops geniculata* (Roth)

**Synonyms:** *Aegilops ovata* p., 1759; *Aegilospontica* auct. (Deg.) Valev, 1963; *Aegilops lorentii* auct. Höchst., 1845.

**Common names:** Bulg: *Kolenchato divo zhito*, *Pontiyski egilops*, *Lorentsiev egilops*.

**Order** POALES

**Family** POACEAE

**Taxonomic description.** A hairy plant with a hairy root, noded stems gathered in tufts reaching upwards from 20 cm to 40 cm. Flat and thick leaves. The spike (without awns) is 2-3 cm long, hard, with 3-4 spikelets of which the upper 1-2 are always non-fructiferous and the lower two always fructiferous, rounded, slightly swollen with 6-8 awns each. The chaffs of the fructiferous spikelets are strongly bristlelike, rugged along the veins but naked between them, ending at the tip, with two long almost similar awns.



#### **IUCN Status**

World level:

Black Sea Regional level:

Subregion level: **CE**

*Allium guttatum* Steven, 1809

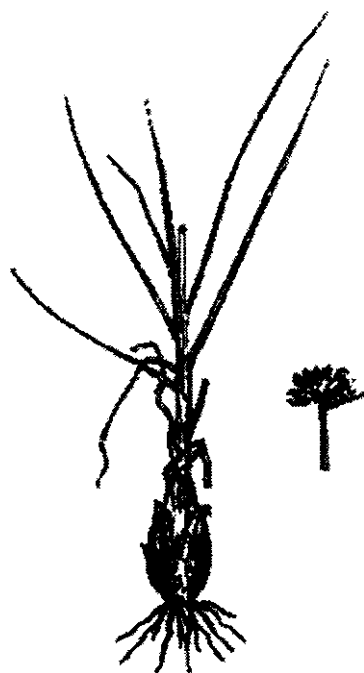
**Synonyms:** None

**Common names:** Engl: *Spotted onion*; Russ: *Luk krapchaty*; Turk: *Kiyi sogani*; Ukr: *Tsybulya krapchasta*

**Order** AMARYLLIDALES

**Family** ALLIACEAE

**Taxonomic description.** A bulbous perennial grassy plant, 30-70 cm in height. Daughter bulbs and substituting bulb capsules are yellow or grey. Leaves semicylindrical and with a chute on the upper side, not narrowed to petioles. Stem thickness about seven mm. Flowers associated in the top umbel floscule without bulbs, enclosed into a cover. Perianth petals about 2.5-3.0 mm lengthwise, white with a violet or brown spot in the middle, with one vein, and the perianth petals combined at the base. Stamen threads longer than perianth petals by a quarter. Interior stamen threads extend to a top, three-toothed. Middle tooth, carrying an anther, shorter than thread-like lateral ones.



**IUCN Status**

World level: **NE**

Black Sea Regional level: **EN**

Subregion level: **CR** in Ukraine

Novosad, V. V., 1992. Flora Kerchensko-Tamanskogo Regiona. (The Flora of the Kerch-Taman Region). Kiev, Naukova Dumka: 277 pp. (in Russian).

Rubtsov, N. I. (Ed.), 1972. Opredelitel' vysshikh rasteniy Kryma. (Identification Book of the Crimean Higher Plants). Leningrad, Nauka: 550 pp. (in Russian).

*Compiled by L. Vakhrusheva*



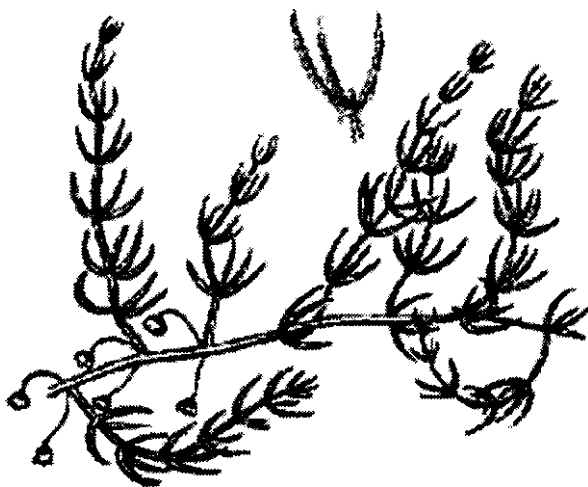
*Asparagus brachyphyllus* Turczaninov, 1840

**Synonyms:** *Asparaguspallasii* Mizez., *Asparagusponcticus* Woronow

**Common names:** Engl: *Short-leaved asparagus*; Bulg: *Asperja*; Russ: *SparzJia korotkolistnaya*, *Sparzha Pallasa*; Turk: *Asparagus*; Ukr: *Kholodok korotkolysty*, *Kholodok Pallasa*

**Order** ASPARAGALES  
**Family** ASPARAGACEAE

**Taxonomic description.** A perennial prostrate grass with slightly rising wriggled curved thin stems (2-3 mm in diameter) in the top part. Cladodes 5-10 mm long, lengthwise fan-like diverging and slightly sickle-like curved, dove-coloured, in bundles of 3-6. The plants are dioecious, the flowers are unisexual, and located on the main lateral branches, one or two per floriferous stem. The fruit is a berry.



**IUCN Status**

World level: NE

Black Sea Regional level: VU

Subregion level: VU in Ukraine

**Distribution, Habitat type, Critical habitats, Limiting factors.** Occurs on a littoral strip of steppe and saline land close to the sea coast or to salty lakes. Critical habitats: Crimea steppe near Razdol'noye, sandy coast of Karkinit Bay, northern coast of Kerch peninsula (Bagerovo, Kurortnoye). Limiting factors: overgrazing, destruction by storms and other severe weather conditions.

Velchev, V. (Ed.), 1984. Chervena kniga na NR Bulgaria. Tom 1. Rasteniya. (The Red Data Book of Bulgaria. Vol. 1. Plants). Sofia, Izdatelstvo na Bulgarskata Akademia na naukite: 448 pp. (in Bulgarian).

Shelyag-Sosonko, Y. R. (Ed.), 1996. Chervona Knyga Ukrayiny. (The Red DataBook of Ukraine). Kiev, Ukrayins'ka Encyklopediya: 608 pp. (in Ukrainian).

*Compiled by L. Vakhrusheva*

*Asparagus litoralis* Steven, 1857

**Synonyms:** *Asparagus misczenkoi* Djin; *Asparagus neglectus* Kar et Kir; *Asparagus monocladus* Vved.; *Asparagus ferganensis* Vved

**Common names:** Engl: *Coastal asparagus*; Bulg: *Asperja*; Russ: *Sparzha pribrezhnaya*; Turk: *Kiyi asparagusu* Ukr: *Kholodok pryberezhny*

**Order** ASPARAGALES  
**Family** ASPARAGACEAE

**Taxonomic description.** A perennial grass, 30-50 cm in height. The plant is dioecious. Cladodes thick (0.3-0.7 mm in diameter), bare, furrowed, near 1.0-1.5 cm lengthwise, to a high degree fan-like diverging from the stem, in bundles of 4-10. The flowers are located at the top of the floriferous stems and branches. The berry is red, near 7-8 mm in diameter.



**IUCN Status**

World level: NE

Black Sea Regional level: VU

Subregion level: VU in Ukraine

**Distribution, Habitat type, Critical habitats, Limiting factors.** The plant prefers littoral strips, sands, cockle-shells, and rocks. Critical habitats: Crimean coastline, in particular Sudak, Shchebetovka, Maly Mayak, Ayudag mountain. Limiting factors: endemism, limited distribution, small population sizes; storm destruction and overgrazing.

Rubtsov, N. I. (Ed.), 1972. *OpredeliteT vysshikh rasteniy Kryma*. (Identification Book of the Crimean Higher Plants). Leningrad, Nauka: 550 pp. (in Russian).

Shelyag-Sosonko, Y. R. (Ed.), 1996. *Chervona Knyga Ukrayiny*. (The Red Data Book of Ukraine). Kijiv, Ukrayins'ka Encyklopediya: 608 pp. (in Ukrainian).

*Compiled by L. Vakhrusheva*

*Astrodaucus Uttoralis* Prude, 1898

**Synonyms:** *Daucus bessarabicus* DC; *Caucalis Uttoralis* Bieb

**Common names:** Russ: *Morkovnitza pribrezhnaya*; Ukr: *Morkovnitnya pryberezhna*

**Order** ARALIALES (APIALES)

**Family** APIACEAE (UMB ELLIFERAE)

**Taxonomic description.** A monocarpous biennial plant, 30-80 cm in height, with parted leaves, their apexes linear, with rare hairs at the leaf margin. Umbels 4-8 cm in diameter with 8-18 bare rays. Petals white, slightly pink, hollowed at the top. The foetus is 3-7 mm long and 0.3 mm wide (without spout), with thick long pyramidal thorns which are about the width of the foetus.

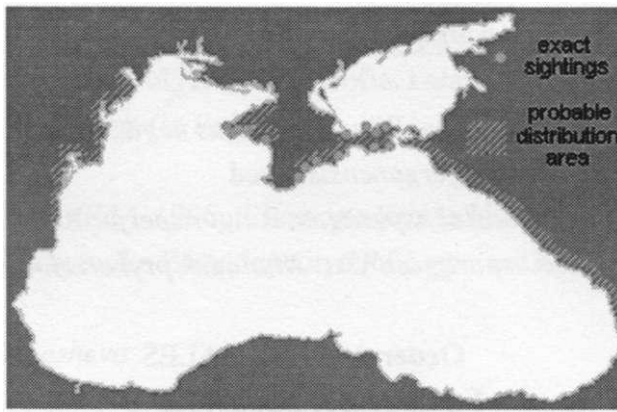


**IUCN Status**

World level: **DD**

Black Sea Regional level: VU

Subregion level: VU in Ukraine



Biology. Flowering in May-June, fruit-bearing in July-August. Reproduction by seeds and vegetatively.

Population trends. Population not abundant and with a tendency to decline.

Threats. Picking by people for decoration; habitat destruction by the creation of artificial beaches.

Conservation measures taken. The species has been entered in the Red Data Book of Ukraine.

Conservation measures proposed. Inventorize the species' locations, population monitoring, organization of reservations in the Crimea (in Kerch and Tarkhankut peninsula areas). An edible plant that can be cultivated!

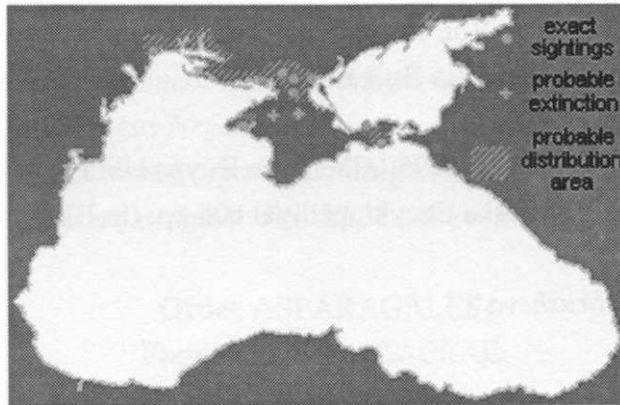
#### References

Golubev, V.N., 1996. *Biologicheskaya flora Kryma*. (Biological Flora of the Crimea). Yalta, GNBS: 86 pp. (in Russian).

Kryukova, I. V., Y A. Luks & L. A. Privalova *et al.*, 1988. *Redkiye rasteniya i zhitovnyye Kryma*. (Rare Plants and Animals of the Crimea). Simferopol, Tavria: 176 pp. (in Russian).

Luks, Y. A., L. A. Privalova & I. V. Kryukova., 1976. *Katalog redkikh, ischezayushchikh i unichtozhaemykh rasteniy flory Kryma, rekomenduyemykh dlya zapovednoy okhrany*. (Catalogue of Rare, Disappearing and Exterminativ Crimean Flora Plants Recommended for Protection). Yalta, GNBS: 24 pp. (in Russian).

Novosad, V. V., 1992. *Flora Kerchensko-Tamanskogo Regiona*. (The Flora of the Kerch-Taman Region). Kiev, Naukova Dumka: 277 pp. (in Russian).



**Biology.** Reproduction is by seeds and vegetatively. The species has an early spring development by overground shoots.

**Population trends.** The population is not abundant. Its range is decreasing by habitat destruction.

**Threats.** Habitat reduction or complete destruction due to cattle grazing; local people pick this plant for decorative purposes.

**Conservation measures taken.** The species has been entered in the Red Data Books of Bulgaria and Ukraine. It is conserved in the Belosaray spit reservation (Donetsk region, Ukraine).

**Conservation measures proposed.** Complete inventory of locations, monitoring of populations, more reservations needed.

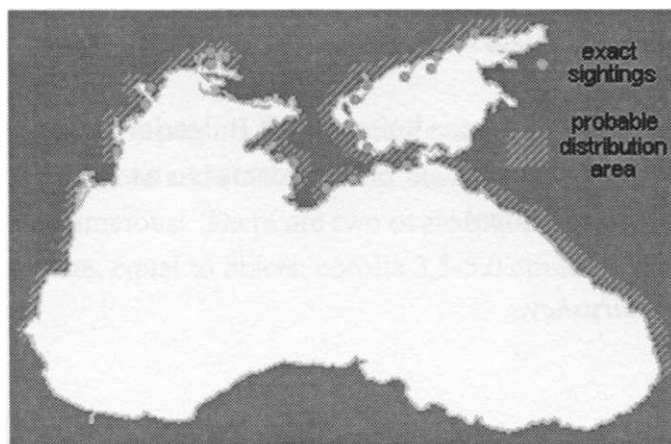
## References

Golubev, V. N., 1996. *Biologicheskaya flora Kryma*. (Biological Flora of the Crimea). Yalta, GNBS: 86 pp. (in Russian).

Kryukova, I. V., Y. A. Luks, & L. A. Privalova *et al*, 1988. *Redkiye rasteniya i zhivotnyye Kryma*. (Rare Plants and Animals of the Crimea). Simferopol, Tavria: 176 pp. (in Russian).

Rubtsov, N. I. (Ed.), 1972. *Opredelitel' vysshikh rasteniy Kryma*. (Identification Book of the Crimean Higher Plants). Leningrad, Nauka: 550 pp. (in Russian).

Distribution, Habitat type, Critical habitats, Limiting factors. Found on a littoral strip of sea coast, coastal sands and places near rocks. Critical habitats: Evpatoria, Mysovoye (Kazantip Cape), Sudak, Maly Mayak and Karabakh (southern coast of the Crimea). Limiting factors: small size of population, elimination during storms and other unfavourable natural situations, overgrazing.



Biology. Flowering and fruit-bearing in June-August. Reproduction by seeds.

Population trends. The population is not abundant, and has a tendency to decline.

Threats. Habitat destruction by the creation of artificial beaches and construction in the coastal zone, recreational stress, collecting for eating.

Conservation measures taken. The species has been entered in the Red Data Books of Bulgaria and Ukraine.

Conservation measures proposed. Complete inventory of locations, population monitoring, organization of more nature reservations. Can be cultivated for eating.

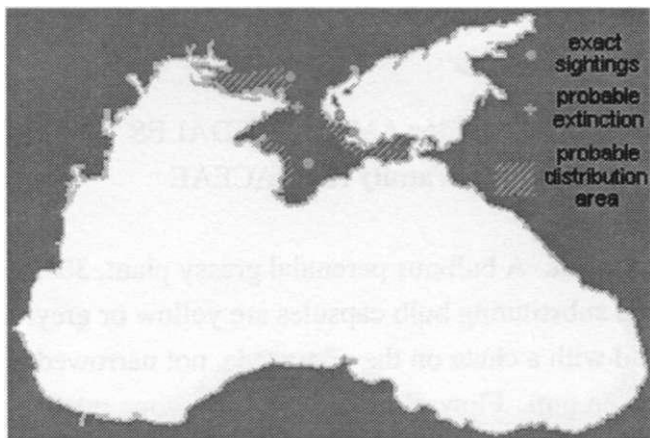
## References

Golubev, V. N., 1996. *Biologicheskaya flora Kryma*. (Biological Flora of the Crimea). Yalta: GNBS: 86 pp. (in Russian).

Luks, Y. A., L. A. Privalova & L. V. Kryukova, 1976. *Katalog redkikh, ischezayushchikh i unichtozhaemykh rasteniy flory Kryma, rekomenduyemykh dlya zapovednoy okhrany*. (Catalogue of Rare, Disappearing and Exterminative Crimean Flora Plants Recommended for Protection). Yalta, GNBS: 24 pp., (in Russian).



Distribution, Habitat type, Critical habitats, Limiting factors. Found along a littoral strip, coastal sands and cockle-shells, and on steppic hillsides. Critical habitats: Arabat spit sands, steppe hillsides near Simferopol. Limiting factors: small natural population size and limited distribution.



Biology. Flowering in July-August. Reproduction by seeds and vegetatively.

Population trends. The colonies are not abundant, and have a tendency to decrease.

Threats. Habitat destruction by construction activity, cattle grazing; elimination by local inhabitants, creation of local market-gardening.

Conservation measures taken. No special measures.

Conservation measures proposed. Regular monitoring of population state; the species should be included in the national Red Data Lists of all Black Sea countries.

## References

Davis, P. H., 1965-1985. Flora of Turkey and the East Aegean Islands. Vols.1-9. Edinburgh University Press.

Golubev, V. N., 1996. Biologicheskaya flora Kryma. (Biological Flora of the Crimea). Yalta, GNBS: 86 pp. (in Russian).

Luks, Y. A., L.A. Privalova, & I. V. Kryukova, 1976. Katalog redkikh, ischezayushchikh i unichtozhaemykh rasteniy flory Kryma, rekomenduyemykh dlya zapovednoy okhrany. (Catalogue of Rare, Disappearing and Exterminative Crimean Flora Plants Recommended for Protection). Yalta, GNBS: 24 pp (in Russian).

Novosad, V. V., 1992. Flora Kerchensko-Tamanskogo Regiona. (The Flora of Kerch-Taman Region). Kiev, Naukova Dumka: 277 pp. (in Russian).

Rubtsov, N. I. (Ed.), 1972. Opredelitel' vysshikh rasteniy Kryma. (Identification Book of the Crimean Higher Plants). Leningrad, Nauka: 550 pp. (in Russian).

Shelyag-Sosonko, Y. R. (Ed.), 1996. Chervona Knyga Ukrayiny. (The Red Data Book of Ukraine). Kijiv, Ukrayins'ka Encyklopediya Publ.: 608 pp. (in Ukrainian).

Velchev, V. (Ed.), 1984. Chervena kniga na NR Bulgaria. Tom 1. Rasteniya. (The Red Data Book of Bulgaria. Plants). Sofia, Izdatelstvo na Bulgarskata Akademia na naukite 1: 448 pp. (in Bulgarian).

*Compiled by L. Vakhrusheva*

Calystegia soldanella (Linnaeus) R. Brown, 1810

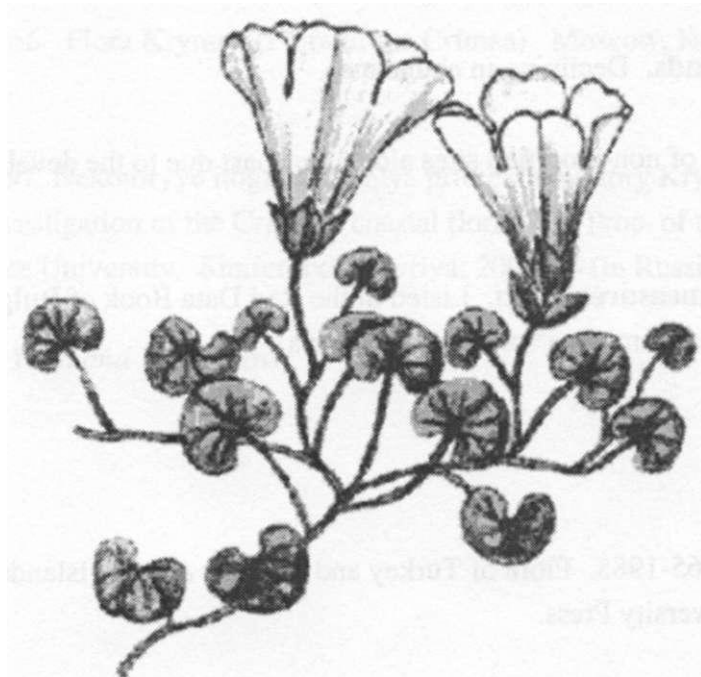
Synonyms: *Convolvulus soldanella* L., 1753

Common names: Bulg: *Kraymorsko chaderche*, *Soldanelovo chaderche*; Russ: *Povoy soldanelevy*; Ukr: *Pletukha soldanelovydna*

Order POLEMONIALES

Family CONVULVULACEAE

Taxonomic description. A perennial herb with long root system and procumbent stems, 15-50 cm long, naked and smooth. Leaf blades reniform and fleshy. Flowers on long pedicels, pentamerous. There are two ovate bracts embracing the receptacle; sepals ovate, mucronate, equal to bracts; corolla 3,5-5,0 cm long, infundibular, pink. Fruit a capsule.



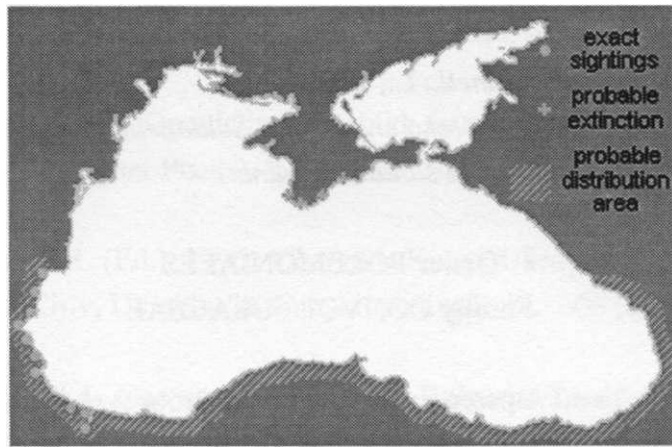
IUCN Status

World level: NE

Black Sea Regional level: CR

Subregion level: VU, EX in Ukraine

Distribution, Habitat type, Critical habitats, Limiting factors. Sandy and shingly coasts. Critical habitats: Crimea (Sevastopol, Laspi, Foros, Nikita, Gurzuf, Novy Svet, Sudak); Bulgaria (mouth of the river Kamchiya, Nesebr, Pomorie, Burgas, Sozopol, Primorsko, Michurin, Akhtopol). Limiting factors unknown.



Biology. Blooms from May to July; fruits from June to August. Propagation both vegetative (by runners and suckers) and by seeds. The species is a psammophyte, xeromesophyte and halophyte.

Population trends. Declining in abundance.

Threats. Lack of non-modified sites along the coast due to the development of resort zones.

Conservation measures taken. Listed in the Red Data Book of Bulgaria and protected in the "Kamchiya" preserve (Bulgaria).

#### References

- Davis P. H., 1965-1985. Flora of Turkey and the East Aegean Islands. Vols. 1-9. Edinburgh University Press.
- Fyodorov, A. A. (Ed.), 1981. Flora yevropeiskoy chasti SSSR. (Flora of European Part of the USSR. Vol. 5). Leningrad, Nauka 5: 380 pp. (in Russian).
- Golubev, V. N., 1996. Biologicheskaya flora Kryma. (Biological Flora of the Crimea). Yalta, GNBS: 86 pp. (in Russian).
- Kryukova , I. V., Y. A. Luks, L. A. Privalova, *et al*, 1988. Redkiye rasteniya i zhivotnyye Kryma. (Rare Plants and Animals of the Crimea). Simferopol: Tavria, 176 pp. (in Russian).

Luks, Y. A., L. A. Privalova & I. V. Kryukova, 1976. Katalog redkikh, ischezayushchikh i unichtozhaemykh rasteniy flory Kryma, rekomenduyemykh dlya zapovednoy okhrany (Catalogue of Rare, Disappearing and Exterminative Crimean Flora Plants Recommended for Protection). Yalta, GNBS: 24 pp. (in Russian).

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Stoyanov, N., B. Stefanov & B. Kitanov, 1967. Flora na Bulgaria. Tom 2. 4 izd. (Flora of Bulgaria. Vol.2, 4th Ed.). Sofia, Nauka i Izkustvo: 1325 pp. (in Bulgarian)

Velchev, V. (Ed.), 1984. Chervena kniga na NR Bulgaria. Tom 1. Rasteniya. (The Red Data Book of Bulgaria. Vol. 1. Plants). Sofia, Izdatelstvo na Bulgarskata Akademia na naukite: 448 pp. (in Bulgarian).

Vulff, E. W., 1966. Flora Kryma. (Flora of the Crimea). Moscow, Kolos 3 (2): 256 pp. (in Russian).

Yena, A. V., 1997 Nekotoryye itogi izucheniya pribrezhnoy flory Kryma. (Some results of the investigation of the Crimean coastal flora). In: Proc. of the Crimean Agricultural State University. Simferopol, Tavriya: 200-204 (in Russian).

*Compiled by A. Yena and M. Filipova.*

*Chrysopogon gryllus* Linnaeus, Trin., 1820

Synonyms: None

Common names: Engl: *Scented grass*; Russ: *Zolotoborodnik tsikadovy*; Ukr: *Zolotoborodnyk tsykadovy*

Order POALES  
Family POACEAE

Taxonomic description. A perennial herb, 50-150 cm in height. Spikelets associated in groups of three, the fertile one of which is unisexual. The two others staminal or not completely developed. At the base of each group of spikelets, a bunch of straight golden hairs. Groups of uniflorous spikelets associated in elegant panicles with whorly grouped branches. Fruit a corn seed.



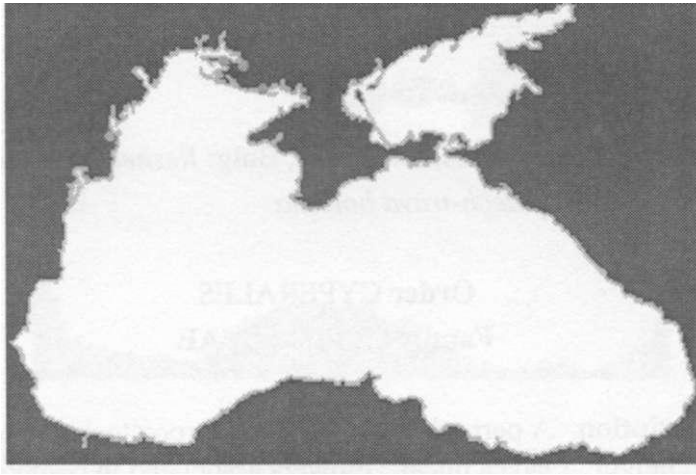
IUCN Status

World level: NE

Black Sea Regional level: CR

Subregion level: CR (Ukraine)

Distribution, Habitat type, Critical habitats, Limiting factors. On seaside sands, sand spits, saline lands, forest edges. In Ukraine found on the Isle of Dzharylgatch, on the coasts near the Reserve of Dunaiskie Plavni.



Biology. Flowering during V-VIII. Fruit-bearing in VIII-IX. Reproducing by seeds.

Population trends. A local species. Populations not abundant.

Threats. Destruction of habitats, extraction of sand, creation of artificial forests with *Pinus sylvestrh*, recreational stress.

Conservation measures taken. The species features in the Red Data Book of Ukraine. It is protected in the Chernomorskiy Biosphere Reserve and the Reserve of Dzharylatch of State importance (Ukraine).

Conservation measures proposed. Create protected zones wherever the species occurs.

#### References

Red Data Book of Ukraine. 1996. Plant Kingdom, Kiev: 606 pp.

Tchopik, V. I., 1978. Rare and vanishing plants of Ukraine. Kiev: 216 pp.

Zaverucha, B. V., T. L. Andrienko & V. V. Protopopova, 1983. Protected plants of Ukraine. Kiev: 176 pp.

Compiled by S. Dyatlov & T. Vasilieva

*Cladium mariscus* Linnaeus, Pohl., 1810

Synonyms: None.

Common names: Engl: *Saw grass, Twig rush*; Bulg: *Rezhets kladium*; Russ: *Mech-trava obyknovennaya*; Ukr: *Mech-trava bolotna*

Order CYPERALES  
Family CYPERACEAE

Taxonomic description. A perennial herb with thick rootstock and round leaved stem, 1-1.5 m in height. Leaves linear. Flowers associated in compound panicles, with a head bunch with long lacerated bracteate leaves.



IUCN Status

World level: NE

Black Sea Regional level: CR

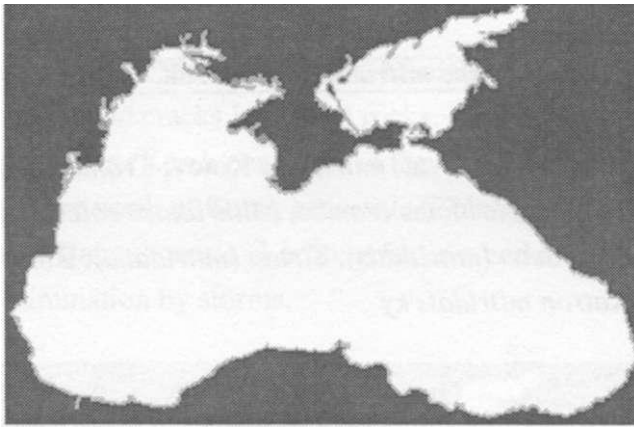
Subregion level: CR

Distribution, Habitat type, Critical habitats, Limiting factors. A European-Mediterranean relict, with disjunctive range. Black Sea coast, on wet seaside sands.

Biology. Flowering during VI-VU. Fruit-bearing in DC. Reproducing by seeds and vegetatively.

Population trends. Populations not abundant.





Threats. Draining of wetlands, creation of residential zones.

Conservation measures taken. The species is protected in the Reserve Dunayskiye Plavne (Ukraine).

Conservation measures proposed. Create protected territories where the species occurs.

#### References

Red Data Book of Bulgaria, 1984. Plants. Sofia, 1: 447 pp.

Red Data Book of Russian Soviet Federal Socialist Republic, 1988. Plants. Moscow: 590 pp.

Red Data Book of Ukraine, 1996. Plant Kingdom. Kiev: 606 pp.

Takhtajan, A. (Ed.), 1981. Rare and vanishing plants of the USSR, Leningrad: 264 pp

Tchopik ,V. I., 1978. Rare and vanishing plants of Ukraine. Kiev: 216 pp.

Zaverucha B. V., T. L. Andrienko & V. V. Protopopova , 1983. Protected plants of Ukraine. Kiev, 176 pp.

*Compiled by S. Dyatlov & T. Vasilieva*

*Crambe mitridatis* Juzepczuk, 1951

Synonyms: *Crambe koktebelica* var. *mitridatis* Kotov, *Crambe orientalis* auct

Common names: Engl: *Mithridates crambe*, *Mithridates colewort*; Bulg: *Divo zele (mitridatis)*; Rom: *Holodean (mitridatis)*, *Tirtan (mitridatis)*; Russ: *Katran mitridatskiy*; Ukr: *Katran mitridats'ky*

Order CAPPARALES

Family BRAS S I C A C E A E (CRUCIFERAE)

Taxonomic description. A tall (1.5-2.0 m), annual or biennial plant with numerous thin branches. Base leaves long, lyre-like, parted (solid ones are more rare), bare on top, with long rare hairs on the veins on the bottom. Flowers white, petals yellowing towards the base. Foetus a nut-like podlet. Its base short, empty; top a large sphere, bearing one seed. The closely related endemic species *C. mitridatis* is often considered as a taxonomic variety of *C. koktebelica* because of only subtle differences between both.



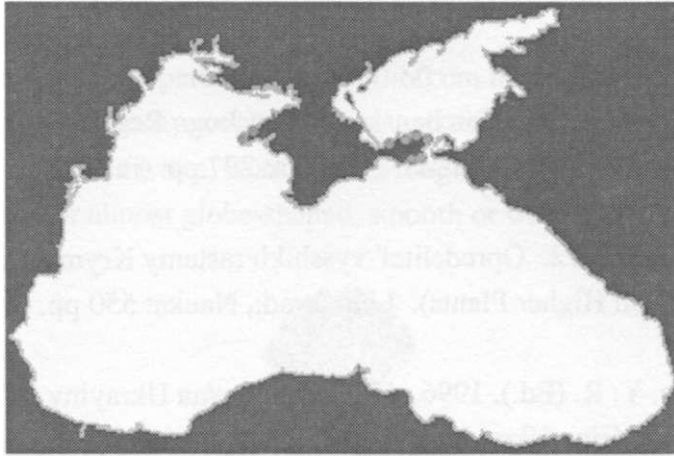
IUCN Status

World level: NE

Black Sea Regional level: CR

Subregion level: CR

Distribution, Habitat type, Critical habitats, Limiting factors. Sand and shingle coasts, beaches, cavities and cracks in coastal rocks. Critical habitats: considered endemic of Opuk mountain (Kerch peninsula in the Crimea) for a long time; in recent years it has spread to the north of Kerch peninsula (Zolotoye, Bagerovo) and to Tarkhankut peninsula (Jangul coast). Limiting factors: endemism, small population size, overgrazing, elimination by storms.



Biology. Flowering and fruit-bearing in June-September. Reproduction by seeds; a low temperature is necessary for germination.

Population trends. The populations are scanty. Trends are not quite clear.

Threats. Overexploitation by local inhabitants, because the plant is edible.

Conservation measures taken. The species is listed in the Red Data Book of Ukraine and conserved in reservation sites at Kazantip Cape and Opuk mountain (Kerch peninsula of the Crimea).

Conservation measures proposed. Population monitoring; cultivation and reintroduction measures; creation of Kerch and Tarkhankut natural reservations including protected areas on Opuk mountain and Kazantip Cape.

#### References

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Kryukova, I. V., Y. A. Luks, L. A. Privalova *et al*, 1988. Redkiye rasteniya i zhivotnyye Kryma. (Rare Plants and Animals of the Crimea). Simferopol, Tavria: 176 pp. (in Russian).

Luks, Y. A., L. A. Privalova & L. V. Kryukova., 1976. Katalog redkikh, ischezayushchikh i unichtozhaemykh rasteniy flory Kryma, rekomenduyemykh dlya zapovednoy okhrany. 1976. (Catalogue of Rare, Disappearing and Exterminative Crimean Flora Plants Recommended for Protection). Yalta, GNBS: 24 pp. (in Russian).

Novosad, V. V., 1992. Flora Kerchensko-Tamanskogo Regiona. (The Flora of the Kerch-Taman Region). Kiev, Naukova Dumka: 277 pp. (in Russian).

Rubtsov, N. I. (Ed.), 1972. Opredelitel' vysshikh rasteniy Kryma. (Identification Book of the Crimean Higher Plants). Leningrad:, Nauka: 550 pp. (in Russian).

Shelyag-Sosonko, Y. R. (Ed.), 1996. Chervona Knyga Ukrayiny. (The Red Data Book of Ukraine). Kijiv, Ukrayins'ka Encyklopediya: 608 pp (in Ukrainian).

*Compiled by L. Vakhrusheva*

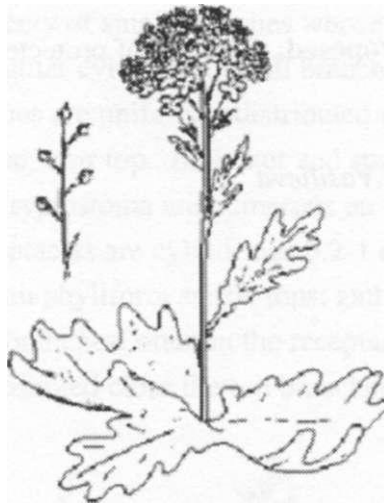
*Crambe pontica* Stev. ex Rupr., 1869

Synonyms: *Crambe maritima sensu* Czerniak

Common names: Engl: *Sea-kale, Colewort*; Russ: *Katran pontiyskiy*; Ukr: *Katran pontiysky*

Order CAPPARALES  
Family BRASSICACEAE

Taxonomic description. A perennial herb, 50-60 cm in height. Root thick, plant bluish and bare. Leaves fleshy, oval or oblong and elliptical, emarginate-lacerated or lobed on the edges. Petals white, near 7-9 mm length. Upper part of the pod 7-12 mm in length, ovate or almost globe-shaped, smooth or wrinkled.



IUCN Status

World level: NE

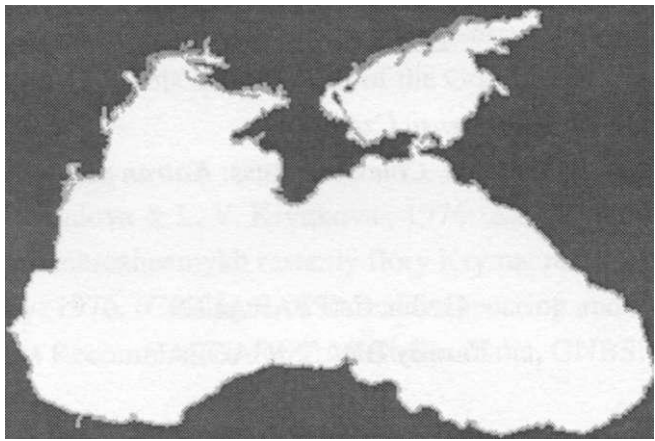
Black Sea Regional level: CR

Subregion level: CR (Ukraine)

Distribution, Habitat type, Critical habitats, Limiting factors. On seaside sands, limestones and sand spits.

Biology. Flowering during IV-VI. Fruit-in bearing VI-Vm. Reproducing by seeds.

Population trends. Not numerous.



Threats. Recreation, building on the seaside.

Conservation measures taken. No special protection.

Conservation measures proposed. Creation of protected

*Compiled by S.Dyatlov & T.Vasilieva*

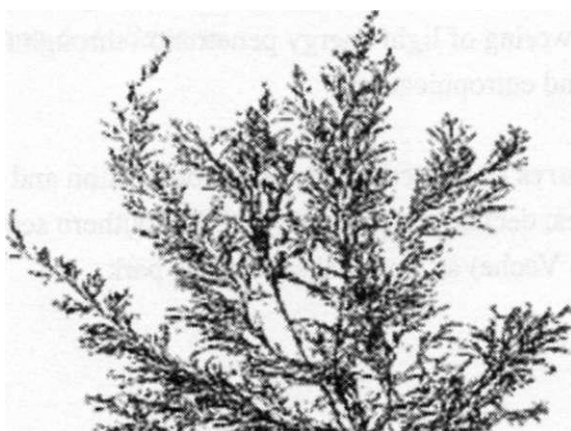
*Cystoseira barbota* (Good. & Wood, 1821)

Synonyms: *Fucus barbatus* Goodenough & Woodward, 1797; *Cystoseira hoppii* Agardh, 1821.

Common names: Rom: *Cistoseira*.

Order FUCALES  
Family SARGASACEAE

Taxonomic description. The thallus is 15-20 cm tall; each branch ends with a conic foot (sole); in most cases the basement branches are joined together in a common base. The stem is narrow, 3-5 mm thick, cylindrical, its surface smooth and unequal. The main branches are alternatively or chaotically branched from the stem, very long, cylindrical in shape, with plenty of small branches whose number gradually decreases, leaving a few singular cylindrical small branches, much shorter than the initial ones; the small branches are uniformly distributed along the main branches or come together as brooms near their top. In winter and spring there are many (air) bladders on the branches. Cryptostoma are numerous on the surface of the branches and (air) bladders. The receptacles are cylindrical, 0.2-1 cm long, strongly stressed on the scaphidia surface and with phyliform sterile tops; gathered in dense installments on the lateral surface of the branches: often in the receptacles the (air) bladders are metamorphozed and are distributed close the top branches .



IUCN Status

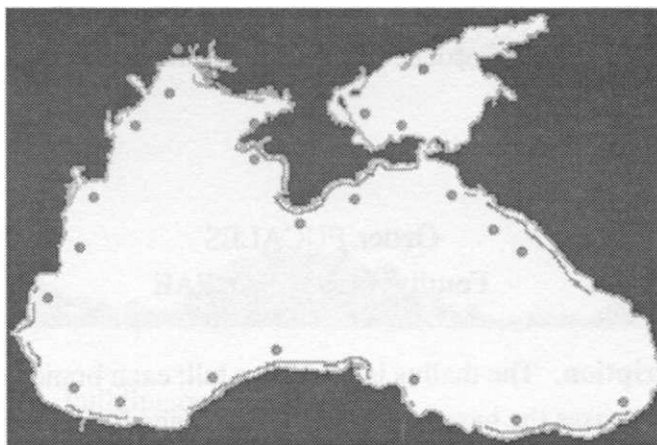
World level:

Black Sea Regional level:

Subregion level: EN

Distribution, Habitat type, Critical habitats, Limiting factors. Rocky bottoms on pebbly grounds in sublittoral areas at depths of 0.5-10 m. Present also in the Azov

and Mediterranean Seas. Species belonging to inferior northern area. Threatened by suspended particles, with decreased light penetration for a consequence.



**Biology.** A perennial plant needing much light; reproduction occurs at a depth of 0.5-5 m.

**Population trends.** Almost disappeared! On the Romanian littoral, in the southern zone of Tuzla-Varna Vech, the biomass of *Cystoseira* has decreased from 5,400 t fresh weight in 1971 to 755 t in 1973 and 120 t in 1979. The first destruction came from the freezing of the sea water during the 1971/1972 winter when floating ice destroyed about 80% of the stock of *Cystoseira* (900 t in 1972). Currently, only isolated tufts survive.

**Threats.** Hard frosts, hydrotechnical constructions, silting of rocky bottoms by suspended matter, lowering of light energy penetration through the water column by increased turbidity and eutrophication.

**Conservation measures proposed.** Reduce eutrophication and pollution from point and non-point sources; declare the protection of the southern sector of the Romanian littoral (2 Mai-Varna Veche) as a natural submarine park.

#### References

Bavaru, A., Bologa A. S. & H. V. Skolka, 1991. A checklist of the benthic marine algae (except the Diatoms) along the Romanian shore of the Black Sea. Rev. roum. Biol. biol. veget. 36: 7-22.

Bologa A. S., 1986. Importanța ecologică a algoflorei bentale de la litoralul Româniilor al Marii Negre. Hidrobiologia 19: 75-82.



Bologa, A. S., 1987-88. Annotated bibliography on the macrophytobenthos along the Romanian Black Sea coast (1881-1986). *Cercet. mar.* 20/21: 353-384.

Bologa, A. S., 1979. Present state of seaweed production along the Romanian Black Seashore. *Vie Milieu* 39: 105-109.

Bologa A. S., N. Bodeanu, A. Petran, V. Tiganus & Y.P. Zaitsev, 1995. Major modifications of Black Sea benthic and planktonic biota in the last three decades. *Bull. Inst, oceanogr. Monaco* 15: 85-110.

Bologa, A. S. & A. Bavaru, in press. Lista rosie a algelor macrofite bentale dispartite si pe cale de extinctie, rare si insuficient cunoscute din sectorul Romaniasc al Marii Negre. *Ocot. nat. prot. med.*

Muller, G. I., 1973. On the possibility of a marine reserve being established on the Romanian coast of the Black Sea. in *Atti. Conv. Int. "I parchi costieri mediterranei"*, Salerno-Castellabate, 18-22 giugno, pp. 715-730.

Vasiliu, F., 1984. Causes and consequences of the present status of perennial algae from the Romanian Black Sea littoral. *Rev.Mus.Mon.* 5 (in Romanian).

Zinova, A. D., 1967. *Opredelitel' zelenykh, burykh i krasnykh vodoroslei iuzhnykh morei SSSR.* Moskva-Leningrad, Nauka: 398 pp.

*Compiled by A. Bologa & A. Bavaru.*

*Cystoseira crinita* (Desf. Bory, 1832)

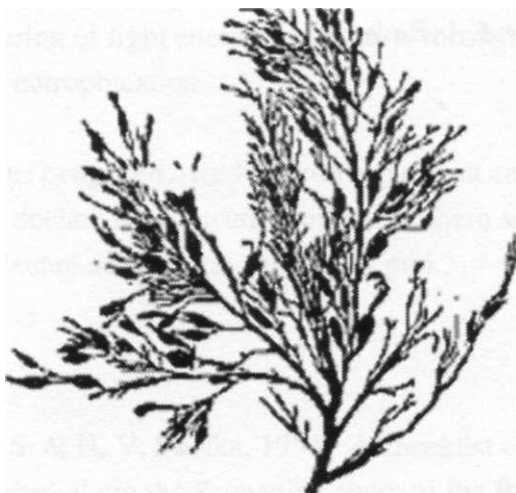
Synonyms: *Cystoseira bosporica* (Sauv.), 1912; *Cystoseira crinita* (Desf.) Duby/.  
*bosporica* A.Zin.& Kalug

Common names: Rom: *Cistoseira*, Russ: *Tsistozeira bosforskaya*; Turk: *Bagazici yosunu*.

Order FUCALES

Family SARGASACEAE

Taxonomic description. The thallus is over 30-40 cm long and grows in the same conditions as *Cystoseira barbata*. The stem is short or stretched along the whole stem, almost 2 mm high; the main branches are 5-10 cm long, one mm thick; its branches branch out alternatively. The surface of the stem and branches is smooth. The branches are cylindrical with a large number of cryptostoma coming out on the surface in shapes visible to the naked eye. The number of (air) bladders is small, interspersed or superficial, one or two on small branches at a certain distance from one another. These (air) bladders are large, 4-8 mm long and 3-4 mm thick, ellipsoidal, sometimes with a lateral growth, or split such a pitch-fork. Cylindrical or spare-shaded receptacles at the top of the branches, often with bladders and sometimes with some small thorns on their surface, and without sterile shoots on the top.



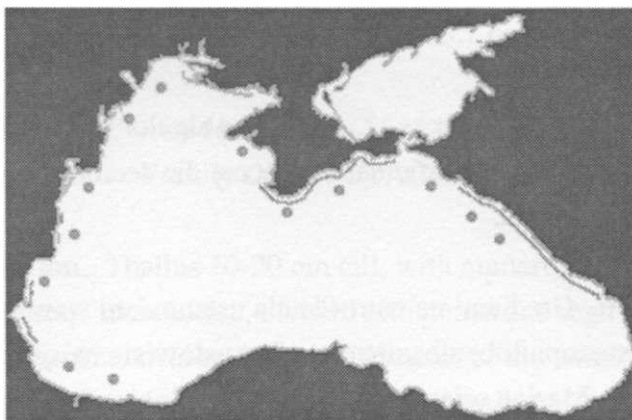
IUCN Status

World level:

Black Sea Regional level:

Subregion level: EN, on the north-western and western shelves

Distribution, Habitat type, Critical habitats, Limiting factors. Rocky bottoms on pebbly grounds in sublittoral areas. Suspended particles hindering light penetration.



Biology. Perennial, in need of much light; reproduction at a depth 0,5-5m. Endemic of the Black Sea.

Population trends. The species has almost disappeared and may soon be extinct.

Threats. Hard frosts, hydrotechnical constructions, silting of rocky bottoms by suspended matter, lowering of light penetration to the water column, eutrophication.

Conservation measures taken. None.

Conservation measures proposed. Reduce eutrophication and pollution from point and non-point sources; organization of a submarine nature park.

#### References

Bavaru, A., S. Bologa & H. V. Skolka., 1991. A checklist of the benthic marine algae (except the Diatoms) along the Romanian shore of the Black Sea. *Rev. roum. Biol., Biol.veget.* 36: 7-22.

Bologa, A. S., 1986. Importanta ecologică a algoflorei bentale de la litoralul Româniilor al Marii Negre. *Hidrobiologia* 19: 75-82.

Bologa, A. S., 1987-88. Annotated bibliography on the macrophytobenthos along the Romanian Black Sea coast (1881-1986). *Cercet. mar.* 20/21: 353-384.

Bologa, A. S., 1979. Present state of seaweed production along the Romanian Black Sea shore. *Vie Milieu* 39: 105-109.

Bologa, A. S., N. Bodeanu, A. Petran., V. Tiganus & Y. P. Zaitsev, 1995. Major modifications of the Black Sea benthic and planktonic biota in the last three decades. Bull. Inst, oceanogr. Monaco 15: 85-110.

Bologa, A. S. & A. Bavaru, in press. Lista rosie a algelor macrofite bentale dispartate si pe cale de extinctie, rare si insuficient cunoscute din sectorul Romaniasc al Marii Negre. Ocrot. nat. prot. med.

Dentsheva, K., 1996. Gradienti na eutrofikacia ustanoweni waw wrazka s promenite na structurata na macrophitobentosnitate cenozii w uslowiata na antropogenna eutrofikacia. Varna, Marine sciences. Marine technologies 3: 386-392.

Kalugina-Gutnik, A.A., 1975. Phytobentos Tshernogo morja. Kiev, Naukova Dumka: 245 pp.

Minicheva, G. G., 1993. Strakturno-funkcionalnie osobennosti formirovanij soobshtestv morskich bentosnich wodoroslej. Algologia: 3-12.

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Zinova, A. D., 1967. Opredelitel' zelenykh, burykh i krasnykh wodoroslei iuzhnykh morei SSSR. Moscow-Leningrad, Nauka: 398 pp.

*Compiled by A. Bologa, A. Bavaru & K. Dencheva.*

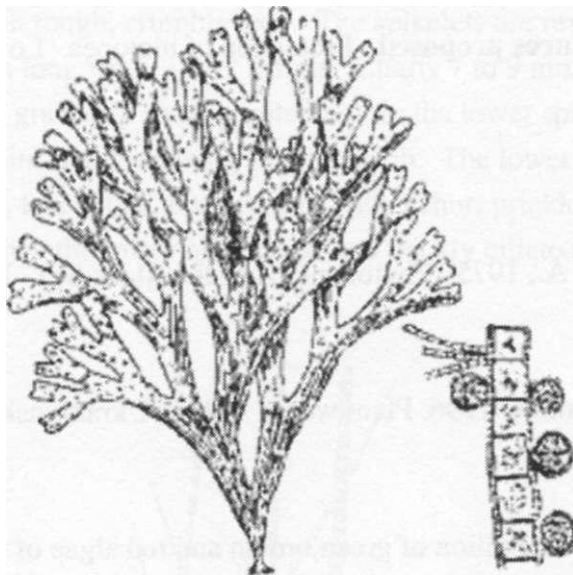
*Dictyota dichotoma* (Lamour, 1809)

Synonyms: *Viva dichotoma* Hudson, 1762.

Common names: Russ: *Diktiota dikhotomicheskaya*.

Order DICTYOTALES.  
Family DICTYOTACEAE.

Taxonomic description. Thallus 10-20 cm tall, with numerous attached risodes. The thallome is rude leathern, dichotomic, divided into numerous segments of 2-8 mm width. Tips of the segments oval or forked. Diameter of the tetrasporangia 100-150 um, usually single, distributed over the surface of the thallome.



IUCN Status

World level:

Black Sea Regional level:

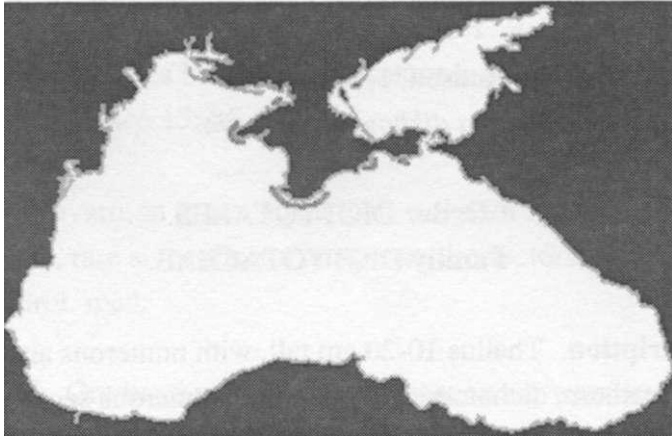
Subregion level: EN (Ukraine)

Distribution, Habitat type, Critical habitats, Limiting factors. On rocks, stones and shells. Disturbed rocky-stony biotopes are critical. High concentration of organic matter is limiting.

Biology. A yearly plant. Reproduction both sexual and asexual.

Population trends. In the 1960s it dominated *Dilopheta* associations. The average biomass was 380 g.m<sup>2</sup>. At present, *D. dichotoma* is a rare species.

Threats. Hydrotechnical constructions, eutrophication.



Conservation measures taken. Included in the Red Book of the Ukraine.

Conservation measures proposed. Protection of biotopes. Lowering the level of eutrophication.

#### References

Kalugina-Gutnik A. A., 1975. Phytobenthos of the Black Sea. Kiev, Naukova Dumka: 245 pp.

Red Book of the Ukraine. 1996. Plant world. Kiyiv, Ukraniynski Encyclopedia Publ. 494 pp.

Zinova A. D., 1967. Definition of green, brown and red algae of the southern seas of the USSR. Leningrad, Nauka: 397 pp.

*Compiled by G. Minicheva.*

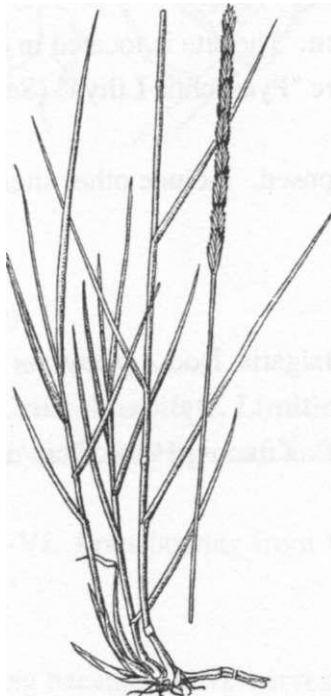
*Elymus pycnanthus* (Godron) Melderis

Synonyms: *Agropyron littorale* Dumortier, 1823; *Triticum littorale* Host, 1809; *Triticum pycnanthum* Godr., 1854; *Triticum repens* L. var. *littorale* Aschers. & Graebn., 1901.

Common names: Bulg: *Kraymorski pirey*, *Kraybrezhen pirey*.

Order POALES  
Family POACEAE

Taxonomic description. Blue-greenish plant with stems usually gathered in loose tufts, naked, up to 50 cm high, with short rambling roots. Naked blades, rough at the margin, short and bristle-like twisted; short stigma ciliated at the top. Inflorescence up to 10 cm long, with rough, crumbly axis. The spikelets are reverse ovate to lanceolate, 12-18 mm long with (3) 5-7 florets. Chaffs 7 to 9 mm long, naked, rather similar to each other, gradually short-pointed out, in the lower spikelets often with a prickle with 5 to 7 veins and projecting rough midrib. The lower chaff is naked, from 7 mm to 10 mm long, lanceolate, blunt, cut or with a short prickle or awn. The upper chaff is a bit longer than the lower one, naked and thickly ciliated only around its margin.



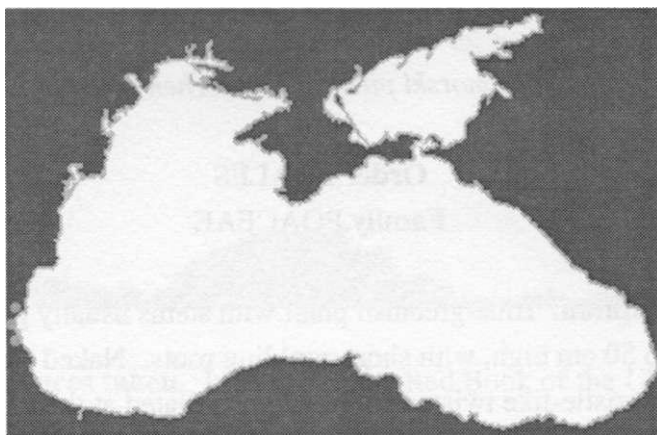
IUCN Status

World level:

Black Sea Regional level:

Subregion level: EN

Distribution, Habitat type, Critical habitats, Limiting factors. Coastal sands. Requires a correct humidity and salinity.



Biology. A perennial grassy plant. Blooms in July, propagates in August-September. Reproduces through seeds and vegetatively through sprouts.

Population trends. Decreasing.

Threats. Site contamination.

Conservation measures taken. The site is located in the Kavatsite resort which is within the range of the Reserve "Pyasachna Liliya" (Sandy Lily).

Conservation measures proposed. Include other sites in protected areas.

#### References

Kitanov, B., 1963. Flora na Balgaria. Rod *Agropyrum* Gart.: 447-456.

Stoyanov, N., B. Stefanov & B. Kitanov, 1966. Flora na Bulgaria. 1: 563 pp. Sofia.



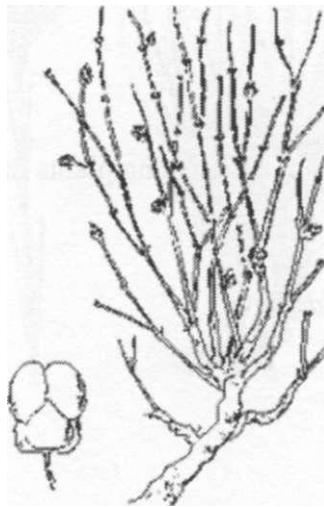
*Ephedra distachya* (Linnaeus, 1753)

Synonyms: None.

Common names: Engl: *Great shrubby, Horse tail*; Russ: *Efedra dvukhkoloskovaya*;  
Turk: *Deniz usumu*; Ukr: *Efedra dvykhkoloskova*.

Order EPHEDRALES  
Family EPHEDRACEAE

Taxonomic description. A strongly branching, evergreen small shrub with lying or straight-boled stem, 10-50 cm in height. Leaves small and pelliculate. Dioecious plants with unisexual strobilae. Cone-berries with red, juicy integuments.



IUCN Status

World level:

Black Sea Regional level:

Subregion level: EN (Ukraine)

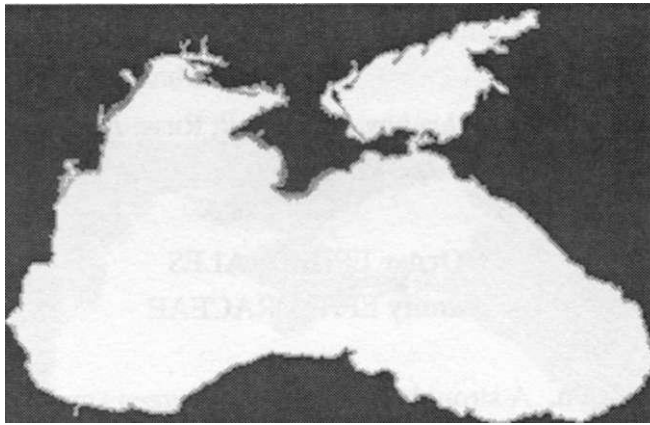
Distribution, Habitat type, Critical habitats, Limiting factors. A mediterranean and West-Siberian species, growing on stony areas and coastal sands.

Biology. Flowering during V-VI. Fruit-bearing from VII onwards. Reproducing by seeds and vegetatively.

Population trends. Decreasing because of overharvesting for their medical value.

Threats. Recreation, building at the seaside.

Conservation measures taken. No special protection.



Conservation measures proposed. Organize protected territories in places where the species occurs.

#### References

Takhtajan, A. (Ed.), 1981. Rare and vanishing plants of the USSR. Leningrad: 264 pp.

*Compiled by S. Dyatlov & T. Vasilieva.*

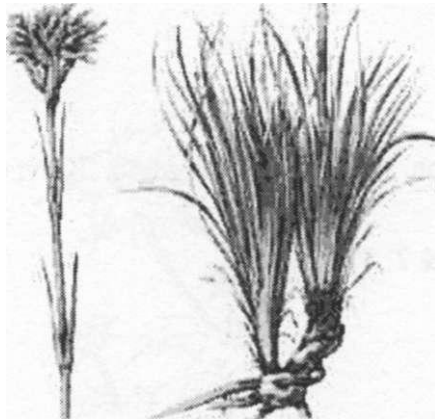
*Eremogone cephalotes* (Bieb., Fenzl.)

Synonyms: *Arenaria cephalotes* Bieb.

Common names: Russ: *Eremogona golovchataya*; Ukr: *Eremogona golovchata*.

Order CARYOPHYLLALES  
Family CARYOPHYLLACEAE

Taxonomic description. A perennial herb with straight glabrous stem, 20-50 cm in height with shorter fruitless shoots at the base. Leaves 4-12 cm in length. Petioles white sessile flowers associated in a thick semiglobed floscule. Fruit an oval pod.



IUCN Status

World level: NE

Black Sea Regional level: VU

Subregion level: VU (Ukraine)

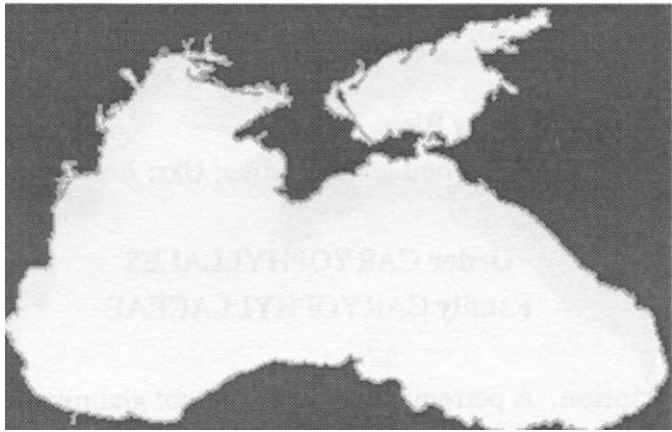
Distribution, Habitat type, Critical habitats, Limiting factors. Seaside sands, steppe hillsides and rocky places.

Biology. Flowering during VI-VU, fruit-bearing during VU-VIII. Reproducing by seeds and vegetatively.

Population trends. Not abundant.

Threats. Destruction of habitats, output of sand, recreational stress.

Conservation measures taken. The species features in the Red Data Book of Ukraine (1996).



Conservation measures proposed. Set up protected territories in places where the species occurs.

#### Reference

Red Data Book of Ukraine, 1966. Plant Kingdom. Kiev: 606 pp.

*Compiled by S. Dyatlov & T. Vasilieva*

*Eryngium maritimum* Linnaeus, 1753

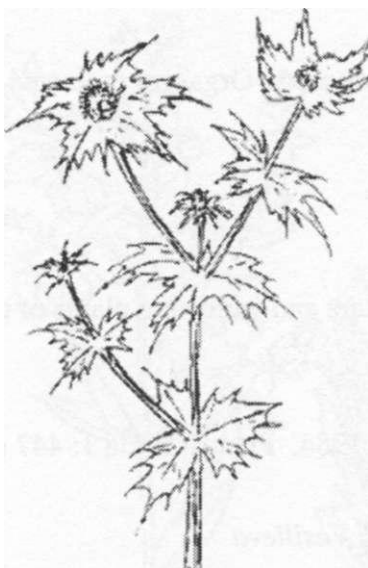
Synonyms: None

Common names: Bulg: *Morski vetrogon, Morski eringium*; Russ: *Sinegolovnik primorskiy*; Ukr: *Mikolaichikprimorsky*

Order ARALIALES (APIALES)

Family APIACEAE (UMBELLIFERAE)

Taxonomic description. A perennial herb, 40-70 cm in height. Leaves leathery, light green, dissected, heart-shaped. Flowers blue, in the head floscule. Fruits cremocarpia.



IUCN Status

WorldlevelhNE

Black Sea Regional level: EN

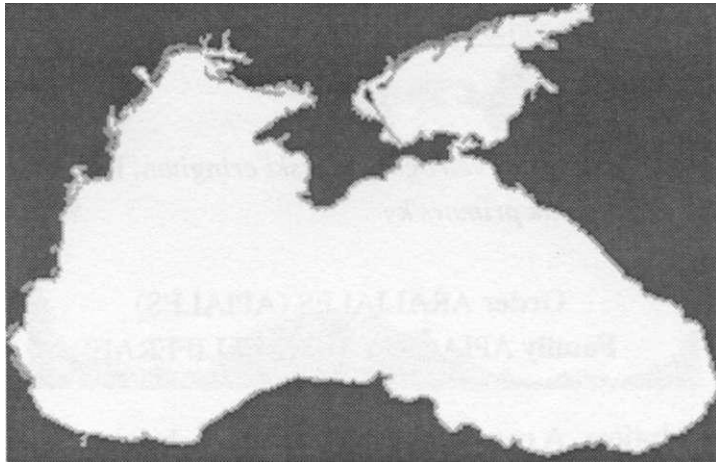
Subregion level: EN (Ukraine)

Distribution, Habitat type, Critical habitats, Limiting factors. Coastal zones of the Baltic, Black and Azov Seas. On sand and saline land. Can be found in isolated groups.

Biology. Flowering during VI-IX, fruit-bearing in VII-X. Reproducing by seeds.

Population trends. Not abundant.

Threats. Picking for bouquets, recreation stress.



Conservation measures taken The species has been entered in the Red Data Book of Bulgaria (1984).

Conservation measures proposed. Organize protected territories in places where the species occurs.

#### References

Takhtajan, A. (Ed.), 1981. Rare and vanishing plants of the USSR. Leningrad: 264 pp.

Red Data Book of Bulgaria, 1984. Plants. Sofia 1: 447 pp.

*Compiled by S. Dyatlov & T. Vasilieva*

*Euphorbia paralias* Linnaeus, 1753

Synonyms: *Tithymalus paralias* (L.) J. Hill, 1768

Common names: Engl: *Sea spurge*; Bulg: *Primorska mlechka*; Russ: *Molochay pribrezhny* Turk: *Sutlegen*; Ukr: *Molochay pryberezhny*

Order EUPHORBIALES

Family EUPHORBIACEAE

Taxonomic description. A dwarf semishrub, up to 60 cm, tall, glabrous, with numerous thick upright densely leaved stems; leaves are setiform, 10-30 mm long, 1-6 mm in width; inflorescence of 3-5 branches; bracts ovate, cyathium small, wide; seeds wrinkled.



IUCN Status

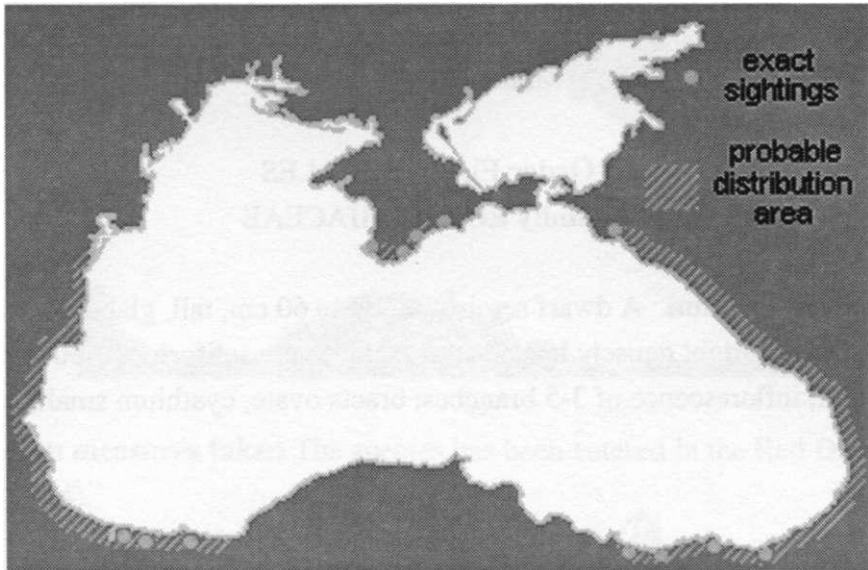
World level: NE

Black Sea Regional level: EN

Subregion level: EN

Distribution, Habitat type, Critical habitats, Limiting factors. Coastal sands. Critical habitats: coasts of the Crimea (Sevastopol, Laspi, Alushta, Karadag) and

Caucasus (southwards from Novorossiysk). Limiting factors: unknown; probably, a low competitive ability in coastal communities.



Biology. Blooms from June to September, fruits from July to October. Successful seed propagation. Deep tap root system, psammophyte, mesoxerophyte, halophyte.

Population trends. Declining in abundance.

Threats. Lack of non-modified sites along the coast due to the development of the coast into a resort zone.

Conservation measures taken. The species is protected in the Karadag natural reserve (the Crimea, Ukraine), listed in the Red Data Book of Bulgaria.

Conservation measures proposed. Establish additional reserves in Bulgaria, Turkey, and Georgia.

## References

Davis P. H., 1965-1985. Flora of Turkey and the East Aegean Islands. Vols. 1-9. Edinburgh University Press.

Golubev, V. N., 1996. Biologicheskaya flora Kryma. (Biological Flora of the Crimea). Yalta, GNBS: 86 pp. (in Russian).

Luks, Y. A., L. A. Privalova & I. V. Kryukova, 1976. Katalog redkikh, ischezayushchikh i unichtozhaemykh rasteniy flory Kryma, rekomenduyemykh dlya



zapovednoy okhrany (Catalogue of Rare, Disappearing and Exterminative Crimean Flora Plants Recommended for Protection). Yalta, GNBS: 24 pp. (in Russian).

Rubtsov, N. I. (Ed.), 1972. *Opredelitel' vysshikh rasteniy Kryma*. (Identification Book of the Crimean Higher Plants). Leningrad, Nauka: 550 pp. (in Russian).

Velchev, V. (Ed.), 1984. *Chervena kniga na NR Bulgaria. Tom 1. Rasteniya*. (The Red Data Book of Bulgaria. Vol. 1. Plants). Sofia, Bulgarska Akademia na naukite: 448 pp. (in Bulgarian).

Tzvelyov, N. N. (Ed.), 1996. *Flora vostochnoy Yevropy. Tom 9 (Flora of the East Europe. Vol.9)*. Sankt-Peterburg, Mir i Sem'ya 95: 455 pp. (in Russian).

Vulff, E. W., 1953. *Flora Kryma*. Moscow, Nauka 2(3): 220 pp. (in Russian).

*Compiled by A. Yena*

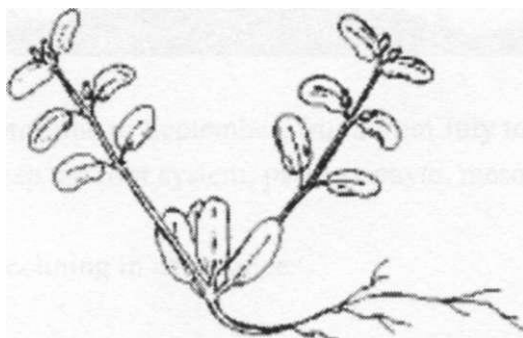
*Euphorbia pepelis* Linnaeus, 1753

Synonyms: None

Common names: Russ: *Molochay buterlakovidny*; Turk: *Kucuk sutlegen*; Ukr: *Molochay shchebrikovydney*

Order EUPHORBIALES  
Family EUPHORBIACEAE

Taxonomic description. An annual herb. Stem not completely developed, consisting of forks of cymose inflorescence with opposite leaves on the nodes. Fleshy leaves with subulate white stipules. Nectaries with linear white appendages. Stipules consisting of 2-3 subulate parts. Fruits 3-4 mm long, seeds smooth, 2.75-3 mm long.



IUCN Status

World level: NE

Black Sea Regional level: EN

Subregion level: EN (Ukraine)

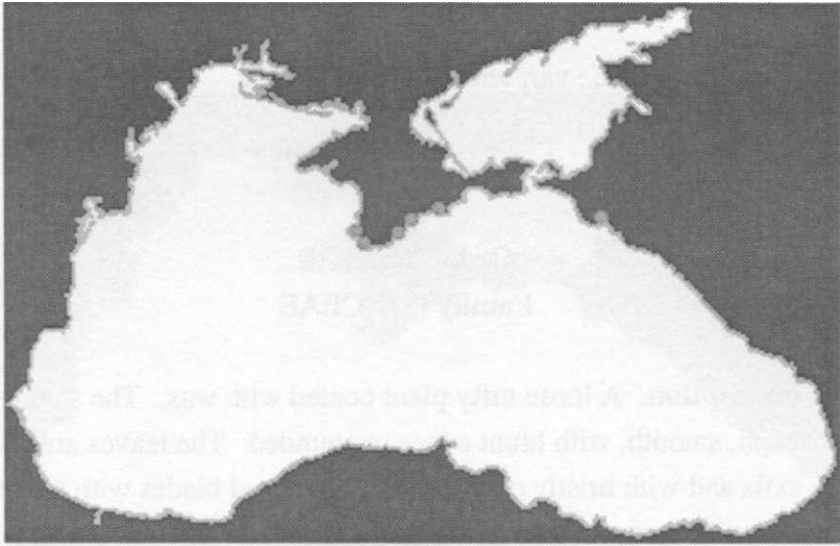
Distribution, Habitat type, Critical habitats, Limiting factors. Coastal zones of western and southern Europe, coasts of the Mediterranean, the Black Sea and the Caspian Sea. This plant can be found alone or with *Eryngium maritimum* and *Centaurea arenaria* on coastal saline sands.

Biology. Flowering during V-VI, fruit-bearing during VII-X. Reproducing by seeds.

Population trends. Not clear

Threats. Recreation, tourism.

Conservation measures taken. The species has been entered in the Red Data Book of Bulgaria (1984).



Conservation measures proposed. Create protected territories in places where the species occurs.

#### References

Takhtajan, A. (Ed.), 1981. Rare and vanishing plants of the USSR. Leningrad: 447 pp.

*Compiled by S. Dyatlov & T. Vasilieva*

*Festuca vaginata* (Waldst. & Kit, ex Willd., 1809)

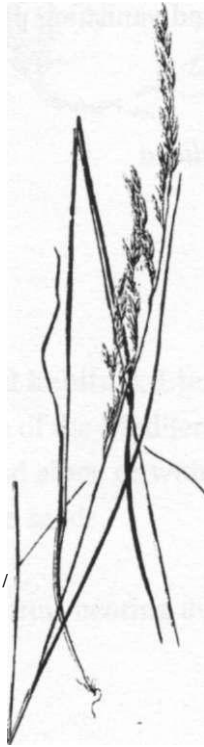
Synonyms: *Festuca ovina* L.; var. *vaginata* Hask., 1882.

Common names: Bulg: *Vlagalischna vlasatka*

Order POALES

Family POACEAE

Taxonomic description. A loose tufted plant coated with wax. The stem is from 40 cm to 60 cm high, smooth, with blunt edges or rounded. The leaves are with long, entire, wide axils and with bristly or cylindrically shaped blades with a diameter of 0.45-1.35 mm, with seven to 15 or most often nine veins, smooth, and two to five sclerenchymatous fascicles. The corymb is up to 20 cm long, patent and then compacted, smooth or slightly rough. The spikelets are small, 5-8 (10) mm long; the lower chaff is 2-3 cm long, pointed; the upper one - blunt with an awn at the tip (often ciliated along the margin). The chaffs are 3.5-4 mm long, lanceolate, pointed, most often ciliated at their upper end, with or without an awn.



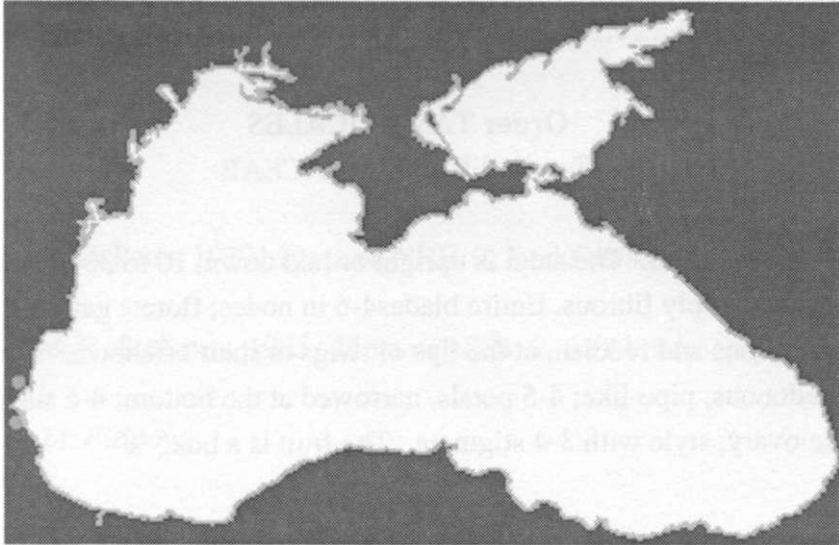
IUCN Status

World level:

Black Sea Regional level:

Subregion level: VU

Distribution, Habitat type, Critical habitats, Limiting factors. Sands, sand dunes and rocky areas.



Biology. A perennial herbaceous plant. Blooms in June. Propagates in July. Reproduces through seeds or vegetatively.

Population trends. Decreasing.

Threats. Resort construction and trampling.

Conservation measures taken. Most of the populations are within the borders of protected areas.

Conservation measures proposed. Strict control in the protected areas where the plant still exists.

#### References

Ahtarov, B., 1953. Rodat *Festuca* L. (Vlasatka) v Balgaria. *Izv. Botan. Inst. BAN* 3 3-91.

Valey, S., 1963. Flora na NRB. I. Rod *Festuca* L.: 390-416.

*Compiled by M. Filipova.*

*Frankenia pulverulenta* (Linnaeus, 1753)

Synonyms: None.

Common names: Bulg: *Frankeniya*..

Order TAMARICALES  
Family FRANKENIACEAE

TA vfruvtx<dLp\_dfisnji<Jjfi<R>.. ^H^^ccTii^" a~upTi^u vn'rditi tkJWn,\*rt) to"3t) cnfnigh, branched, thick, simply fibrous. Entire blades 4-6 in nodes; florets gathered in semi-umbels, synoecious and reddish, at the tips of twigs or their offshoots. The receptacle is 4-5 cotyledonous, pipe-like; 4-5 petals, narrowed at the bottom; 4-6 stamens; a mono-ovule ovary; style with 3-4 stigmata. The fruit is a box.

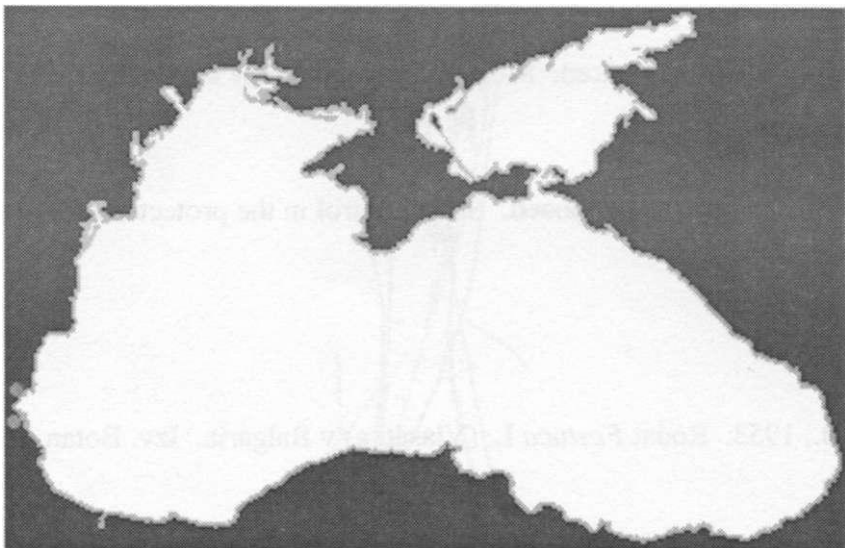
IUCN Status

World level:

Black Sea Regional level:

Subregion level: CE

Distribution, Habitat type, Critical habitats, Limiting factors. Salty coastal sands and clay soils. Humidity and salinity are threats.



Biology. An annual herbaceous plant. Blooms in July-August, propagates in August-September. Reproduces through seeds.

Population trends. Rapidly declining.

Threats. Human activities.

Conservation measures taken. Included in the list of protected plants in Bulgaria.

Conservation measures proposed. Confirmation of the sites and declaring them protected.

#### References

Iordanov, D. & D. Peev, 1979. Flora na NRB. 7. Rod *Frankenia* L: 416 418.

Stoyanov, N. & B. Stefanov, 1925. na NRB. 2. 640 1104.

*Compiled by M. Filipova.*

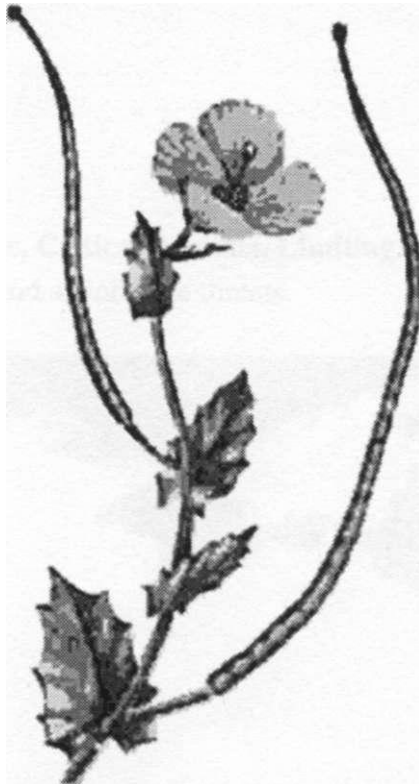
*Glacium flavum* Crantz., 1763

Synonyms: None

Common names: Engl: *Yellow horned-poppy*; Bulg: *Zheltmak, Zhelta paparonka, Zhelt rogatets, Zhelt kadenka*; Russ: *Machok zholty*; Turk: *Gelincik*; Ukr: *Machok zhovty*

Order PAPAVERALES  
Family PAPAVERACEAE

Taxonomic description. An annual, biennial or perennial herb, 20-50 cm in height. Stem bluish and fleshy. The lower leaves have thick hairs. Flowers large, yellow, with four petals like a poppy. The fruit is a pod of up to 25 cm length.



IUCN Status

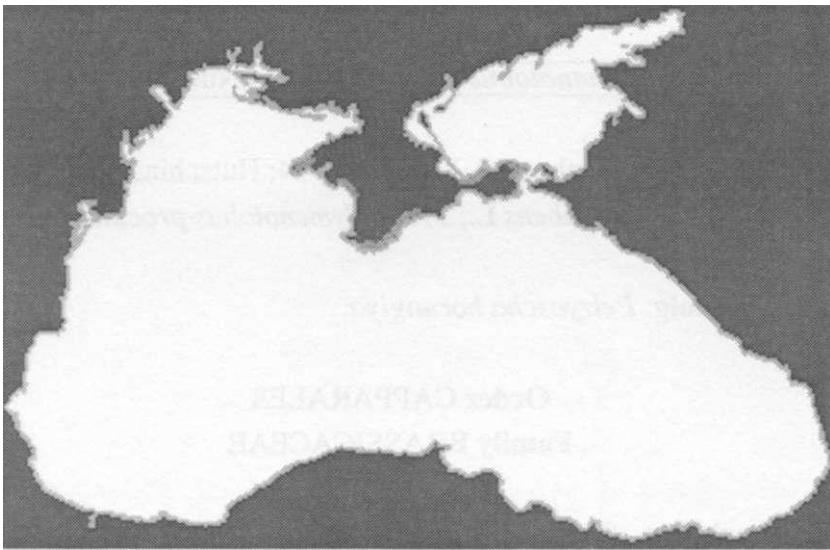
World level: NE

Black Sea Regional level: VU

Subregion level: VU (Ukraine)

Distribution, Habitat type, Critical habitats, Limiting factors. Coastal sands and shingles.





Biology. Flowering during V-VII, fruit-bearing during VII-IX. Reproducing by seeds.

Population trends. Rare, in little groups. Populations are stable (100-130 specimens).

Threats. Destroying its ecotopes, by "improving" beaches; high recreational stress and overharvesting for the medical value of the species.

Conservation measures taken. No special protection.

Conservation measures proposed. Create protected zones in places where the species occurs.

#### References

Red Data Book of Bulgaria, 1984. Vol. 1. Plants. Sofia.

Red Data Book of Russian Soviet Federal Socialist Republic, 1988. Plants. Moscow: 590 pp.

Red Data Book of Ukraine, 1996. Vegetal Kingdom. Kiev: 606 pp.

*Compiled by S. Dyatlov & T. Vasilieva*

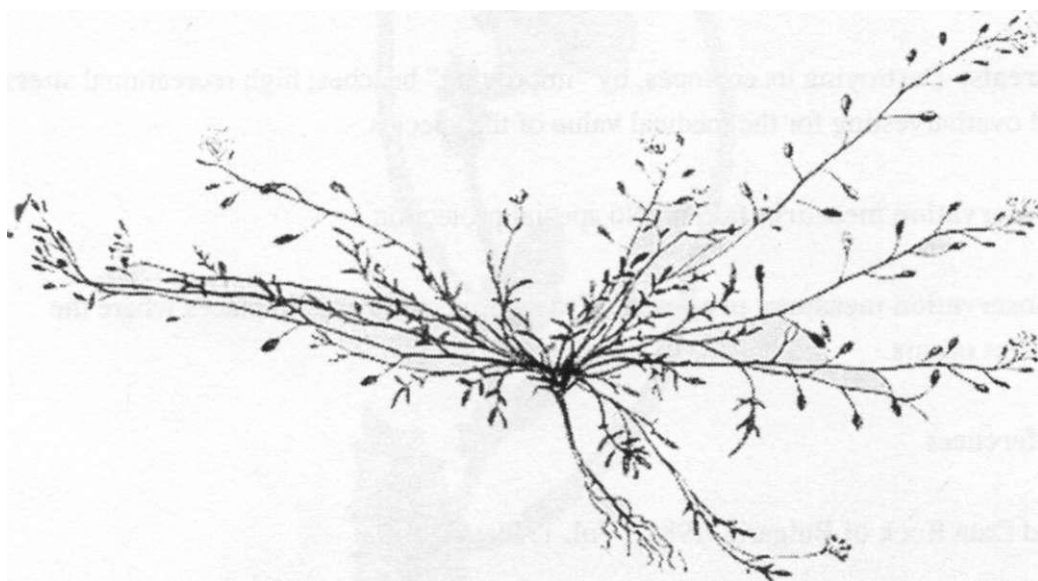
*Hymenolobus procumbens* (L.) Nuttall

Synonyms: *Horungia procumbens* (L.) Hayek, 1924; *Hutschinsia procumbens* (L.) Desf., 1814; *Lepidium procumbens* L., 1753; *Hymenolobus procumbens* (L.) Nutt., 1838.

Common names: Bulg: *Pelzyascha horungiya*.

Order CAPPARALES  
Family BRASSICACEAE

Taxonomic description. The stems are from 3 cm to 20 cm tall, single or branching from the base, down or upright, covered with rare, unbranched hairs. The lower leaves have petioles and are abruptly pinnatifid. The upper leaves are lanceolate, dentate or entire. The inflorescences are thick, cluster-like. Multiple small florets with pedicels from 1 mm to 3 mm long (after fading quite elongated, horizontally outstretched). White petals with equal sepals.



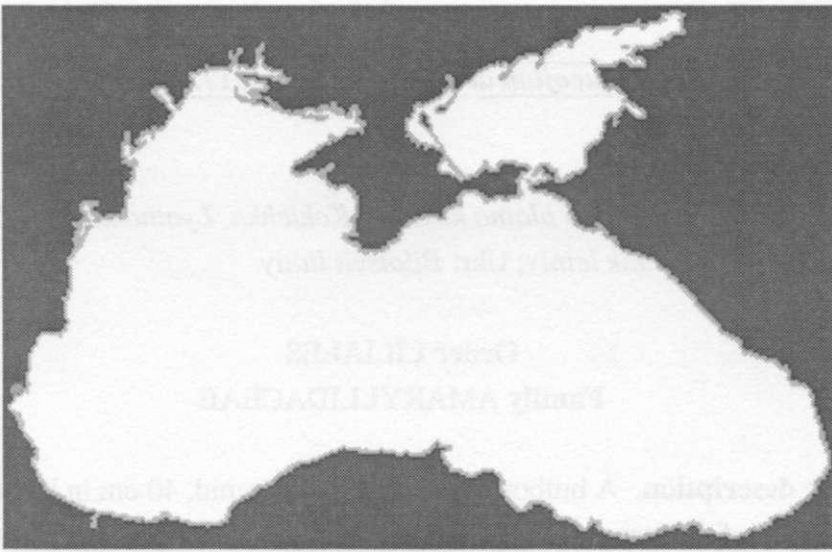
IUCN Status

World level:

Black Sea Regional level:

Subregion level: CE

Habitat type, Critical habitats, Limiting factors. Salty coastal sands. Treats include humidity and salinization.



**Biology.** An annual or perennial herbaceous plant. Blooms and propagates in April-May. Reproduces through seeds.

**Population trends.** Rapidly declining.

**Threats.** Resort construction and intensive use of sandy coastal strips.

**Conservation measures taken.** None.

**Conservation measures proposed.** To be included in the list of protected plants.

#### Reference

Valey, S., 1970. Flora na NRB. Rod *Horungia* Reichenb. 4: 545-546.

*Compiled by M. Filipova*

*Leucojum aestivum* Linnaeus, 1759

Synonyms: None

Common names: Bulg: *Letno blatno kokiche, Kokichka, Lyatno kokiche, Blatno kokiche*; Russ: *Belotsvetnik letniy*; Ukr: *Bilotsvit litniy*

Order LILIALES

Family AMARYLLIDACEAE

Taxonomic description. A bulbous perennial, ephemeroid, 40 cm in height. Leaves the same height of the stem or longer. Flowers with a belted perianth in the umbel (3-8 on one). Six white petals with a green spot on the edge.



IUCN Status

World level: NE

Black Sea

Regional level: CR. Subregion level: CR (Ukraine)

Distribution, Habitat type, Critical habitats, Limiting factors. Wet coastal sands.

Biology. Flowering during IV-V, fruit-bearing during VII-VUJ. Reproducing by daughter bulbs and seeds. The species has a wide ecological amplitude, easily surviving summer droughts.

Population trends. Declining.



Threats. Destruction of its locations; overharvesting for its medical and ornamental value.

Conservation measures taken. No special protection.

Conservation measures proposed. Create protected zones in places where it occurs. Cultivate the species in botanical gardens.

#### References

Red Data Book of the Russian Soviet Federal Socialist Republic, 1988. Plants. - Moscow: 590 pp.

Red Data Book of Bulgaria, 1984. Vol. 1. Plants. Sofia: 447 pp.

Red Data Book of Ukraine, 1996. Plant Kingdom. Kiyiv: 606 pp.

Takhtajan, A. (Ed.), 1981. Rare and vanishing plants of the USSR. Leningrad: 264 pp.

Tchopik, V. I., 1978. Rare and vanishing plants of Ukraine. Kiev: 216 pp.

*Compiled by S. Dyatlov & T. Vasilieva*

*Linaria sabulosa* (Czern. ex Klok.)

Synonyms: None.

Common names: Engl: *Toad flax*; Bulg: *Lulichka*; Russ: *L'nyanka peschanka*; Ukr: *L'onok pischany*.

Order SCROPHULARIALES  
Family SCROPHULARIACEAE

Taxonomic description. A perennial herb with smooth bluish stem, 15-30 cm in height. Stem ascending, not complicated, slightly branched. Leaves orbicular, ovate, sessile, almost stem-clasping, alternate, from below fleshy, associated at a base. Flowers yellow, 14-16 mm in length.



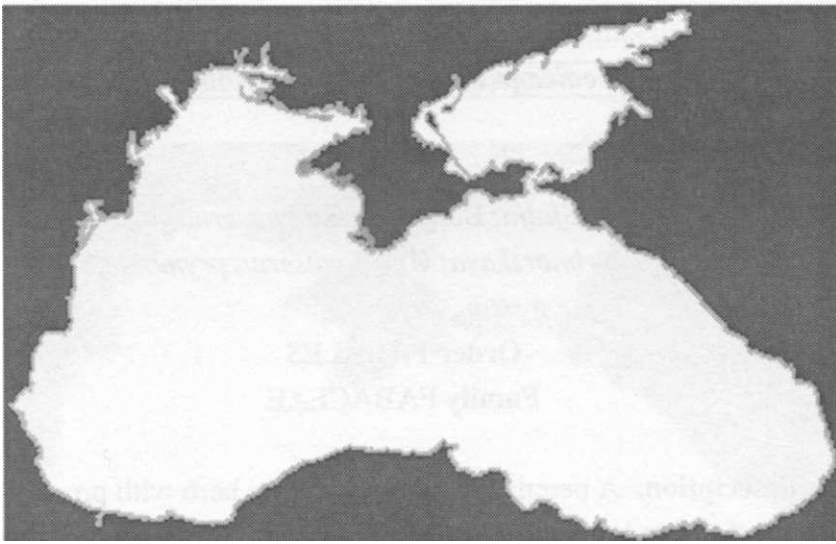
IUCN Status

World level: NE

Black Sea Regional level: VU

Subregion level: VU (Ukraine)

Distribution, Habitat type, Critical habitats, Limiting factors. South-western Crimean peninsula. Coastal sands and cockle-shell beaches.



Biology. Flowering and fruit-bearing during VI-VIII.

Population trends. A rare species.

Threats. Destruction of its habitat, anthropogenic stress.

Conservation measures taken. No special protection.

Conservation measures proposed. Create protected zones in places where it occurs.

Reference

Red Data Book of Ukraine, 1996. Plant Kingdom. Kyiv:606pp.

*Compiled by S. Dyatlov & T. Vasilieva.*

*Medicago marina* Linnaeus, 1753

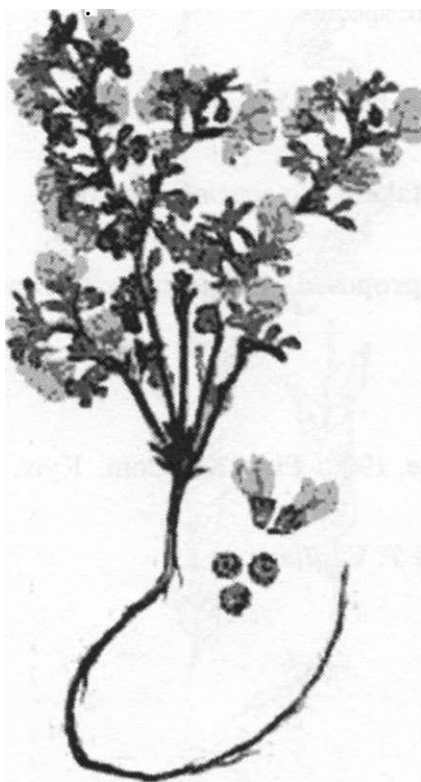
Synonyms: None

Common names: Engl: *Sea alfalfa*; Bulg: *Morska lyutserna*; Rom: *Lucerna (marina)*; Russ: *Lyutsernaprimorskaya*; Ukr: *Lyutsernaprymors'ka*

Order FAB ALES

Family FABACEAE

Taxonomic description. A perennial white-tomentose herb with procumbent stems; leaflets obovate, 5-7 mm long, dentate at the tip; stipules ovate, acute, smooth edged; flowers yellow, 6-8 mm long, in densely flowered racemes; beans spiralled, twisted, 5-6 mm in diameter, prickly.



IUCNStatus

World level: NE

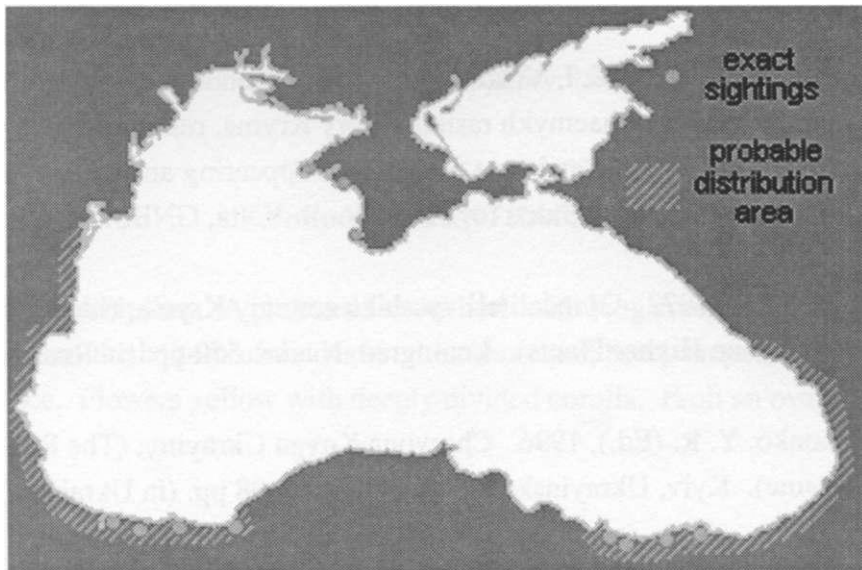
Black Sea Regional level: NE

Subregion level: CR in Ukraine

Distribution, Habitat type, Critical habitats, Limiting factors. Coastal sands and shingles. Critical habitats: Sevastopol and Evpatoria areas and Tarkhankut Cape (the



only localities in the Crimea). Limiting factors: a low competitive ability in coastal plant communities; the stenotopic nature of the species.



**Biology.** Blooms from May to June; fruits from July to August; a deep tap root system; propagation by seed and vegetatively by long rhizomes. An euxerophyte and a halophyte.

**Population trends.** Declining in abundance.

**Threats.** The expansion of coastal tourism.

**Conservation measures taken.** No special measures.

**Conservation measures proposed.** The species needs to be monitored; creation of Tarkhankut nature reservation.

## References

Davis, P. H., 1965-1985. Flora of Turkey and the East Aegean Islands. Vols. 1-9. Edinburgh University Press.

Fyodorov, A. A. (Ed.), 1987. Flora yevropeiskoy chasti SSSR. Leningrad, Nauka, 6: 254 pp. (in Russian).

Kryukova, I. V., Y. A. Luks, L. A. Privalova *et al*, 1988. Redkiye rasteniya i zhitovnyye Kryma. (Rare Plants and Animals of the Crimea). Simferopol, Tavria: 176 pp. (in Russian).

Golubev, V. N., 1996. Biologicheskaya flora Kryma. (Biological Flora of the Crimea). Yalta, GNBS: 86 pp. (in Russian).

Luks, Y. A., L. A. Privalova & I. V. Kryukova, 1976. Katalog redkikh, ischezayushchikh i unichtozhaemykh rasteniy flory Kryma, rekomenduyemykh dlya zapovednoy okhrany. 1976. (Catalogue of Rare, Disappearing and Exterminative Crimean Flora Plants Recommended for Protection). Yalta, GNBS: 24 pp.

Rubtsov, N. I. (Ed.), 1972. Opredelitel' vysshikh rasteniy Kryma. (Identification Book of the Crimean Higher Plants). Leningrad, Nauka: 550 pp. (in Russian).

Shelyag-Sosonko, Y. R. (Ed.), 1996. Chervona Knyga Ukrayiny. (The Red Data Book of Ukraine). Kyiv, Ukrayinska Encyklopediya: 608 pp. (in Ukrainian).

Vulff, E. W., 1960. Flora Kryma 2 (2). Moscow, Sel'khozgiz: 312 pp. (in Russian).

Yena, A. V., 1997. Nekotoryye itogi izucheniya pribrezhnoy flory Kryma. (Some results of the investigation of the Crimean coastal flora). Proc. Crimean Agricultural State University. Simferopol, Tavriya: 200-204 (in Russian).

*Compiled by A. Yena.*

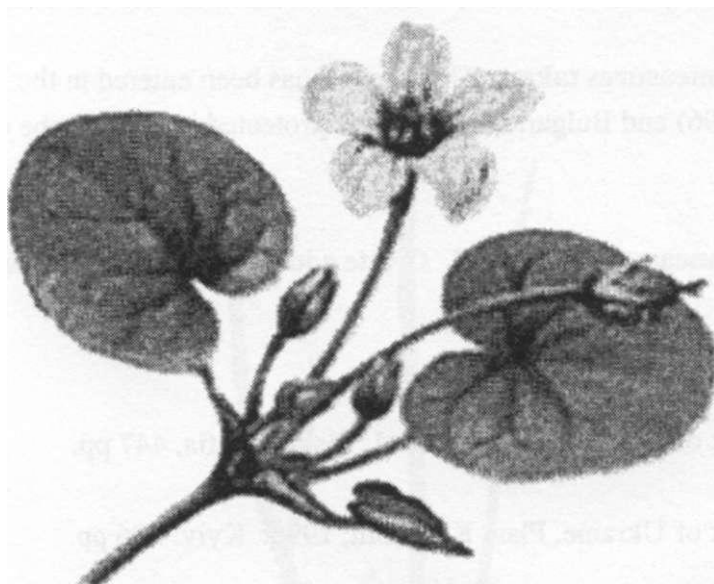
*Nymphoides peltata* S.G.Gmel

Synonyms: None

Common names: Russ: *Bolototsvetnik shchitolistny*; Ukr: *Plavun shchitolystny*

Order GENTIANALES  
Family MENYANTHACEAE

Taxonomic description. A perennial water herb with long creeping rootstock, holding firm on the bottom of the water. Leaves round, heart-shaped, floating on the water surface. Flowers yellow with deeply divided corolla. Fruit an ovate pod.



**IUCN Status**

World level: NE

Black Sea Regional level: LR

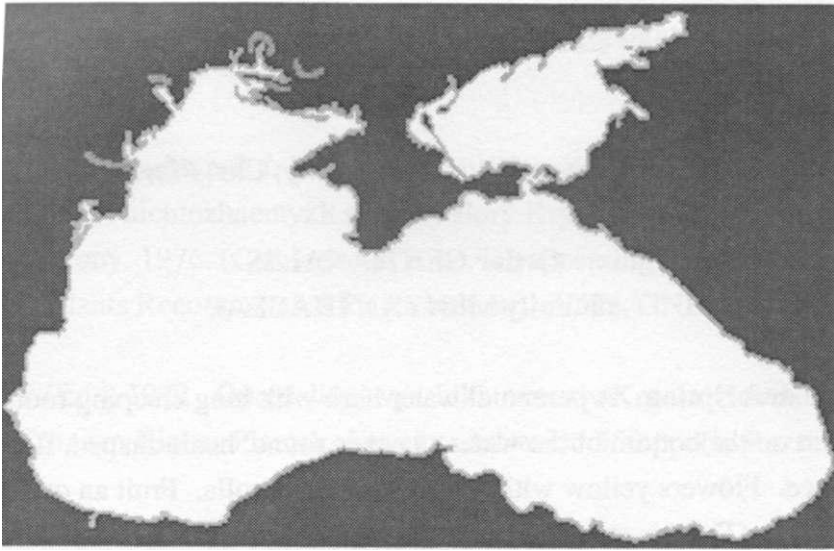
Subregion level: LR (Ukraine)

Distribution, Habitat type, Critical habitats, Limiting factors. Shallows (30-50 cm depth) with rapid or slow-flowing water with sandy and silty sediments.

Biology. Flowering during **VI-Vm**. Fruit-bearing during **Vffl-IX**. Reproducing by seeds and vegetatively.

Population trends. Populations are numerous, but decreasing.

Threats. Drying, pollution and salinisation of reservoirs.



Conservation measures taken. This species has been entered in the Red Data Books of Ukraine (1996) and Bulgaria (1984). It is protected in the Danube delta (Ukraine and Romania).

Conservation measures proposed. Create additional protected zones.

#### References

Red Data Book of Bulgaria, 1984. Vol. 1. Plants. Sofia, 447 pp.

Red Data Book of Ukraine. Plant Kingdom, 1996. Kyiv: 606 pp.

Takhtajan, A. (Ed.), 1981. Rare and vanishing plants of the USSR. Leningrad, Nauka: 264 pp.

*Compiled by S. Dyatlov & T. Vasilieva*

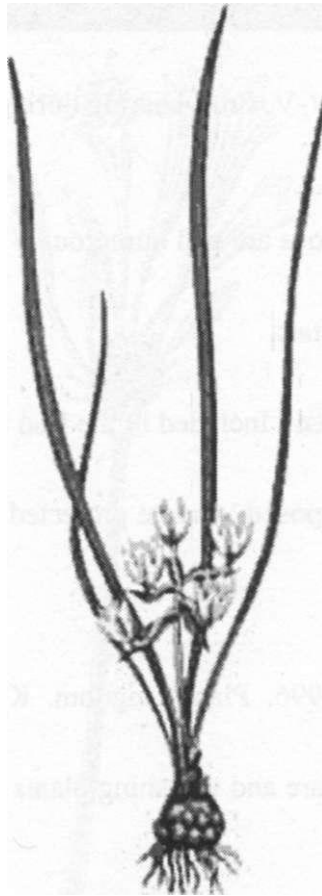
*Ornithogalum refractum* Kit & Schlecht, 1814

Synonyms: None

Common names: Engl: *Summer snowdrop*; Russ: *Ptitsemlechnikprelomleny*; Turk: *Tukruk oto*; Ukr: *Ryastka vidignuta*

Order LILIALES  
Family LILIACEAE

Taxonomic description. A perennial bulbous herb, 10-15 cm tall. The bulb is ovate, with numerous daughter bulbs. Its leaves are linear with a white stripe in the middle. The floscules are thin, shielded, consisting of 5-10 flowers; the leaflets of the perianth are white with wide green stripes below.



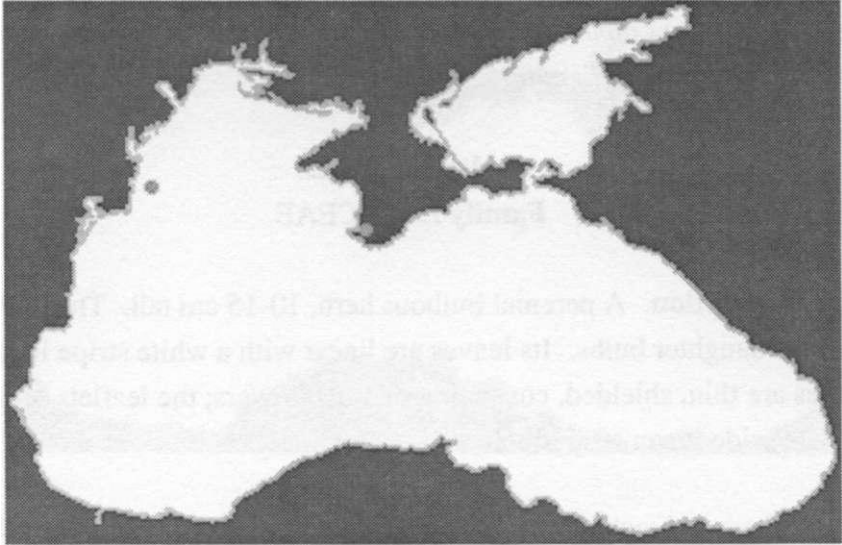
IUCN Status

World level: NE

Black Sea Regional level: LR

Subregion level: LR (Ukraine)

Distribution, Habitat type, Critical habitats, Limiting factors. Western Black Sea coasts, Zmeiniy Island.



Biology. Flowering during IV-V. Fruit-bearing during V-VI. Reproducing by seeds and daughter bulbs.

Population trends. Populations are still numerous.

Threats. Destruction of habitats.

Conservation measures taken. Included in the Red Data Book of Ukraine (1996).

Conservation measures proposed. Create protected zones.

#### References

Red Data Book of Ukraine, 1996. Plant Kingdom. Kyiv: 606 pp.

Takhtajan, A. (Ed.), 1981. Rare and vanishing plants of the USSR. Leningrad: 264 pp.

*Compiled by S. Dyatlov & T. Vasilieva*

*Pancratium maritimum* (Linnaeus, 1753)

Synonyms: None.

Common names: Bulg: *Pyasechna liliya*; Russ: *Pankratsiy morskoy*.

Order LILIALES  
Family AMARYLLIDACEAE

Taxonomic description. A plant with a large, almost spherical bulb, coated with a brown skinny cover. Stem 30-40 cm high, partially flattened. Long linear leaves (5-6), blue-green like the stem. The inflorescence contains from five to ten florets, embraced before blooming by two large skinny sepals. Large, white, fragrant blooms up to 16 cm long with infundibular perianth. Stamens pop out of the corolla; anthers arch-shaped. Fruit large and almost spherical, over 2 cm in diameter.



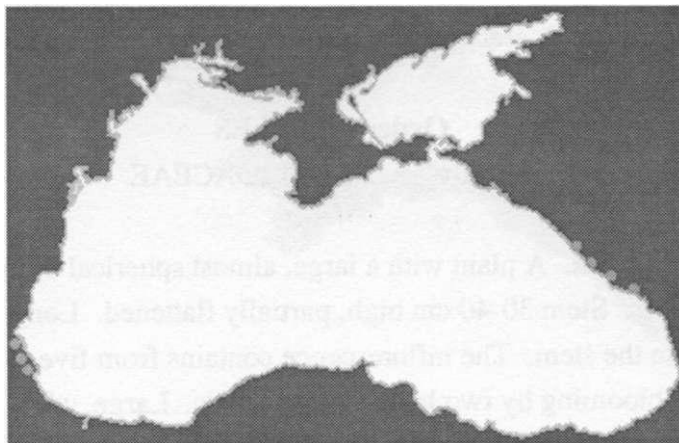
IUCN Status

World level:

Black Sea Regional level:

Subregion level: EN

Distribution, Habitat type, Critical habitats, Limiting factors. On coastal sands and in dunes. Threat: humidity.



Biology. A perennial bulbaceous plant. Blooms in July-August (September). Propagates in October. Reproduces vegetatively and through seeds. High seed productivity but limited reproduction through seeds.

Population trends. Declining.

Threats. Active use of the sandy coastal strip; resort construction and flower picking.

Conservation measures taken: Protected plant. There is a reserve named Sandy Lily in the countryside of Kavatsite.

Conservation measures proposed. Effective protection and maintenance of the reserve in Kavatsite. Include other sites within the borders of protected areas.

#### References

Iordanov, D., 1964. Flora na NRB. 2. Rod *Pancratium* L., pp. 323-324.

Velchev, V. & P. Vasilev, 1976. Ecobiologichno i fitocenologichno prouchvane na Piasachnata lilia (*Pancratium maritimum* L.) v raiona na Sozopol. Fitologia 5: 3-20.

Velchev, V., P. Vasilev & T. Meshinev, 1979. Vlianie na ecologichnitr uslovia varhu generativnoto razmnojavane na Piasachnata lilia (*Pancratium maritimum* L.). Ecologia 5: 64-72.

*Compiled by M. Filipova.*



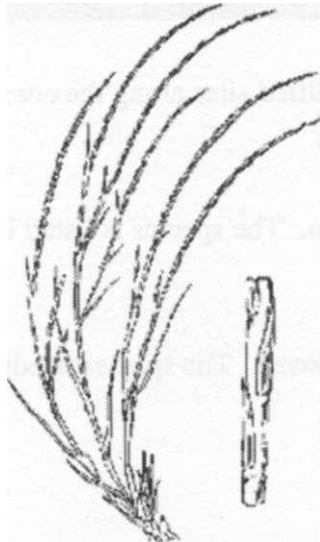
*Parapholis incurva* (Linnaeus) C.E.Hubbard, 1946

Synonyms: *Lepidurus incurvus* (L.) Janch. nom. invalid., *Lepturus incurvus* (L.) Druce, *Pholiurus incurvus* (L.) Schinz & Thell

Common names: Engl: *Curved parapholis*; Bulg: *Izvit foliurus*; Russ: *Parafolis sognuty*; Ukr: *Parafolis zignuty*

Order POALES  
Family POACEAE

Taxonomic description. An annual grass of up to 5-25 cm in height, with curved brittle spike; spikelets solitary, one-flowered, with two glumes as long as the lemma; Lemma without awn.



RJCN Status

World level: NE

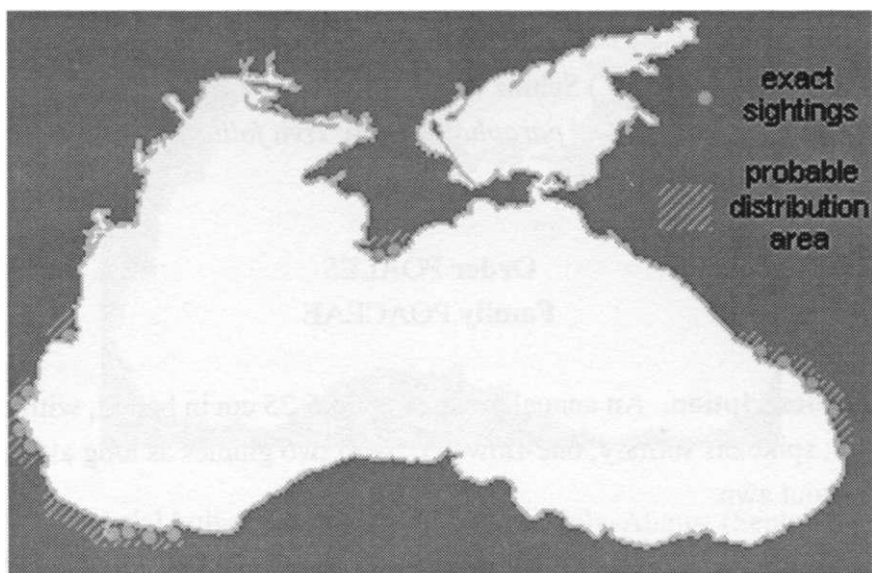
Black Sea Regional level: EN

Subregion level: CR in Ukraine

Distribution, Habitat type, Critical habitats, Limiting factors. On coastal slopes, sands and shingles. Critical habitats: the Crimea (Alupka, Yalta region, Salgir river), Georgia (Adzharia), Turkey, Bulgaria (Tolbukhin and Burgas districts). Limiting factors: a low competitive ability.

Biology. Blooms from May to June; fruits from June to July. Root system - short fibrous. Only seed propagation. A psammophyte, xeromesophyte and glycohalophyte.

Population trends. Declining.



Threats. Scarcity of non-modified sites along the coast due to the development of the coast into a populated zone.

Conservation measures taken. The species is listed in the Red Data Book of Bulgaria.

Conservation measures proposed. The species needs to be monitored in the region; new reservations are desirable.

#### References

Davis, P. H., 1965-1985. Flora of Turkey and the East Aegean Islands. Vols 1-9. Edinburgh University Press.

Golubev, V. N., 1996. Biologicheskaya flora Kryma. (Biological Flora of the Crimea). Yalta, GNBS: 86 pp. (in Russian).

Luks, Y.A., L. A. Privalova & I. V. Kryukova, 1976. Katalog redkikh, ischezayushchikh i unichtozhaemykh rastemy flory Kryma, rekomenduyemykh dlya zapovednoy okhrany. 1976. (Catalogue of Rare, Disappearing and Exterminative Crimean Flora Plants Recommended for Protection). Yalta, GNBS: 24 pp. (in Russian).

Rubtsov, N. I. (Ed.), 1972. *Opredelitel vysshikh rasteniy Kryma. (Identification Book of the Crimean Higher Plants)*. Leningrad, Nauka: 550 pp. (in Russian).

Tzvelyov, N. N., 1976. *Zlaki SSSR. (Cereals of the USSR)*. Leningrad, Nauka: 788 pp. (in Russian).

Velchev, V. (Ed.), 1984. *Chervena kniga na NR Bulgaria. Tom 1. Rasteniya. (The Red Data Book of Bulgaria. Vol. 1. Plants)*. Sofia, Bulgarskata Akademia na naukite: 448 pp. (in Bulgarian).

Vulff, E. W., 1951. *Flora Kryma, 1 (4)*. Moscow, Izdatel'stvo sel'skokhozyaystvennoy literatury: 170 pp. (in Russian).

*Compiled by A. Yena*

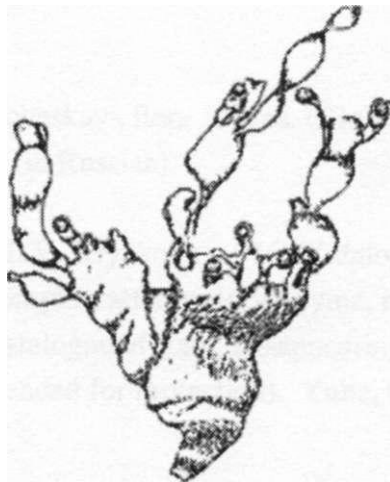
*Phyllophora brodiaei* (Turn J. Ag., 1842)

Synonyms: *Fucus brodiaei* Turner, 1809; *Coccotylus brodiaei* in Kutzing, 1869; *Phyllophora truncata* (Pallas) A. Zin f. *brodiaei* Turn.

Common names: Rom: *Filofora*; Russ: *Fillofora*; Turk: *Filofora*.

Order GIGARTINALES  
Family PHYLLOPHORACEAE

Taxonomic description. Thallus with brush shape, 5-40 cm tall, most of the surface smooth, the inferior side cylindrical, the superior side a thin stem, simple or branched out; on the stem top and branches there are smaller membranaceous lamellae in the feather, oval or heart shaped, superior margins waved and lobated. The leaflet pairs appear in large numbers, often with the same length as those of the main lamella where the superior margins are branched in lamellas; the strong detachment of the lamellas give them the shape of a fan. At the end of the lamellas, a pair of leaflets. The stem can provide support for new lamellas; proliferation at the base of the long and short stems. The central part of the lamella consists of big cells with thicker membranes, which become thinner on the margins; the cortical strata consist of one small cell range, almost square with rounded corners. Reproductive organs on the upper side of the lamellas. Nemathecae with spherical tetraspores of up to 2 mm in diameter. Spermatangia develop at certain ages, under smaller leaves or on the thickened margins of the lamellas; appearing under short blades, uncoloured, grouped not deep in the stem and reminiscent of conceptacles. The matured cristocarps grow on the superior margins of the lamellas' spherical bodies. This species does not form carpospores; cleavage of cells takes place in the gonimoblast cell blades.



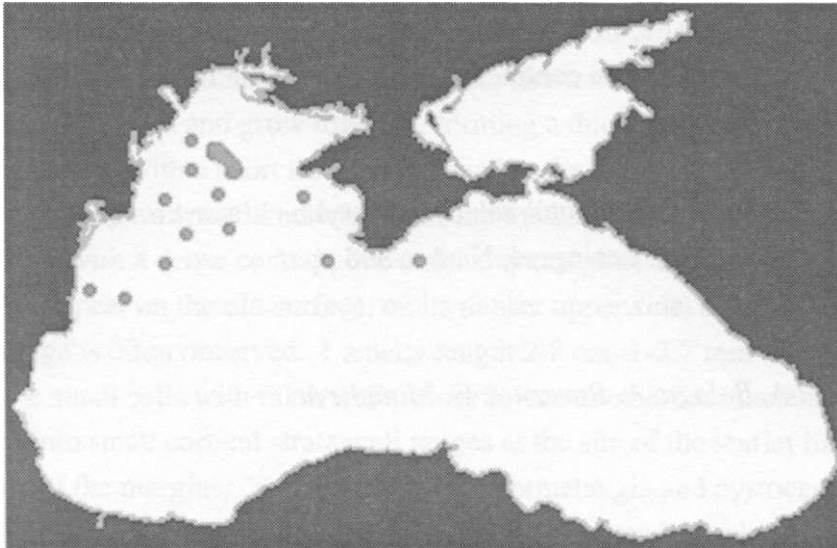
## IUCN Status

World level:

Black Sea Regional level: VU

Subregion level: VU

Distribution, Habitat type, Critical habitats, Limiting factors. In "Zernov's field". On rocky, and shelly bottoms, at depths ranging between 4 and 47 m. Also in the Arctic Ocean, Atlantic littoral of Europe and North America, Morocco, Japan Sea, near Mauritius Island. A northern species, limited by light penetration.



Biology. Reproduction between June and November.

Population trends. A severe reduction! (together with *Phyllophora nervosa* and *Phyllophora pseudoceranoid.es*). Assessments made in 1971 on the Romanian shelf, in a area of 1,296 km<sup>2</sup>, recorded a quantity of 5,9761, of which 3,983 t was situated in an area of 216 km<sup>2</sup> of Zernov's field, at a depth of 43-48 m.

Threats. Lowering of light energy penetration, eutrophication.

Conservation measures proposed. Improve the ecological conditions of the central Northwestern Black Sea.

## References

Bavaru A., A. S. Bologa & H. V. Skolka, 1991. A checklist of the benthic marine algae (except the Diatoms) along the Romanian shore of the Black Sea. Rev. roum. Biol., Biol, veget. 36: 7-22.

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Bologa A. S., N. Bodeanu, A. Petran, V. Tiganus & Y. P. Zaitsev, 1995. Major modifications of the Black Sea benthic and planktonic biota in the last three decades. *Bull. Inst. oceanogr. Monaco* 15: 85-110.

Kalugina-Gutnik, A. A., 1975. *Phytobenthos of the Black Sea*. Kiev, Naukova Dumka: 245 pp.

Vasiliu, F. & N. Bodeanu, 1972. Repartition et quantité d'algues rouge du genre *Phyllophora* sur la plateforme continentale roumaine de la mer Noire. *Cercet. mar.* 3: 47-52.

Zinova, A. D., 1967. *Opredelelitel' zelenykh, burykh i krasnykh vodoroslei iuzhnykh morei SSSR*. Moscow - Leningrad, Nauka: 398 pp.

*Compiled by A. Bologa, A. Bavaru & G. Minicheva.*

*Phyllophora nervosa* (P.C. Grev., 1830)

Synonyms: *Fucus nervosus* De Candolle, 1805; *Phylophora rubens* (Good. & Wood.) Grev., *F. nervosa* Hauck, 1885; *Phyllophora crispa* (Huds.) Dixon.

Common names: Rom: *Filofora*; Russ: *Fillofora*; Turk: *Filofora*.

Order GIGARTINALES  
Family PHYLLOPHORACEAE

Taxonomic description. Thallus formed by brushes of 50 cm length. Base consists of suckers or of a small foot (sole), provided with short, branched twigs (sprigs, shoots) which often join and grow together, forming a thicker stratum. From the base rise vertical suckers with a short stem (cylindrical at the base and flat on the upper side). Stem passing over the lamellate site of the thallus. Shape of the lamella linear and linear-oval with a dense central zone and wavy margins, abundantly branched; new lamellas appear on the old surface; on its denser upper side, a pair of leaflets; a forked cleavage is often observed. Lamella length 2-8 cm, 1-2.7 mm wide. In cross section, some small cells with thick walls, close to one another, permanently transformed into small cortical strata; cell ranges at the site of the leaflet formation double those of the margins. Tetrasporangium, spermatangia and cystocarps develop into spherical nemathecae provided with pedicels on stem surface, along both sides of the leaflets and near the lamella margins. Surface of the cystocarps wrinkled and folded.



## IUCN Status

World level:

Black Sea Regional level: VU

Subregion level: VU

Distribution, Habitat type, Critical habitats, Limiting factors. Found in Zernov's fields; on rocky, gravelly bottoms at depths of 0 to 60 m. A deterioration in water transparency reduces light penetration and leads to the disappearance of this plant.

Biology. Formation of cystocarps in summer.

Population trends. A severe reduction of all three species has been recorded on the Romanian shelf. In the 1950s, total biomass reached about  $10^7$  tonnes. In 1980, it had declined to  $14 \cdot 10^5$  tonnes, and in 1990 to  $3-5 \cdot 10^5$  tonnes.

Threats. Decline in light energy penetration; eutrophication.

Conservation measures proposed. Improve the ecological conditions of the central northwestern Black Sea; areas of the main *Phyllophora* beds to be closed to dragged fishing gear disturbing the bottom; delimit ecological sanctuaries to protect unique associated fauna.

## References

Bavaru A., A. S. Bologa & H. V. Skolka, 1991. A checklist of the benthic marine algae (except Diatoms) along the Romanian shore of the Black Sea. Rev. roum. Biol., Biol, veget. 36: 7-22.

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Bologa A. S., N. Bodeanu, A. Petran, V. Tiganus & Y. P. Zaitsev, 1995. Major modifications of the Black Sea benthic and planktonic biota in the last three decades. Bull. Inst, oceanogr. Monaco 15: 85-110.

Kalugina-Gutnik, A.A., 1975. Phytobentofos of the Black Sea. Kiev, Naukova Dumka: 245 pp.

Kaminer, K. M., 1987. Degradation of the phytocoenoses of Dzharylgachskiy Bay of the north-western Black Sea as a result of several years anthropogenic load. In: Hydrobiological investigation on the Ukraine in the 1th Five-Year Plan. Kiev, 41-42.



Katukov, A. B., 1983. Phyllophora's field as indicators condition of the ecosystem. In : Systems analysis and modelling processes on the shelf of the Black Sea. Sevastopol. Akad. Nauk. Ukr. SSR, 140-147.

Vasiliu, F., 1984. Cauze si consecinte ale starii actuale a populatiilor de alge perene de la litoralul Romaniasc al Marii Negre. Rev. Muz. Monum. 5.

Vasiliu, F. & N. Bodeanu, 1972. Repartition at quantité d'Algues rouges du genre *Phyllophora* sur la plateforme continentale roumaine de la mer Noire. Cercet. mar. 3: 47-52.

Zaitsev, Y., 1992. Recent changes in the trophic structure of the Black Sea. Fish. Oceanogr. 1: 180-189.

Zinova, A. D., 1967. Opredelitel' zelenykh, burykh i krasnykh vodoroslei iuzhnykh morei SSSR. Moskva - Leningrad, Nauka: 398 pp.

Zinova, A. D., 1967. Definition of green, brown and red algae of the southern seas of the USSR. Leningrad, Nauka: 397 pp.

*Compiled by A. Bologa. A. Bavaru & G. Minicheva.*

*Phyllophora pseudoceranoides* (Gmel.) Newr. & R. Taylor, 1971.

Synonyms: *Phyllophora membranifolia* (Good. & Wood.) J. Ag. Hauck, 1885; *Fucus pseudoceranoides* Gmelin, 1768.

Common names: Russ: *Fillofora psevdorogataya*; Turk: *Filofora*.

Order GIGARTINALES  
Family PHYLLOPHORACEAE

Taxonomic description. Thallus 3-20 cm high, chaotically branched. Stems end on the top leaf-shaped lamellas which have a triangular shape. Base of the stems cylindrical, width c. 1 mm, almost black in colour. Leaf lamellas without rib, but thin and tender. Length of the lamellas 1.5-3 cm, width at base 2-5 mm, at the top 10-20 mm. Same lamellas with dichotomic division on the top. Tsiistocarps developing on stems. Lamellae 1.5-2 mm on the feet.



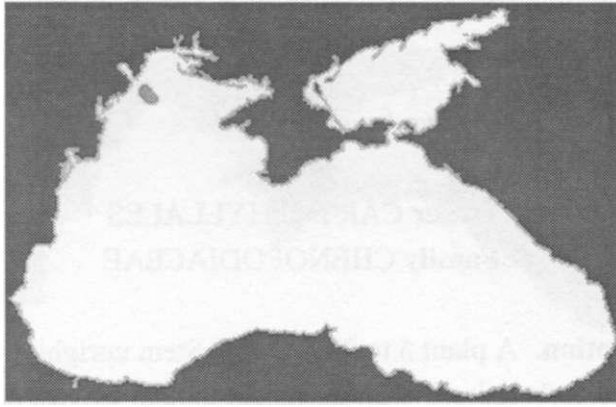
IUCN Status

World level:

Black Sea Regional level:

Subregion level: CE (Ukrainian sector)

Distribution. Mostly in the north-western part of Zernov's *Phyllophora* fields.



Habitat type, Critical habitats, Limiting factors. On stones and shelly bottoms at a depth of 25-30 m. High concentration of suspended matter highly detrimental. Plant suffers from low light penetration.

Biology. Perennial. *P. pseuduceranoid.es* has tetrasporophites and two-housed gametes.

Population trends. In the 1960s, the biomass reached 10-350 g.m<sup>2</sup>, and stocks were of the order of 25-10<sup>3</sup> tons. Currently in decline.

Threats. Decreased water transparency. Eutrophication.

Conservation measures taken. Included in the Red Data Book of the Ukraine.

Conservation measures proposed. Reduce concentrations of suspended matter. Reduce the level of phosphorus and nitrogen.

#### References

Kalugina-Gutnik, A. A., 1975. Phytobenthos of the Black Sea. Kiev, Naukova Dumka: 245 pp.

Red Book of the Ukraine, 1996. Plant World, 1996. Kiyiv, Ukrainskyi Encyklopediya Publ.: 494 pp.

Zinova, A. D., 1967. Definition of green, brown and red algae of the southern seas of the USSR. Leningrad, Nauka: 397 pp.

Compiled by G. Minicheva.

*Polycnemonum heuffelii* (Lang, 1828)

Synonyms: None.

Common names: Bulg: *Hoyfelova hrupenka*.

Order CARYOPHYLLALES

Family CHENOPODIACEAE

Taxonomic description. A plant 5 to 30 cm tall. Stem upright, pyramid-like, branching, with rare curly hairs. Filiform, almost tubular leaves, the middle and lower ones 6 to 10 times longer than the sepals, pointed at the tip, usually arch-shaped and horizontally spread. White, skinny, oviform bracts with elongated pointed tips, up to two times longer than the petals. The latter from 1 to 1.5 cm long, oval, pointed on the back, without knots. The seeds are lenticular, dark brown to black, finely warty.



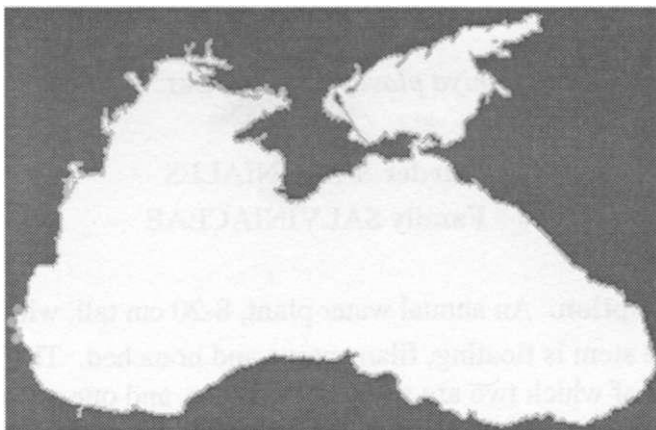
IUCN Status

World level:

Black Sea Regional level:

Subregion level: EN

Distribution, Habitat type, Critical habitats, Limiting factors. Dry rocky and sandy places. Humidity.



Biology. An annual herbaceous plant. Blooms in June-September. Propagates in August-October. Reproduces through seeds.

Population trends. Declining.

Threats: Anthropological activities.

Conservation measures taken. Some of the sites are in the Ropotamo reserve.

Conservation measures proposed. Species to be included in the list of protected plants in Bulgaria.

#### References

Ball, P. W., 1964. Flora Europaea. 1. Genus *Polycnemum* L.: p. 91.

Iordanov, D. & B. Kuzmanov, 1966. Flora na NRB, 3. Rod *Polycnemum* L.: 570-572 pp.

Reichinger, K., 1933. Neue pflanzen aus dem Alibotusch-Gebirge. Magyar. Bot. Lab. 32: 152-153.

Velenofski, J., 1891. Flora Bulgarica. Prague:676p

*Compiled by M. Filipova.*

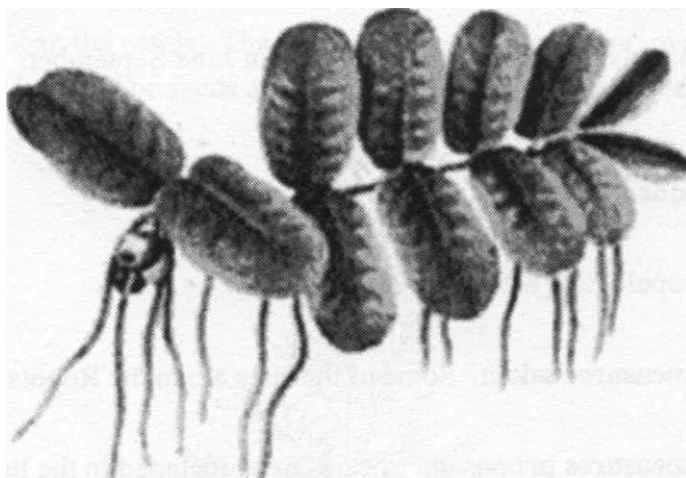
*Salvinia natans* (L.) All., 1785

Synonyms: None

Common names: Russ: *Salviniya plavayuschaya*.; Ukr: *Salviniya plavayucha*

Order SALVJMALES  
Family SALVINIACEAE

Taxonomic description. An annual water plant, 8-20 cm tall, with both mega- and microspores. The stem is floating, filamentous and branched. The leaves are located in nodes in threes of which two are above the surface, and one submerged.



IUCN Status

World level: NE

Black Sea Regional level: LR

Subregion level: LR (Ukraine)

Distribution, Habitat type, Critical habitats, Limiting factors. Surface of slow running waters.

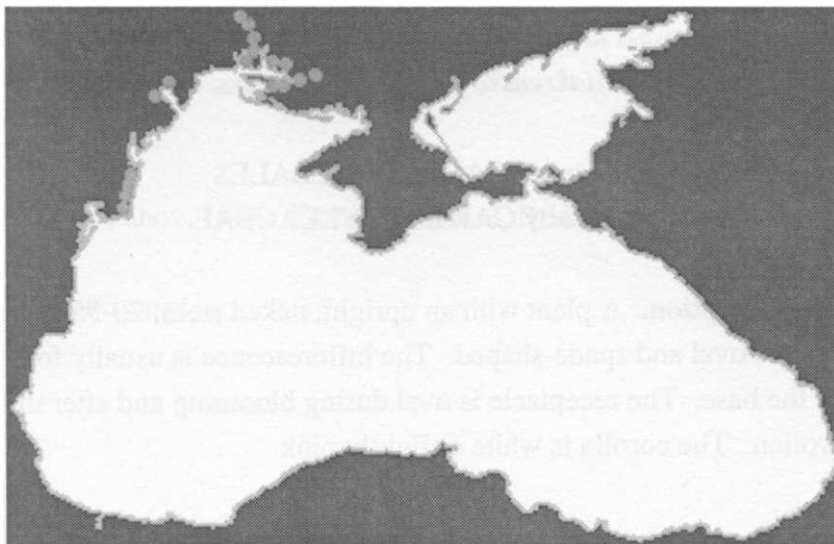
Biology. Reproduction by spores and vegetatively. Spore ripening during VHI-IX.

Population trends. Numerous.

Threats. Drying and pollution of water-bodies.

Conservation measures taken. The species has been entered in the Red Data Book of Ukraine (1996) and protected in the Danube delta (Ukraine and Romania).

Conservation measures proposed. Create more protected zones.



#### References

Takhtajan, A. (Ed.), 1981. Red Data Book of Ukraine, Vegetal Kingdom. Kiev: 606 pp

Tchopik, V.I., 1978. Rare and vanishing plants of Ukraine. Kiev: 216 pp.

Zaverucha, B.V., T. L. Andrienko & V. V. Protopopova, 1983. Protected plants of Ukraine. Kiev: 176 pp.

*Compiled by S. Dyatlov & T. Vasilieva*

*Silene caliacrae* (D.Jord. & P.Pan., 1966)

Synonyms: None.

Common names: Bulg: *Kaliakrensko plyuskaviche*; Russ: *Smolyovka*.

Order CARYOPHYLLALES  
Family CARYOPHYLLACEAE

Taxonomic description. A plant with an upright, naked stem, 20-55 cm tall. The lower leaves are oval and spade-shaped. The inflorescence is usually fork-like, branched at the base. The receptacle is oval during blooming and after that bubble-like and swollen. The corolla is white or lightly pink.

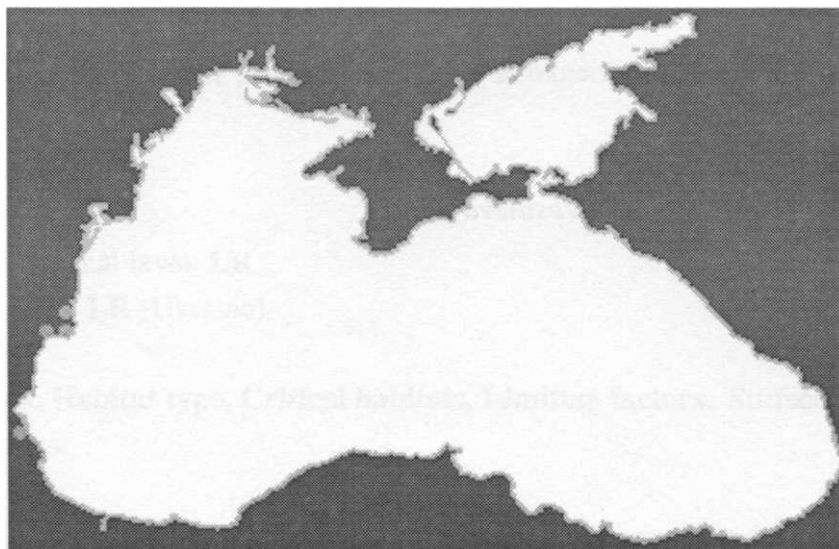
IUCN Status

World level: CE

Black Sea Regional level: CE

Subregion level: CE (Bulgarian endemic)

Distribution, Habitat type, Critical habitats, Limiting factors. Lime-stone rocky sites nearby the sea.



Biology. An annual or biennial herbaceous plant. Blooms in May-June, propagates June-July. Reproduces through seeds.

Population trends. Declining.

Threats. Trampling, resort construction and flower picking.



Conservation measures taken. One of its sites is in the Kaliakra reserve.

Conservation measures proposed. Protecting the site at Rezovska River.

#### Reference

Jordanov, D. & P. Panov, 1966. Flora na NRB. 3. Rod *Silene* L.: 435-512 pp.

*Compiled by M. Filipova.*

*Silene euxina* (Rupr., 1869)

Synonyms: *Silene racemosa* Otth. var. *rubriflora* boh., 1867.

Common names: Bulg: *Chernomorsko plyuskaviche*; Russ: *Smolyovka*.

Order CARYOPHYLLALES  
Family CARYOPHYLLACEAE

Taxonomic description. A plant with a creeping stem, upright at the top, 10-30 cm tall, thick hairy, without leaves. Inflorescences dehisce. Grassy bracts, lanceolate and pointed at the ends. Synoecious florets or with sterile stamens. Tubular or bell-shaped calyx covered with stiff hairs. White or pink-reddish petals.

IUCN Status

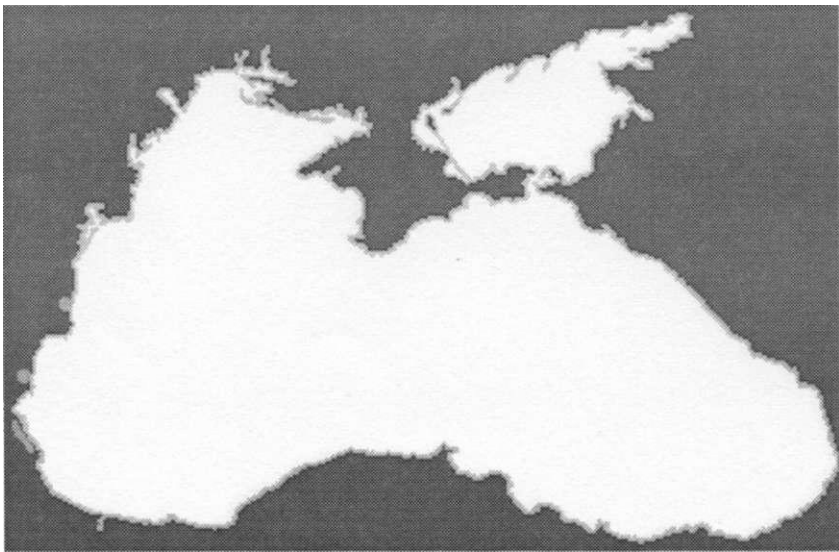
World level:

Black Sea Regional level:

Subregion level: EN

Distribution, Habitat type, Critical habitats, Limiting factors. On coastal sands.

Threats: humidity and running sands.



Biology. Annual, biennial to perennial herbaceous plant. Blooms in June-July. Propagates in July-August.

Population trends. Declining.

Threats. Resort construction.

Conservation measures taken. None.

Conservation measures proposed. Identification and preservation of remaining sites.

#### References

Chater, A. O. & S. M. Walters, 1964. Flora Europaea. 1. Genus *Silene* L.: 158-181 pp.

Iordanov, D. & P. Panov, 1966. Flora na NRB. 3. Rod *Silene* L.: 435-512 pp.

*Compiled by M. Filipova.*

*Tetragonolobus maritimus* ((Linnaeus) Roth, 1788)

Synonyms: *Lotus maritimus* L., 1753, *Lotus siliquosus* L., 1758.

Common names: Bulg: *Tetragonolobus*.

Order FAB ALES  
Family FABACEAE

Taxonomic description. The stem is spreading or upright, thick, bristling, hairy. Triple leaves. Stipules leaf-like, partially accreted with the petiole. Single florets within the leaves. Tubular and bell-shaped naked receptacle. Slightly yellow, naked corolla, 22 -25 mm long. Germen cylindrical, pointed at the tip. Wide, lenticular, dark brown seeds.

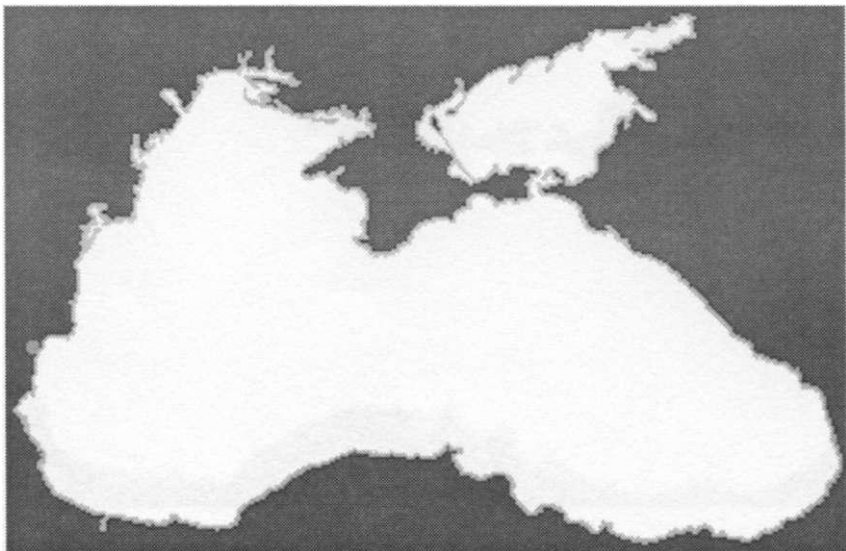
IUCN Status

World level:

Black Sea Regional level:

Subregion level: EX

Distribution, Habitat type, Critical habitats, Limiting factors. Wet, marshy meadows and swamps. Limited by humidity.



Biology. A perennial herbaceous plant. Blooms in May-July. Propagates in July-September. Reproduction by seeds.

Population trends. Extinct.

Threats. Changes in the water regime and contamination of the Lake of Varna.

Conservation measures taken. None.

Conservation measures proposed. Reintroduction.

#### References

Kuzmanov, B., 1976. Flora na NRB. 4, Rod *Tetragonolobus* Scop.: 214-215 pp.

*Compiled by M. Filipova.*

*Thymus littoralis* Klok & Shost

Synonyms: *T. moldavicus* Klok. & Shost. x *T. marschalianus* Willd

Common names: Russ: *Timyan pribrezhniy*, Ukr: *Chebrets prybrezhny*

Order LAMIALES

Family LAMIACEAE

Taxonomic description. A semifrutex, c. 15 cm tall with short horizontal stems with floscules on the top. Rising shoots fruitless. Shoots with flowers have long protruding hairs. Leaves petiolar, elliptical and oblong. Floscule oblong. Corolla rose-purple.



IUCN Status

World level: NE

Black Sea Regional level: CR

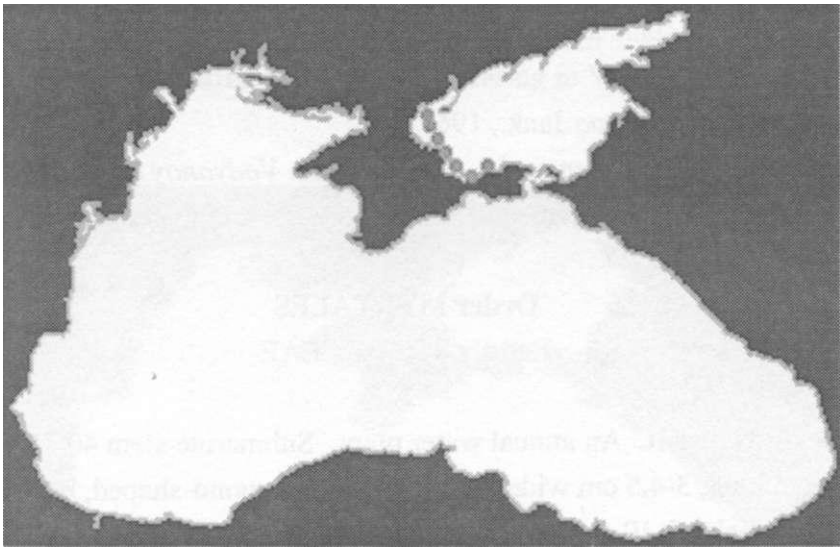
Subregion level: CR (Ukraine)

Distribution, Habitat type, Critical habitats, Limiting factors. An endemic psammophyte, typical of the littoral strip. Sea of Azov coast of Crimea.

Biology. Flowering during VI-VITJ, fruit-bearing during VHI-DC. Reproduction by seeds and creeping shoots.

Population trends. Local populations up to 50 specimens.

Threats. Excessive amount of pastures, recreational stress, stenotopic character of species.



Conservation measures taken. The species is in the Red Data Book of Ukraine (1996).

Conservation measures proposed. Increase Arabat Reserve territory; maintain in botanical gardens.

#### Reference

Red Data Book of Ukraine, 1996. Plant Kingdom. Kyiv: 606 pp.

*Compiled by S. Dyatlov & T. Vasilieva*

*Trapa natans* Linnaeus, 1753

Synonyms: *Trapa longicarpa* Jank., 1961

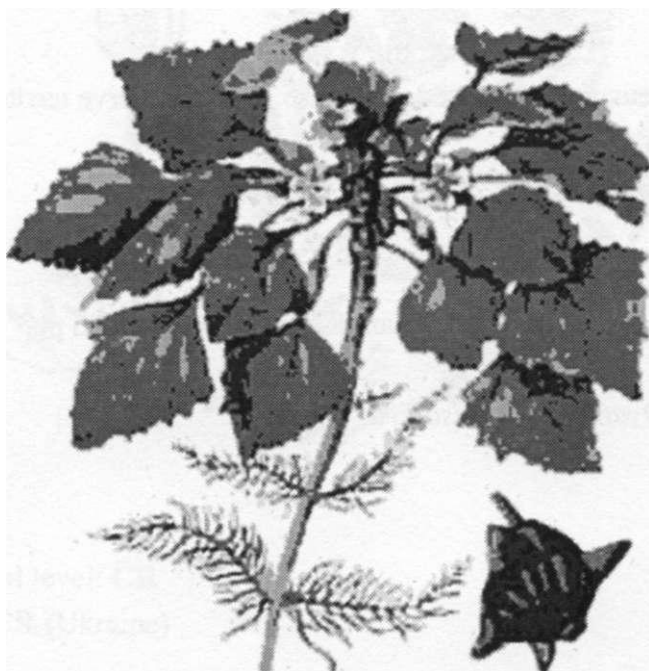
Common names: Bulg: *Voden orekh, Julyun*; Russ: *Vodyanoy orekh plavayushchiy*;

Ukr: *Vodyany gorikh plavayuchy*

Order MYRTALES

Family TRAPACEAE

Taxonomic description. An annual water plant. Submarine stem 40-150 cm long. Leaves 3-4 cm long, 3-4.5 cm wide, floating, wide diamond-shaped, below with hairs along veins. Petioles 3-10 cm long, cylindrical or with oblong swellings near leaf blades. Fruit diameter 6-10 mm, with firm cover, four-cornered.



IUCN Status

World level: VU

Black Sea Regional level: VU

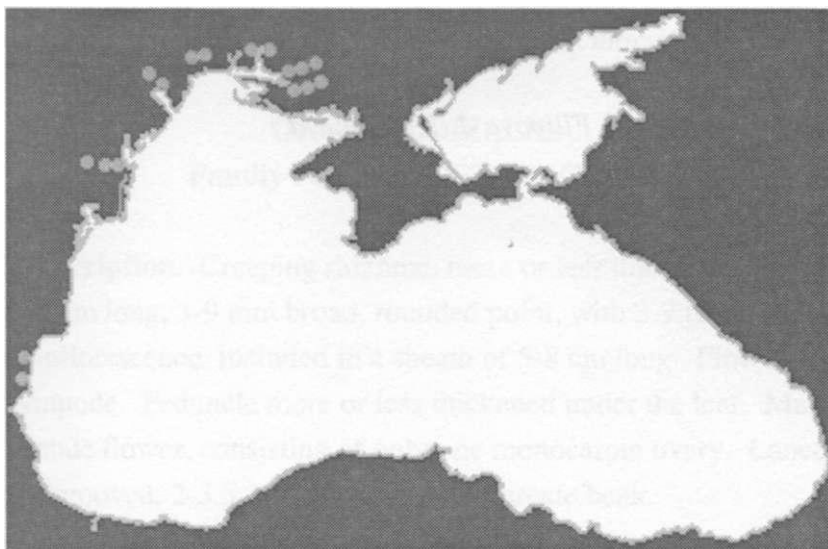
Subregion level: VU

Distribution, Habitat type, Critical habitats, Limiting factors. Geographic range of species covers both Europe and Mediterranean. In stagnant or slow-flowing water. Occurs in pure growths or mixed with other water plants.

Biology. Probably, the species has obligate self-fertilization: there is no evidence of cross fertilization. Fruits are distributed by flowing waters, mammals and birds.



Seeds have good germination power (up to 40-50 years), annually only a part of them shoot. Flowering during VI-VII. Fruit-bearing in VITI-IX. Reproduction only by seeds.



Population trends. Populations abundant, particularly in the Dunaiskie plavni reserve (Ukraine).

Threats. Drying of wetlands, chemical pollution, use for animal feeding. Conservation measures taken. The species is in the Red Data Books of delta (Ukraine and Romania).

Conservation measures proposed. Create new protected zones.

#### References

Lucas, G., 1977. List of rare, threatened and endemic plants in Europe. Strasbourg: 286 pp.

Peev, D., 1979. Flora na NRB. 7 Sem. Trapaceae: 444-446 pp.

Rare and vanishing plants of the USSR (A. Takhtajan, Ed.), 1981. Leningrad: 264 pp.

Red Data Book of Russian Soviet Federal Socialist Republic, 1988. Plants. Moscow: 590 pp.

Red Data Book of Bulgaria, 1984. Plants. Sofia 1: 447 pp.

Red Data Book of Ukraine, 1996. Plant Kingdom. Kyiv:606pp.

Tchopik, V. I., 1978. Rare and vanishing plants of Ukraine. Kiev: 216 pp.

Zaverucha B. V., T. L. Andrienko & V. V. Protopopova, 1983. Protected plants of Ukraine. Kiev: 176 pp.

*Compiled by S. Dyatlov, M. Filipova & T. Vasilieva*

*Zostera marina* (Linnaeus, 1753)

Synonyms: None.

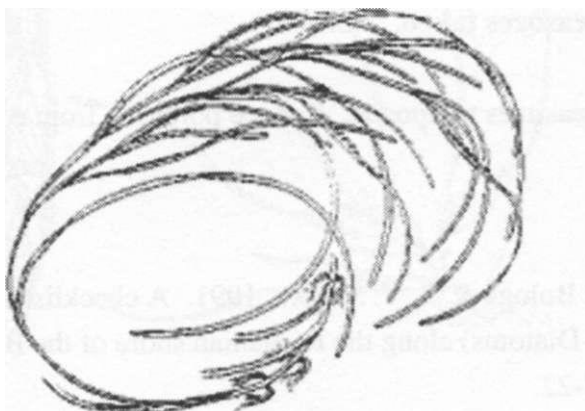
Common names: Rom: *Iarba de mare*; Russ: *Vzmornik morskoy*.

Order HELOBIALES

Family POTAMOGETONACEAE

Taxonomic description. Creeping rhizome, more or less thickened. Floating linear leaves, 60-150 cm long, 3-9 mm broad, rounded point, with 3-7 (9) nerves.

Multiflorous inflorescence, included in a sheath of 5-8 cm long. Flowers placed on a foliaceous sympode. Peduncle more or less thickened under the leaf. Male flowers next to the female flower, consisting of only one monocarpic ovary. Lanceolate fruit, longitudinally grooved, 2-3.5 mm long, with a bifurcate beak.



IUCN Status

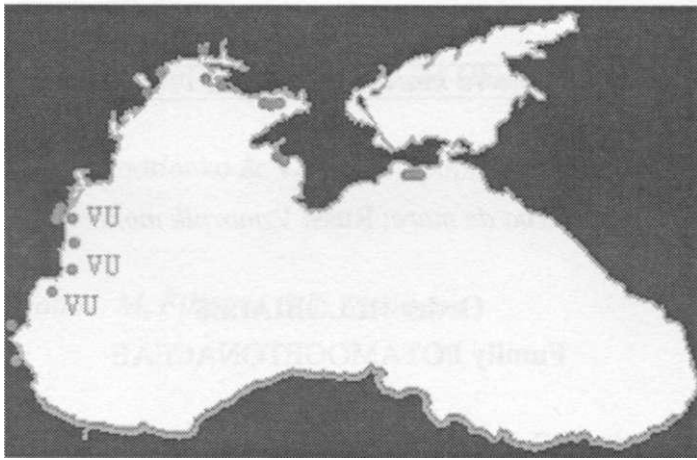
World level:

Black Sea Regional level:

Subregion level: VU

Distribution, Habitat type, Critical habitats, Limiting factors. Rocky and sandy bottoms next to seashore and lakes. Sensitive to effects of water quality, and human exploitation (by fisherman). General distribution: Europe, Middle East, China, Japan and North America.

Biology. The detritus found amidst these plants constitutes an abundant source of food for fish (especially grey mullet) and sea birds. The plant is also used as a fertilizer and for reinforcing home-made bricks. The leaves (seagrass) are used for filling pillows and mattresses, as well as for packing eggs, pieces of furniture and other fragile objects.



Population trends. A severe reduction due to the construction of harbours (Midia, Agigea, Mangalia) near to their typical habitat.

Threats. Increasing turbidity due to hydrotechnical constructions; over-exploitation.

Conservation measures taken. None.

Conservation measures proposed. Reduce pollution from coastal point sources.

#### References

Bavaru, A., A. S. Bologa & H. V. Skolka, 1991. A checklist of the benthic marine algae (except the Diatoms) along the Romanian shore of the Black Sea. *Rev. roum. Biol, veget.* 36: 7-22.

Bologa, A. S., 1987-88. Annotated bibliography on the macrophytobenthos along the Romanian Black Sea coast (1881-1986). *Cercet mar.* 20/21: 353-384.

Bologa, A. S., 1979. Present state of seaweed production along the Romanian Black Sea shore. *Vie Milieu* 39: 105-109.

Bologa, A. S., N. Bodeanu, A. Petran, V. Tiganus & Y.P. Zaitsev, 1995. Major modifications of the Black Sea benthic and planktonic biota in the last three decades. *Bull. Inst, oceanogr. Monaco* 15: 85-110.

Savulescu, T. & E. I. Nyarady (Eds), 1966. *Flora R.S. Romania*. Bucuresti, Acad. R S Romane 11: 876 pp.

*Compiled by A. Bologa & A. Bavaru.*

*Zostera noltii* (Hörnern, 1832)

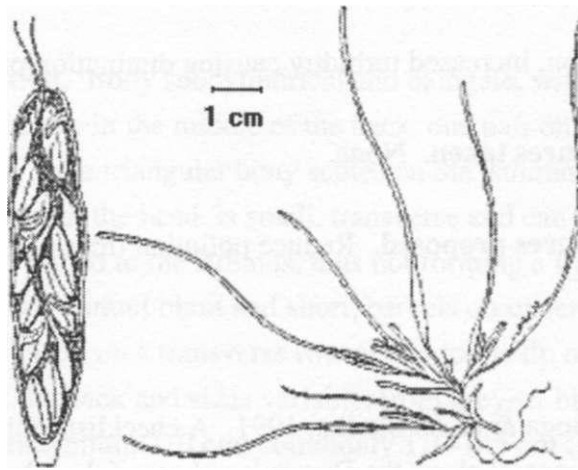
Synonyms: *Zostera nana* Roth.

Common names: Rom: *Iarba de mare*; Russ: *Vzmornik maliy*; Turk: *Ince deniz otu*.

Order HELOBIALES

Family POTAMOGETONACEAE

Taxonomic description. Thin, branched rhizome stems, 10-40 cm long. Narrow linear leaves, 5-20 (30) cm long, 0.5-2 mm broad, with 1-3 main nerves and 3-4 secondary nerves and emarginate point. Peduncle not thickened under the sheath. Ear 1.5 cm long, with (3) 6-12 flowers. Ripe fruit completely smooth - VI-VJTI.



IUCN Status

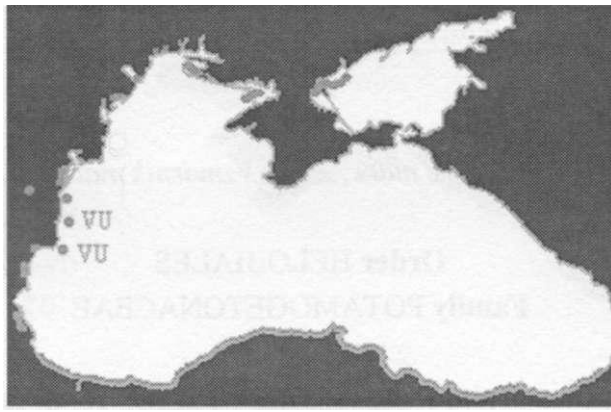
World level:

Black Sea Regional level:

Subregion level: VU

Distribution, Habitat type, Critical habitats, Limiting factors. Rocky and sandy bottoms of the sea and littoral lakes. Mediterranean Sea, Baltic Sea, Caspian Sea, Karacum. Species of arctic-northern origin. Threats: high turbidity; human exploitation (by fishermen).

Biology. Beside the utilization mentioned for the previous species, it is used as a substitute for artificial wool. It contains 14% protein and 2.1% fat, and can be used as food for pigs.



Population trends. On the sandy-muddy bottoms of the Romanian littoral in the Mamaia-Midia, Agigea and Mangalia zones, belts of this phanerogam occurred till 1975-1980. A severe reduction after harbour building.

Threats. Exploitation, increased turbidity causing diminution of light penetration.

Conservation measures taken. None.

Conservation measures proposed. Reduce pollution from coastal point sources.

#### References

- Avaru, A., A. S. Bologa & H. V. Skolka, 1991. A checklist of the benthic marine algae (except the Diatoms) along the Romanian shore of the Black Sea. *Rev. roum. Biol., Biol, veget.* 36: 1-2, 7-22.
- Bologa, A. S., 1987-88. Annotated bibliography on the macrophytobenthos along the Romanian Black Sea coast (1881-1986). *Cercet. mar.* 20/21: 353-384.
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*Compiled by A. Bologa, A. Bavaru & B. Oztürk.*

## PART II. ANIMALS

### *Acipenser giildenstaedti* (Brandt, 1833)

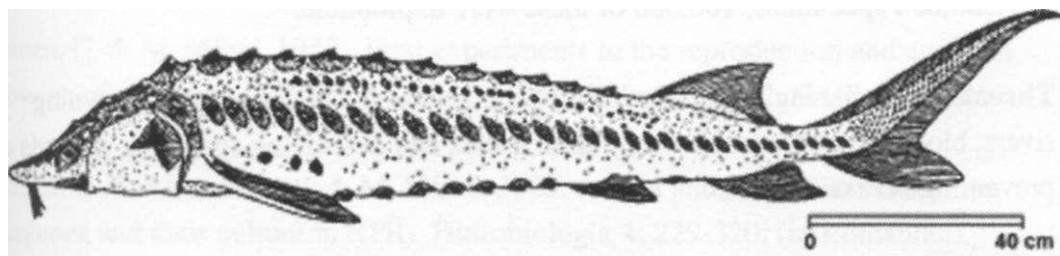
Synonyms: *Acipenser giildenstaedti* Berg, 1911; *Acipenser giildenstaedti* var. *colchicus* Marti, 1940; *Acipenser giildenstaedti colchicus* Berg, 1948.

Common names: Engl: *Russian sturgeon*; Bulg: *Ruska esetra*; Rom: *Nisetru*; Russ: *Russkiy osetr*. Turk: *Karaca*; Ukr: *Oseter*.

#### Order ACIPENSERIFORMES

#### Family ACIPENSERIDAE

Taxonomic description. Body subcylindrical and elongate, with large bony scutes arranged in five rows; one in the middle of the back, one pair on the sides and another on the belly; a pair of large triangular bony scutes on the isthmus beneath the head; the mouth, placed beneath the head, is small, transverse and can project as a short tube; gill membranes joined to the isthmus, thus not forming a free fold; lower lip interrupted in mid-line of snout blunt and short, barbels on underside of snout do not reach the mouth and insert on a transverse row nearer to the tip of the snout than to the mouth; colour of the back and sides variable, from greyish-black to dark green. Belly whitish. Size: maximum 210 cm; commonly 110-145 cm (males), and 130-170 cm (females).



#### RJCN Status

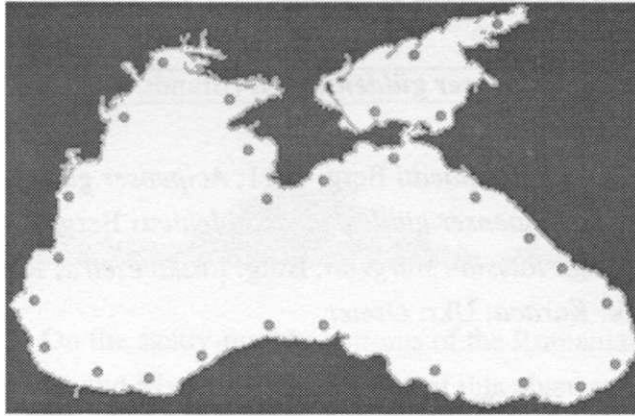
World level: listed in appendix II of CITES

Black Sea Regional level: idem

Subregion level: VU

Distribution, Habitat types, Critical habitats, Limiting factors. Mainly in coastal waters of the sea and rivers; enters the Don, Kuban, Dniepr, Danube and rivers of the Caucasian coasts of the Black Sea. Spends winter in the zone of the *Mytilus* and

*Modiolus biocoenosis* (at a depth of 60-70 m). Abundant in the Azov Sea, and also occurring in the Caspian Sea but absent from the Mediterranean Sea.



**Biology.** Feeds mainly on molluscs, crustaceans and fish. A migratory, anadromous species; in spring (February-May), it enters the rivers and in autumn (August-November) it moves to its hibernation grounds in the sea. During their spawning run, fish move separately or in small shoals. Sexual maturity is reached at 8-12 years (male) and 13-15 years (female); after reproduction, adults return to the sea.

**Population trends.** Caught with drift and stake net, long lines and beach seines. In June 1903 - March 1904, 85,160t were caught, in front of the St.Gheorghe branch of the Danube, and 60,175 kg in the Portita zone. Compared with the 1920-1940 period, the catches of 1940-1960 decreased by 80%; in front of the Danube, the catches recorded were: in 1989-19,000t; in 1990-4,000 t and in 1991-15,000 t; for the 1993-1994 period, there was an estimated (for the North-West zone of the Black Sea) stock of 3,300,000 specimens, 180,000 of these were exploitable.

**Threats.** Overfishing, marine pollution, and reservoir-building on the spawning rivers, blocking the traditional migration routes and destroying spawning grounds or preventing access to them.

**Conservation measures.** Development of methods of artificial reproduction; building of hatcheries to release fry to the sea. This species has been under protection in Turkey since 1997. A special recovery and monitoring programme was started by the Turkish Marine Research Foundation in the Sakarya and Kizilirmak estuaries.

**Conservation measures proposed.** Protection of the feeding sites of the fry in the Danube mouth; interruption of fishing with pound nets during the great agglomerations of fry in July-August; protection of spawners during migration and spawning (April-July); production of fingerlings to repopulate the Danube river.



Adoption of strict national measures to reduce poaching; conduct fisheries under strict international control.

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*Compiled by A.Petranu & B.Óztürk.*

*Acipenser stellatus* (Pallas, 1711)

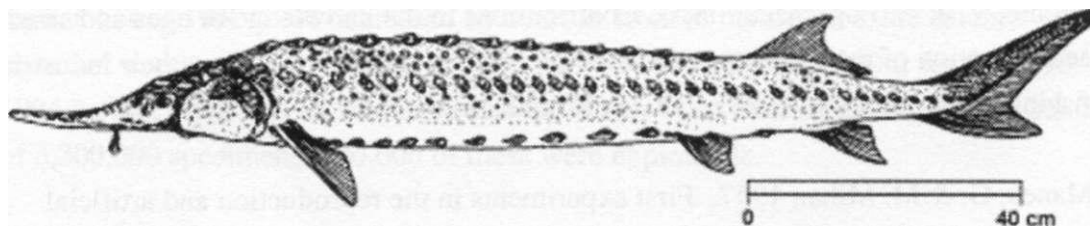
Synonyms: *Acipenser he lops* Pallas, 1811; *Acipenser stellatus donensis* Lovetzky, 1834; *Acipenser stellatus ilyricus* Brusina, 1902; *Acipenser stellatus stellatus* Banarascu, 1964.

Common names: Eng *Starry sturgeon*; Bulg: *Pestruqa*; Rom: *Pastruga*; Russ: *Sevryuga*; Turk *Mersin javrusu*; Ukr: *Sevryuga*.

Order ACIPENSERD70RMES

Family ACIPENSEPJDAE

Taxonomic description. Body subcylindrical elongate, with bony scutes arranged in five rows, one on the middle of the back, one pair on the sides and another on the belly; on the isthmus beneath the head, a pair of triangular bony scutes. The mouth, placed beneath the head, is small, transverse and can project as a short tube; lower lip interrupts at the mid-line; snout swordlike and very long, making up more than 60% of the head length. Barbels on the underside of the snout short, ending well before the mouth and inserted nearer to the mouth than to the tip of the snout. Back and sides coffee-brown, belly whitish. Size: Maximum length 180 cm; commonly 130 to 140 cm (females) and 110 to 120 cm (males).



IUCN Status

World level: listed in appendix II of Cites

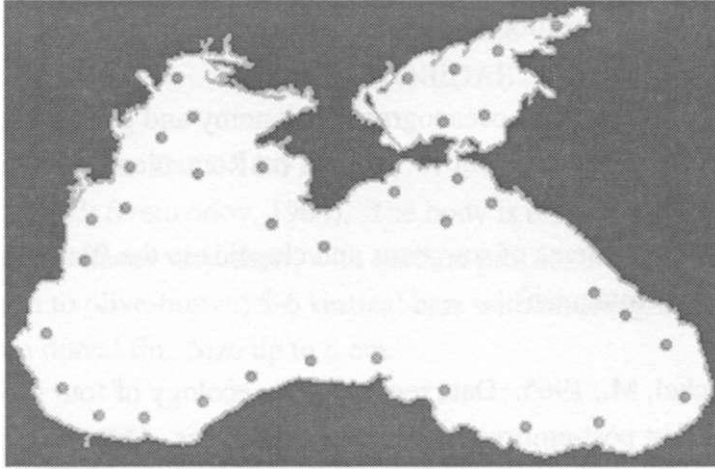
Black Sea Regional level: Idem

Subregion level: VU

Distribution, Habitat types, Critical habitats, Limiting factors

Lives close to the bottom, in summer in coastal zones, coming up to the surface for feeding at night; enters the Kuban, Don, Dniepr, Danube and other rivers flowing into the Black Sea, also in Sinoe lagoon. Abundant in the Azov and Caspian Sea, rare in the Sea of Marmara; only incidentally recorded in the Mediterranean Sea (in the Adriatic Gulf).

Biology. A migratory, anadromous species, which enters the rivers in April-October. Reproduction in May-June; a female can lay 20,000-360,000 eggs. Sexual maturity reached when five (male) or seven (female) years old. Feeds mainly on fish, also on molluscs, crustaceans and chironomids. Caught mainly with stake nets, drift nets and beach seines. A highly esteemed table fish. A ponto-caspian relict.



Population trends. Like *Acipenser guldenstaedti*, the population of this species has dropped by 80 % in 1940-1960 relative to the previous two decades (1920-1940). In the catches of the northern zone of the Romanian littoral (Chituc - Vadu), in May 1991 this species represented 50 kg in May (15 specimens); in June 30 kg (11 specimens) and in August 14 kg (358 specimens, all juveniles). The catches recorded for the entire Romanian littoral were: 1989-19,000 t; 1990-4,000 t, 1991-15,000 t, for Bulgaria 15,000 t (1989), for US 27,000 t (1989), 15,000 (1990), 15,000 (1991). In 1993-1994, the exploitable stock of the north-western area of the Black Sea was assessed at 220,000 specimens.

Threats. Overfishing, chemical pollution, large-scale dam building which block the traditional routes of migration and access to spawning grounds.

Conservation measures taken. This species has been under protection in Turkey since 1997. Total catch was 110 tons in 1995. A special recovery and monitoring programme was started by the Turkish Marine Research Foundation in the Sakarya and Kizilirmak estuaries.

Conservation measures proposed. Protection of spawners during migration and spawning; protection of spawning and feeding areas; artificial reproduction; strict national measures to reduce poaching.

## References

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*Compiled by A. Petranu & B. Ôztiirk.*

*Aidablennius sphynx* Valenciennes, 1836

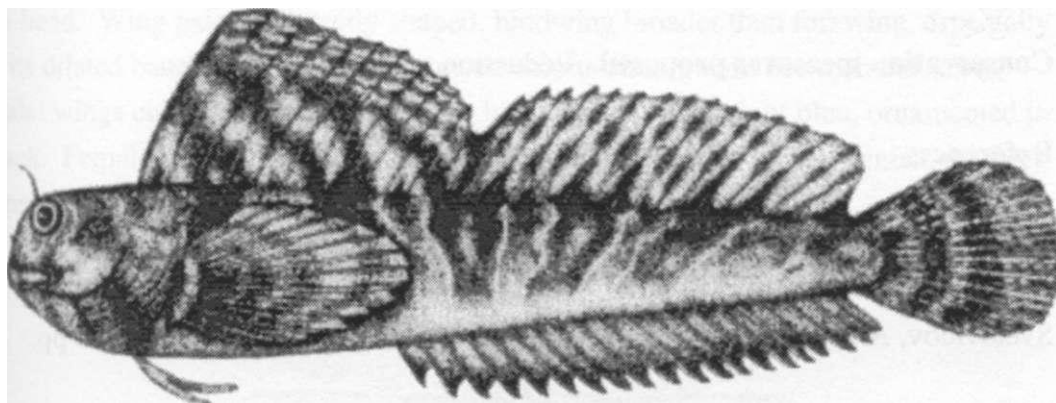
Synonyms: *Blennius sphinx* Giinther, 1861

Common names: Georg: *Zgvis pinia [spinksi]*; Turk: *Horozbina*

Order PERCIFORMES

Family BLENNUDAE

Taxonomic description. D Xn 16-17; AII17-19; P 13-14. V 14. Vertebrae 34-36 (Stojanov *etal*, 1963; Svetovidov, 1964). The body is elongated, laterally compressed, naked. Snout very short, with vertical profile. Mouth small. Colour basically greenish to olive-brown; 5-6 vertical bars with blushing margins on body; 8-9 oblique bars on dorsal fin. Size up to 8 cm.



IUCN Status

World level:

Black Sea Regional level:

Subregion level: VU

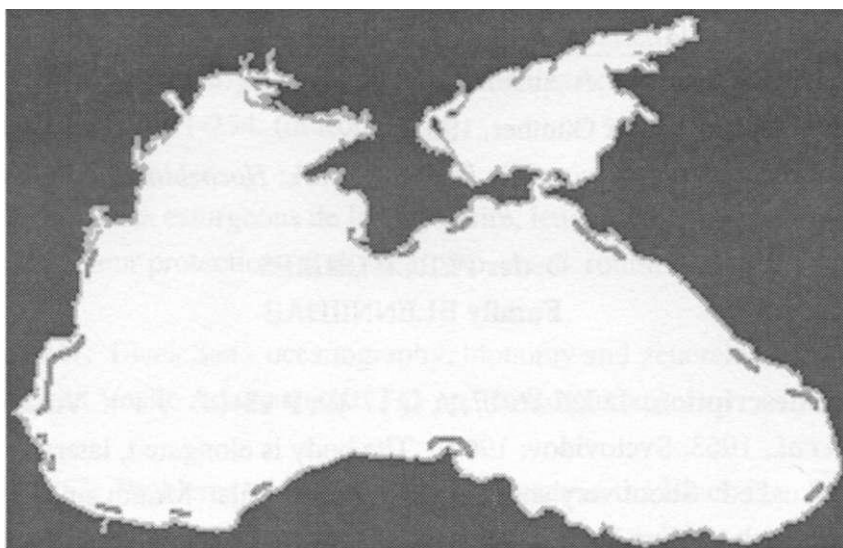
Distribution. Mediterranean, Black Sea and Atlantic coast of Morocco (Zander, 1986). In Bulgaria found along the entire coast.

Habitat type, Critical habitats, Limiting factors. Inshore, rocky, shelly, sea-grass bottoms.

Biology. Reproduction: April-July. Food: benthic invertebrates, algae.

Population trends. Declining.

Threats. Industrial pollution.



Conservation measures taken. None.

Conservation measures proposed. Reduction of chemical pollution.

#### References

Stojanov, S. *etal*, 1963. The fishes of the Black Sea. Varna: 246 pp.

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*Compiled by Y. Sivkov & K. Prodanov*

*Anax imperator* Leach, 1815

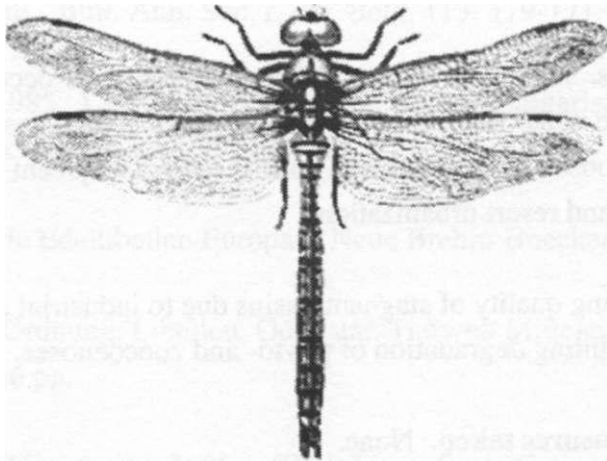
Synonyms: *Anax imperator* Leach, 1815.

Edinb. Enc, Vol. IX, Edinburg, p. 137; *Aeshna formosa*: Vander Linden, 1820, p. 3, fig. 1; *Anax imperator* Schmidt, 1929, p. 40, fig. 27e, 33k

Common names: Engl: *Emperor dragonfly*; Bulg: *Vodno konche-imperator*; Russ: *Dozorshchik*; Turk: *Yusufcuk*; Ukr: *Dozorets'*

Order ODONATA  
Family AESHNIDAE

Taxonomic description. A very large insect with total body length 72-77 mm and length of hindwing 47-51 mm. Eyes big, contiguous dorsomedially, covering most of the head. Wing pairs differently shaped, hindwing broader than forewing, especially in its dilated basal portion. A pronounced colour dimorphism between the sexes. Male: wings colourless, veins yellow or black. Abdomen bright blue, ornamented in black. Female: wings slightly yellowish. Abdomen green to blue-greenish, dorsally ornamented in brown-black.



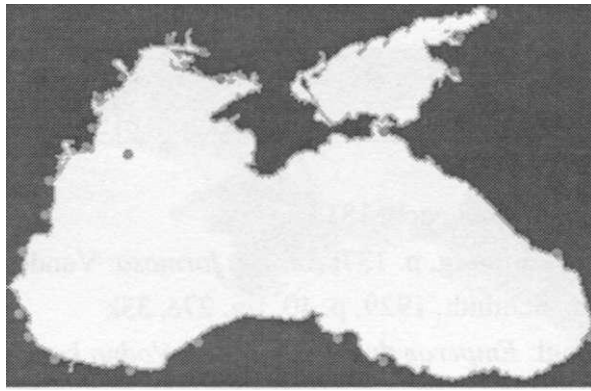
IUCN Status

World level: NE

Black Sea regional level: DD

Subregion level: VU

Distribution. A widespread dragonfly species, occurring both in the Afrotropical and Palearctic regions, i.e. from the Cape Province in the south to Scandinavia, and to Central Asia in the east. Found all over the Balkan peninsula.



Habitat type, Critical habitats, Limiting factors. Ecologically broadscoped insect, inhabiting slow-running and vegetation- rich localities of the rhithral, and, most of all lakes, marshes and flooded estuary zones of rivers (limnal). Those habitats in the Black Sea coastal region, situated in or near urbanized or otherwise polluted sites should be considered critical. Important limiting factors are also the drying-up of coastal marshes, industrial and anthropogenic water pollution, as well as the draining and realignment of the upper courses of rivers.

Biology. Larvae phytophilous, living in stagnant or slow running water, rich in aquatic vegetation. Adults occur from V to X. Active predators in all stages. Life cycle two years. Excellent fliers, that can sometimes be observed far away from water.

Population trends. Although widespread, the species never occurs in large numbers, thus appearing rare rather than common. A decline in abundance during recent decades has been observed in Black Sea coastal regions adjacent to sites with intensive tourism and resort urbanization.

Threats. Worsening quality of stagnant basins due to industrial and household water pollution, with resulting degradation of phyto- and zoocoenoses.

Conservation measures taken. None.

Conservation measures proposed. Include *Anax imperator* in list of vulnerable animal species of Black Sea region.

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*Compiled by K. Kumanski*

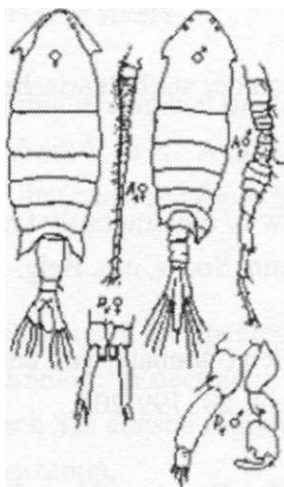
*Anomalocera patersoni* (Templeton, 1837)

Synonyms: None.

Common names: None.

Order CALANOIDA  
Family PONTELLIDAE

Taxonomic description. One of three species of Pontellidae in the Black Sea. The head is somewhat triangular with a recurved spine or cephalic hook on each side. It bears two pairs of dorsal ocular lenses. There is a ventral eye and five thoracic segments, the last of which is asymmetrical in the male. The antennule is about half the length of the body and has twenty segments. It is of very uneven thickness in the male. This large copepod is of a blue or blue-green colour. The length of females is 3.5-4.2 mm, that of the males 3-4 mm.



IUCN Status

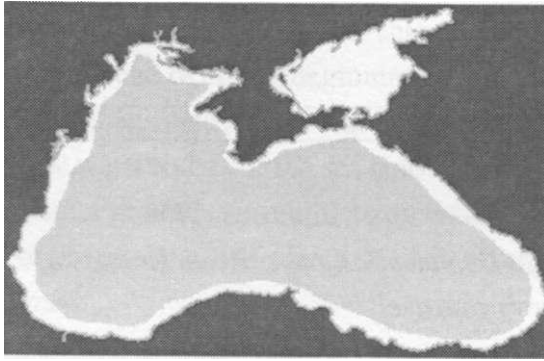
World level:

Black Sea Regional level: EN

Subregion level: EN

Distribution. All over the Black Sea, except in low salinity zones such as the Sea of Azov. In the Mediterranean Sea, Atlantic Ocean, English Channel, North Sea, and Pacific Ocean.

Habitat type, Critical habitats, Limiting factors. A neustonic species inhabiting the surface microlayer (0-5 cm). Winter (dormant) eggs sink to the bottom. Limiting factors are the pollution of the water surface by surfactants and the lack of oxygen in the near-bottom layer.



**Biology.** Well adapted to the surface layer of water, living in coastal and open sea areas, this blue coloured carnivorous copepod is capable of aerial jumps. It is a North Atlantic species with mass development in spring and autumn. Abundant in convergence zones in which surface waters of different origins come together.

**Population trends.** A sharp decline in population numbers since the 1970s, with a reduction of 50-70% over the last 10 years.

**Threats.** Pollution of the surface microlayer of water and eutrophication, triggering bottom hypoxia.

**Conservation measures taken.** None.

**Conservation measures proposed.** Reduce Black Sea pollution.

## References

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*Compiled by Y. Zaitsev.*

*Anthropoides virgo* Linnaeus, 1758

**Synonyms:** *Grus virgo*, *Árdea virgo* Linnaeus, 1758

**Common names:** Engl: *Demoiselle Crane*; Russ: *Krasavka, ZhuravV-krasavka*; Turk: *Telli turna*; Ukr: *Stepovy zhuraveV*

**Order** GRUIFORMES

**Family** GRUID AE

**Taxonomic description.** In the areas along the sea coast, it is estimated that 330-380 of these birds can be found. About 120-140 pairs breed here; in pre-migration periods, gatherings may reach c. 1000 specimens.



**IUCN Status**

World level: **LR**

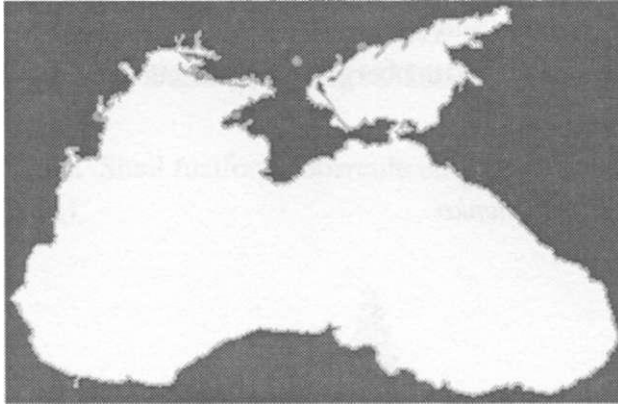
Black Sea Regional level: EN

Subregion level: **VU**

**Distribution, Habitat type, Critical habitats, Limiting factors.** Breeds in steppes and cultivated fields, either with low and thinned out mosaic vegetation or without vegetation. In the post-breeding period, it occurs on shallow water-bodies (bays, estuaries, river mouths) surrounded by agricultural fields or steppe.

**Biology.** A breeding, summer and migratory species. Arrives by the beginning of the second third of April. The nest is a trampled plot on the ground, encircled by old parts of plants, small stones, clods of earth, and dry cattle droppings. Egg-laying starts from the second third of April onwards. The clutch consists of 1-2, rarely three

eggs and is incubated for 28-29 days. The parents share incubation equally. Fledglings are observed at the end of June - beginning of July. Non-breeders associate in flocks of irregular size and move within the breeding area. In July-August these flocks move to the shallow waterbodies of the sea coast where families concentrate before departure to the winter grounds. Autumn migration commences by mid October. Both vegetative (vegetal parts of plants, seeds) and animal (insects, molluscs) food is consumed.



**Population trends.** The numbers are low, but stable. Insufficient breeding range, in spite of an ability to breed in agricultural fields and low-grazing pastures.

**Threats.** Clutch and chick losses due to the intensification of agriculture, disturbance and killing by people, increase in predation by Crows (*Corvidae*), Raccoons (*Nyctereutes procyonoides*), foxes (*Vulpes vulpes*), and domestic dogs.

**Conservation measures taken.** There is no real protection. Only one pair breeds within a protected area.

**Conservation measures proposed.** Expansion of the protected areas in the breeding and concentration sites (Kerch and Tarkhankut peninsulas, the Sivash), limitation of grazing in the breeding sites, reduction in predator numbers, toughening of measures prohibiting hunting and extraction of eggs, chicks and adults.

## References

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Winter S. & O. Lezhenkin , 1988. The Demoiselle Crane (*Anthropoides virgo*). Biology in the Zhaporozhie Region. In Cranes of the Palearctic. Vladivostok: 35-48. (in Russian).

Winter S. V., Y. A. Andryushchenko & P. I. Gorlov, 1995. The Demoiselle Crane in the Ukraine: Status, ecology and conservation prespects. In "Crane Research and protection in Europe". Halle-Wittenberg, Martin Luther-Universitat.: 285-289.

*Compiled by Y. Andryushchenko*

*Aporrhais pespelecani* (Linnaeus, 1758)

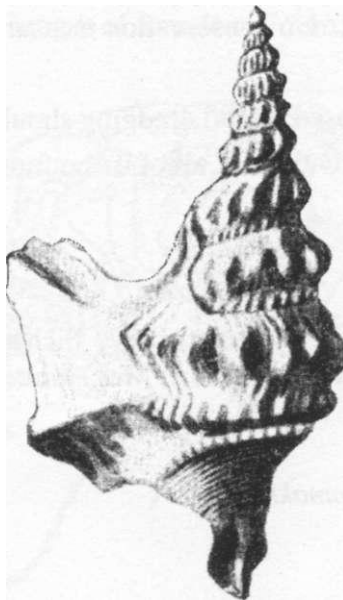
**Synonyms:** *Chenopus pespelecani* Philippi, 1836.

**Common names:** Engl: *Common pelican foot*; Georg: *Moluski aporaisi*; Russ: *Pelicanya noga*; Turk: *Pelikan ayagi*.

**Order** PROSOBRANCHIATA

**Family** APORRHAIIDAE

**Taxonomic description.** Shell fusiform, opercule elliptic, labrum with three long furcae, shell ornamented.



**IUCN Status**

World level:

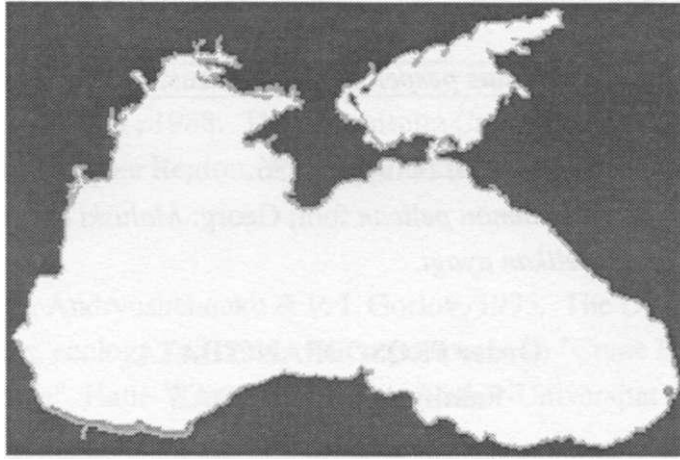
Black Sea Regional level: **VU**

Subregion level: **VU**

**Distribution, Habitat, Critical habitat, Limiting factors.** Sandy and muddy deeps, infralittoral and circalittoral of the sea. The critical zone is the infralittoral part of the Black Sea between 15-50 meters. Main threats: sand dredging from the sea, trawling, mussel dredging.

**Biology.** Lives in sandy bottoms, digging into the sand.

**Population trends.** No data on population trends.



**Threats.** Sand dredging and trawling.

**Conservation measures taken.** No conservation measures have been taken yet.

**Conservation measures proposed.** Sand dredging should be banned in the Black Sea as this method is very destructive for **all** of its bottom fauna.

#### **Reference**

Schneider, M., W. Fisher & L. M. Bauchot, 1987. Fiches d'identification des espèces pour les besoins de la Pêche. Méditerranée et Mer Noire. Végétaux et Invertébrés. Rome, FAO and CEE 1.

*Compiled by B. Öztürk & A. Komakhidze*



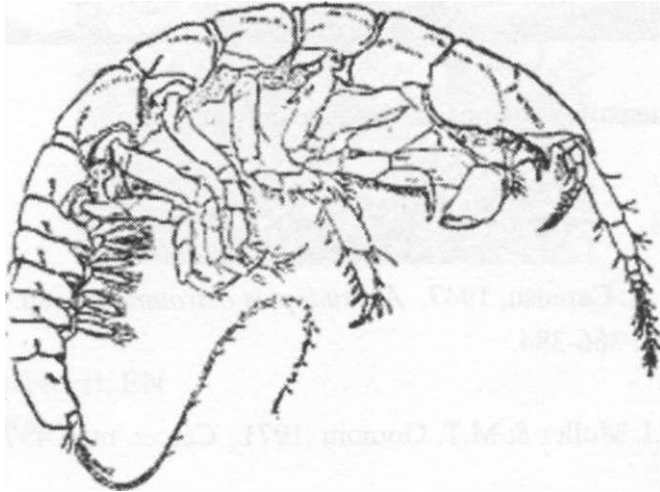
**Synonyms:** *Apseudes coecus* Ostr.1803; *Apseudes latreillei* var. *coecus* Sowinsky 1895, Guryanowa 1936, Bacescu, 1940

**Common names:** Georgian: *Tskhlis viruka*

**Order ANISOPODA (TANAIDACEA)**

**Family APSEUDIDAE**

**Taxonomic description.** Body flattened; frontal side of carapace toothed. Eyes absent. Third thoracic segment fused with head capsule. Antenna II with two flagella. Chelipeds thin, flattened in female, thicker in male. First pair of pereopods with 6-8 spines; the second and other pairs of pereopods are walking legs. Ectopodite of uropod with three articles. Endopodite of uropod with 33-36 (female) up to 45 articles (male). Size: length of female c. 7 mm; of male - 6.7 mm.



**IUCN Status**

World level:

Black Sea Regional level:

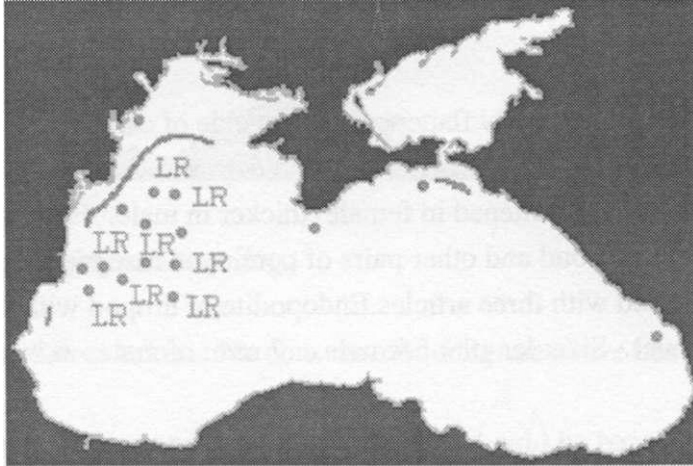
Subregion level: **LR**

**Distribution, Habitat type, Critical habitats, Limiting factors.** Found in the circalittoral zone and silty bottoms, at 35-100 m depths. Frequent in *Modiolus* biocoenosis. Sensitive to pollution and eutrophication.

**Biology.** An iliophilic species. Reproduction in the warm season of the year; a female spawns c. 85 eggs. A benthic organisms without planktonic larval stages.

**Population trends.** A characteristic common species of the *Modiolus phaseolinus* biocoenosis. In recent years, it has been found in considerable quantities in the Southern Romanian Black Sea littoral (Mangalia zone) (1993 - 795 ind.m<sup>2</sup>, 1994 - 584 ind.m<sup>2</sup>, 1995 - 1133 ind.m<sup>2</sup> and 1996 - 1438 ind.m<sup>2</sup> at a depth of c. 60 m.

**Threats.** Hypoxia by eutrophication.



**Conservation measures proposed.** Reduce eutrophication.

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*Compiled by C. Dumitrache*

*Ardeola ralloides* (Scopoli, 1769)

**Synonyms:** *Ardea ralloides*.

**Common names:** Engl: *Squacco heron*; Russ: *Zholtaya tzaplya*; Turk: *Alaca balikcil*; Ukr: *Zhovta chaplya*, *Chepura*.

**Order** CICONUFORMES

**Family** ARDEIDAE

**Taxonomic description.** *Ardeola ralloides* is one of five species in its genus, widely distributed in Africa and Southern Asia, and the only one to occur in the Black Sea region.



**IUCN Status**

World level:

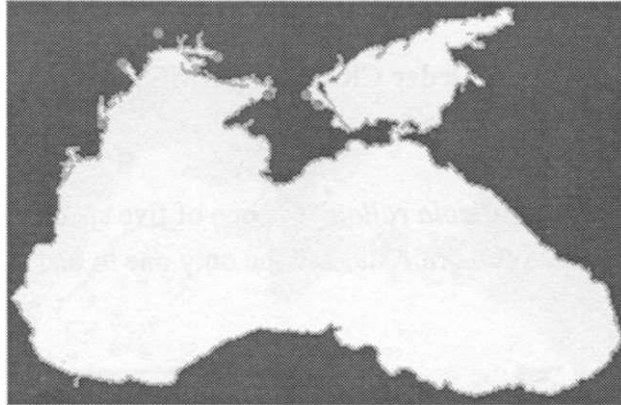
Black Sea Regional level: EN

Subregion level: EN

**Distribution, Habitat type, Critical habitats, Limiting factors.** Breeds in dense reed-beds of fresh and brackish water-bodies or flooded marshes of river-valleys. *Ardeola ralloides* always joins other Ciconiiform colonies, occupying the outer rims of them. Its feeding habitats are open and half-open shallow-waters, where it forages on insect larvae and other invertebrates.

**Biology.** Arrival in April-early May (usually between 13 April - 2 May). Breeding in mid June, sometimes late May. Hatching is in early July. Autumn migration starts early - from late August to mid September. Some birds may stay till the end of September. Breeds always colonially, together with larger herons and *Plegadis falcinellus*. Due to its late breeding, *Ardeola ralloides* has to settle in the periphery of the colonies, thus risking prédation on its nests. Clutch size varies from three to five eggs, breeding success depends on the disturbance level nearby. If not disturbed,

birds usually breed successfully. The heron preys in open or slightly vegetated shallow water-bodies, searching for food. Its diet consists mostly of molluscs, insects and their larvae, small copepods, spiders and leeches. A rare visitor to gardens in the river valleys, where it may prey on invertebrates after rains.



**Population trends.** Hard to estimate, since it varies in sub-regions: in some places, numbers sharply decrease, whereas new colonies appear in others. The population "balances on the edge" and new colonies may not ensure its stability. Up-to-date estimates of population size show fluctuations within 200-900 pairs.

**Threats.** Constant human disturbance, degradation of reed-beds in some regions, and river pollution. Water pollution and a decrease in feeding capacity in big and small river deltas as well as disturbance of colonies are the major threats.

**Conservation measures taken.** Special protection of all new colonies, expansion of the network of reserves.

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*Compiled by J. Chernichko*

*Aythya nyroca* Guldenstadt, 1770

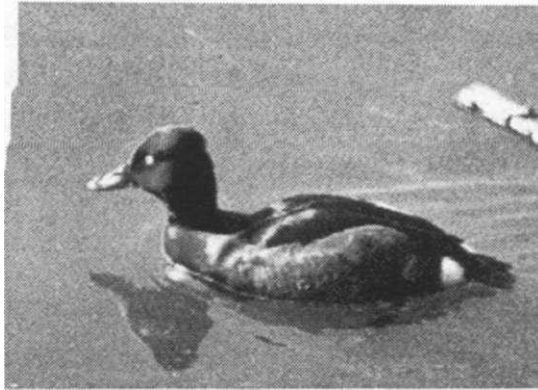
**Synonyms:** *Anas nyroca* Guldenstadt, 1770 (1769)

**Common names:** Engl: *Ferruginous duck*; Russ: *Beloglazy nyroc*; Turk: *Karabas*;  
Ukr: *Bilooka chern'*

**Order** ANSERIFORMES

**Family** ANATDDAE

**Taxonomic description.** See Lysenko, 1994.



**IUCN Status:**

World level:

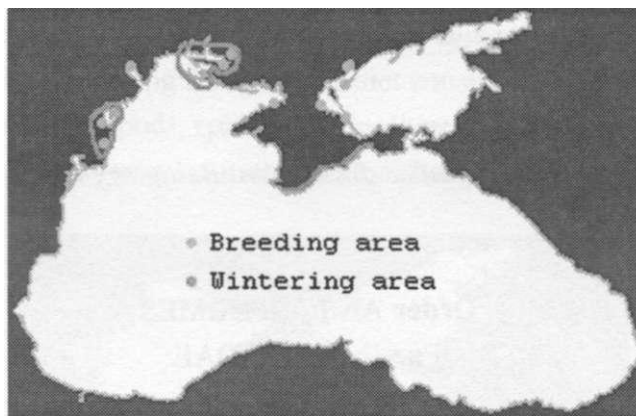
Black Sea Regional level:

Subregion level: VU

**Distribution, Habitat type, Critical habitats, Limiting factors.** Breeding habitats are deep lakes, large lagoons, sandy spits with water-bodies covered by reeds, and river estuaries.

**Biology.** The spring arrival of the first flock occurs between the end of February and the first third of March. Mass immigration at the end of March. Breeding begins in May. The nest is situated on broken reeds. The clutch consists of 6-14 eggs.

Incubation takes 25-28 days. In autumn, the birds depart imperceptibly from the end of September till the end of October. Small groups of stay to overwinter in the region of the Danube and Black Sea Reserves and on the Southern coast of the Crimea. This duck mainly eats plants.



**Population trends.** About 2000 pairs are breeding in the Danube Reserve, 130-140 pairs in the Black Sea Reserve, 150 pairs in the Crimea, 10-15 pairs in Priazovie. In the Danube Reserve and Dnestr lagoon their number has decreased; on the lagoon of Azov-Black Sea region it is stable, in the northern Crimea it is slowly increasing.

**Threats,** not well defined.

**Conservation measures proposed.** Creation of a protected areas network along the Azov coast and adding Stenzovsky Plavni to the Danube Reserve.

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*Compiled by P. Gorlov*

*Betone betone euxini* (Günther, 1899)

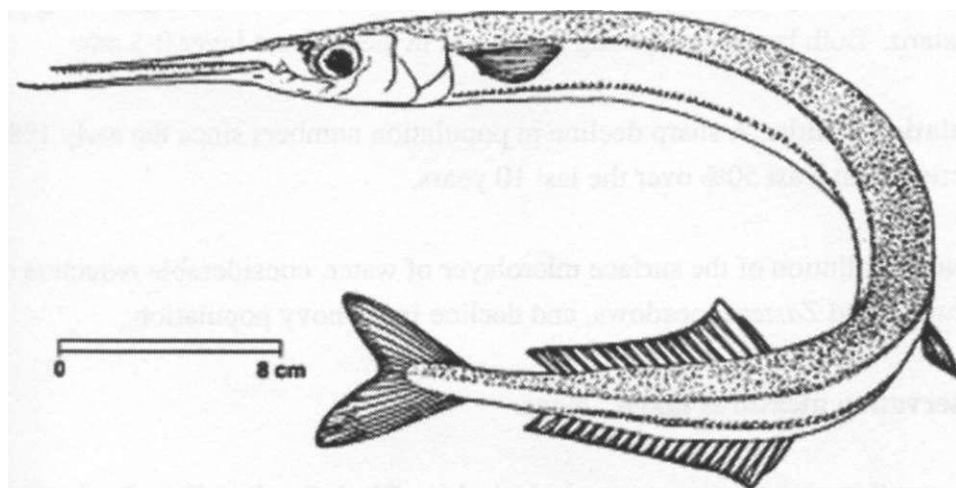
**Synonyms:** *Esox betone* Pallas, 1811; *Betone rostrata* Nordman, 1840; *Betone betone* Borna, 1929; *Betone acus euxini* Popov, 1930.

**Common names:** Engl: *Garfish* Bulg: *Zargan*; Georg: *Sarghani*; Rom: *Zargan*; Russ: *Sargan*; Turk: *Zargana baligi*; Ukr: *Sargan*.

**Order** BELONIFORMES,

**Family** BELONIDAE

**Taxonomic description.** Body elongate, almost cylindrical in section; head prolonged into a beak-like, very long and sharp snout; lower jaw longer than upper one so that the mouth is on top; small teeth on the jaw margins and a row of strong, sharp and spaced internal teeth; large, near, triangular nostrils. Dorsal and anal fins similar in shape and inserted far behind the mid-point of the body; neither fin has finlets; dorsal fin margin slightly concave; pectoral fins with wide base and sharp top; caudal fin deep emarginate, lower lobe shorter than the upper one; the lateral line runs along the belly from the gill opening to near the tail. Gill rakers present (to be seen after detaching the gill cover); scales easily detached, except along the lateral line; back greenish-blue, sides and belly silvery, the latter with a yellow tinge; pelvic and anal fins yellowish with dark tips; the other fins are dark.



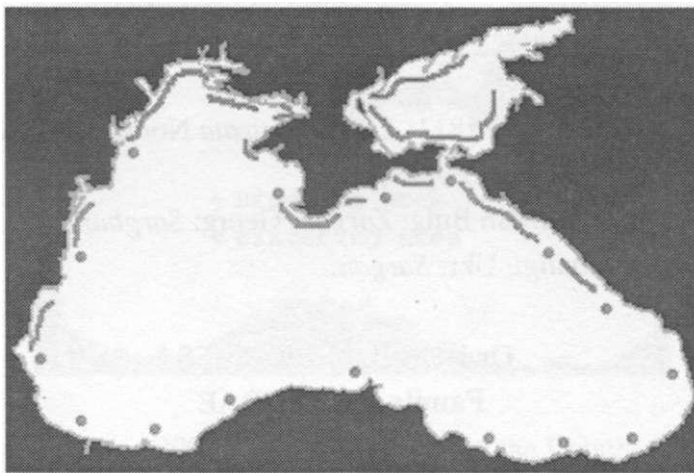
**IUCN Status**

World level:

Black Sea Regional level: EN

Subregion level: EN (Ukrainian sector)

**Distribution.** All Black Sea coastal waters, Sea of Azov, Sivash lagoon, Sinoe lagoon, Mediterranean Sea and Atlantic Ocean



**Habitat type, Critical habitats, Limiting factors.** In coastal waters. Young specimens are most common near the *Cystoseira* and *Zostera* belts. The critical habitat is the surface microlayer. Main limiting factors are the pollution of the surface microlayer, and the reduction of the *Cystoseira* and *Zostera* biocoenoses.

**Biology.** A coastal pelagic carnivorous fish feeding mainly on anchovy (*Engraulis encrasicolus ponticus*) and silverside (*Atherina mochon pontica*). Spawning occurs from May to September. Its filament-bearing eggs, nearly 2 mm in diameter, are attached to algae (*Cystoseira*) or sea grasses (*Zostera*). Newly hatched larvae 9-12 mm long, are intensely coloured in brown and appear like floating fragments of *Cystoseira*. Young fish 5-10 cm long are green coloured, resembling floating leaves of *Zostera*. Both larvae and young fish occur in the neuston layer 0-5 cm.

**Population trends.** A sharp decline in population numbers since the early 1980s. A reduction of at least 50% over the last 10 years.

**Threats.** Pollution of the surface microlayer of water, considerable reduction of *Cystoseira* and *Zostera* meadows, and decline in anchovy population.

**Conservation measures taken.** None.

**Conservation measures proposed.** Include in Black Sea Red Data Book. Reduce coastal waters pollution.



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Svetovidov, A. N., Ryby Chernogo morya (Fishes of the Black Sea). Moscow-Leningrad, Nauka: 551 pp. (in Russian).

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Zaitsev, Y. P., 1993. Impact of Eutrophication on the Black Sea Fauna. Studies and Reviews 64: 59-86.

*Compiled by G. Radu, F. Veriotti, Y. Zaitsev & A. Komakhidze.*

*Benthophiloides brauneri* (Beling & Iljin, 1927)

**Synonyms:** None.

**Common names:** None.

**Order** PERCIFORMES

**Family** GOBHDAE

**Taxonomic description.** D VI, 111-13; AI 9-11; P 18-20. Vertebrae: 27-29 (Gheorgiev, 1966). Head wide, dorso-ventrally depressed. Body depth 60-66 % of body width. Upper lip uniformly wide. Eyes 20-24 % of head length. Colour: with broad dark band across behind pectoral fin and below first dorsal. Size up to 7.2 cm,

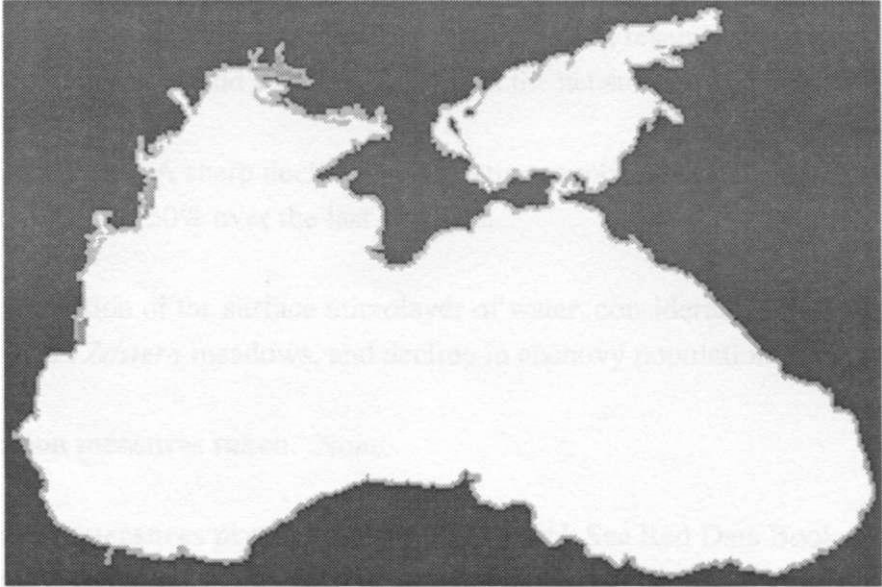
**IUCN Status**

World level:

Black Sea Regional level:

Subregion level: **VU** (Bulgarian Coast)

**Distribution.** Black Sea, Sea of Azov and Caspian estuaries and rivers (Miller, 1986). In Bulgaria only in Lake Shabla.



**Habitat type, Critical habitats, Limiting factors.** In fresh and brackish waters; limited by changes in hydrological regime of Lake Shabla.

**Biology.** Reproduction: July-August. Food: chironomid larvae, small crustaceans, gastropods.

**Population trends.** Declining.

**Threats.** Changes in the hydrological regime in Lake Shabla.

**Conservation measures taken.** None.

**Conservation measures proposed.** Settling in Lakes Durankulak and Ezeretz.

### **References**

Gheorgiev, J., 1966. Composition d'espèces et caractéristique des Gobiides (Pisces) en Bulgarie., Proc. Res. Inst. Fish. Oceanogr. Varna 7: 159-228.

Miller, P., 1986. Fishes of the North-eastern Atlantic and the Mediterranean 3: 1024 pp.

*Compiled by K. Prodanov & Y. Sivkov.*

*Biancolina cuniculus* (Stebbing, 1874)

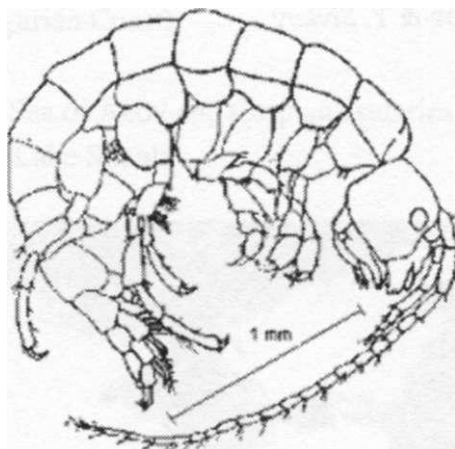
**Synonyms:** *Amphithoe cuniculus* Stebbing, 1874; *Biancolina algicola* Delia Valle, 1893.

**Common names:** None.

**Order** AMPHIPODA

**Family** AMPHITHOIDAE

**Taxonomic description.** Head large, with two lateral lobes where the two pairs of antennae articulate. Antenna I much longer than antenna U, in the male reaching more than half of the body length. The two pairs of female gnathopods similar, male gnathopods II much stronger than gnathopods I. Male gnathopod II with a large propodus and a deeply excavated palm edge. Outer ramus of uropod III armed, on the edge, with two upward-pointing thin hooks.



**IUCN Status**

World level:

Black Sea Regional level:

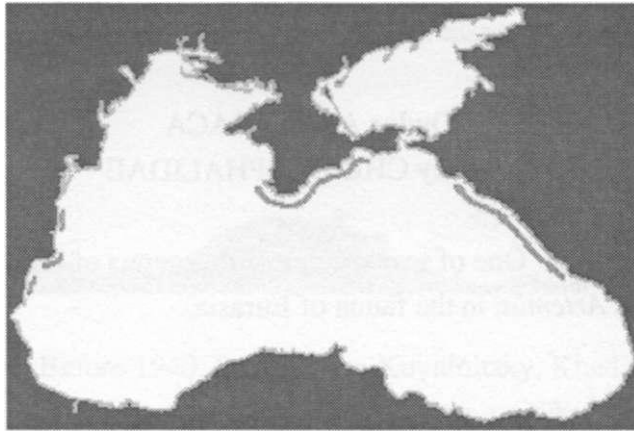
Subregion level: **EN**

**Distribution, Habitat type, Critical habitats, Limiting factors.** Macrophyte fields, especially *Cystoseira* belts'. Threatened by disappearance of *Cystoseira* belts, pollution, eutrophication.

**Biology.** A phytophilic species, detritivorous and herbivorous.

**Population trends.** In 1961 - 30 ind.m<sup>2</sup> on rocky substratum with macrophytes; in 1970-1974, 57-88 ind.kg<sup>-1</sup> of wet macrophyte substratum. Research on the rocky and

macrophyte fauna of the Romanian Black Sea littoral did not identify this species after 1980.



**Threats.** Disappearance of perennial macrophytes biotopes, especially *Cystoseira*, pollution, eutrophication.

**Conservation measures taken.** None.

**Conservation measures proposed.** General measures for the reduction of eutrophication and pollution.

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- Mordukhai-Boltovskoi, F. D., I.I. Greeze & S. V.Vasilenko, 1969. *Opredeliteli fauny Tchernogo i Azovskogo Morei. (Otriad Amphipoda)* 2: 440-525.
- Tiganus, V., 1976. Dynamique saisonnière des populations d'Amphipodes des champs à *Cystoseira barbata* (Ag.) du littoral roumain de la mer Noire. *Cercet. mar. Constantza, IRCM9*: 151-171.
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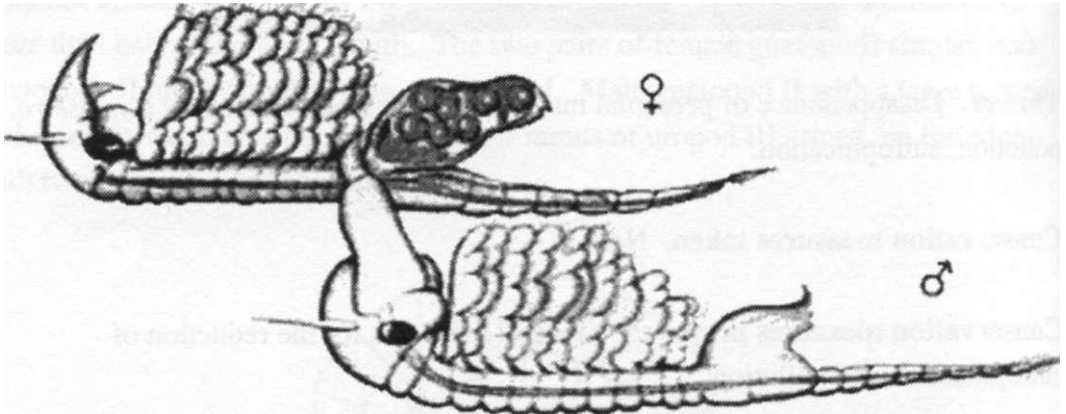
*Compiled by V. Tiganus.*

**Synonyms:** None

**Common names:** Russ: *Brankhinektella srednyaya*; Ukr: *Brankhinektella serednyaya*

**Order ANOSTRACA**  
**Family CHIROCEPHALIDAE**

**Taxonomic description.** One of two species of this genus of fairy shrimp, shaped more or less like an *Artemia*, in the fauna of Eurasia.



**IUCN Status**

World level:

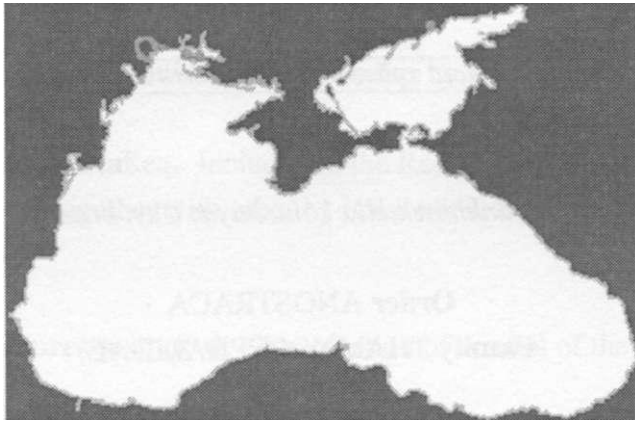
Black Sea Regional level: **EN**

Subregion level: **EN** (Ukrainian sector)

**Distribution.** The species range includes South Europe, Northern Kazakhstan, North Africa (Marocco, Algeria). Discovered in the north-west Black Sea basin in saline waters of the Kinburn peninsula and adjacent areas of the Kherson and Mikolaiv districts (Golaya Pristan, Ochakov).

**Habitat type, Critical habitats, Limiting factors.** Saline water-bodies (salinity 1.5-4.0 ppt), drying-out lakes in saline swamps.

**Biology.** A halobiont; a filtering organism which feeds on phytoplankton, detritus, organic matter and bacteria. Active at water temperatures of 4-24 °C for 35-55 days (from late March to late May). Produces resting eggs, in 3-6 broods of 12-120 eggs each. Length of the different life cycle periods: naupliar 10-14, prereproductive - 12-17, reproductive - 26-34 days.



**Population trends.** Before 1940, found in the Kuyalnitsky, Khadzhibeysky and Molochny limans. Present population trends unknown.

**Threats.** Excessive antropogenic influence, in particular increases in water salinity, siltation of soil on irrigated lands.

**Conservation measures taken.** Included in Red Data Books of Ukraine and the Black Sea. Protected together with other aquatic organisms in Chernomorsky Biosphere Reserve (Ukraine).

**Conservation measures proposed.** Organization of biological control of the population status.

#### **Reference**

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*Compiled by B. Alexandrov*

*Branchinecta spinosa* Schrankewitsch, 1873

**Synonyms:** None

**Common names:** Russ: *Brankhinektella koluchaya*; Ukr: *brankhinektella kolucha*

**Order** ANOSTRACA

**Family** THAMNOCEPHALIDAE

**Taxonomic description.** One of 29 species of a genus otherwise characteristic of the Australian fauna. Distinctive features of the species are its relatively weakly developed antennae II; the epipodites of I-fll pairs of appendages differ markedly in the number of distinct teeth and spines.

**IUCN Status**

World level:

Black Sea Regional level: **EN**

Subregion level: **EN** (Ukrainian sector)

**Distribution.** Range includes Eurasia (from Southern Europe to Central Asia - Mongolia), North Africa (Morocco, Algeria), Mediterranean and Black Sea coast of Turkey. Found in the north-western part of the Black Sea, in saline water bodies near Odessa, Kinburn peninsula and adjacent areas of the Kherson and Mikolaiv oblasts (Golaya Pristan, Ochakov). Encountered also in the Crimea peninsula and at the foot of the Caucasus.

**Habitat type, Critical habitats, Limiting factors.** Shallow waters (depths of 0.3-2.5 m), usually drying out in summer. Saline lakes and puddles (salinity 1.5-9.5 ppt).

**Biology.** A halobiont; filters out bacteria, phytoplankton, detritus and small crustaceans. The active life phase in the spring generation extends from early April to late July at water temperature of 4-26 °C; summer generation from July to September at temperatures of 19-33 °C. The species may have 1-2 spring and 3-4 summer generations. Life span of these generations is 45-65 and 25-35 days, respectively. The amount of broods is 3-5, with 20-310 eggs each. The life cycle includes the following periods: naupliar 7-15, prereproductive - 8-19 and reproductive - 18-24 days. Fertility of females in spring is lower than in summer.

**Population trends.** Until the 1940s, it was encountered in the Kuyalnitsky and Khadzhibeysky limans. At present it is still sometimes numerous.



**Threats.** Cattle-grazing, pollution of water bodies by runoff from cattle farms, etc.

**Conservation measures taken.** Included in the Red Data Books of Ukraine and the Black Sea. Protected together with other hydrobionts in the Chernomorsky Biosphere Reserve (Ukraine).

**Conservation measures proposed.** Organization of control of the state of the populations.

## **References**

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*Compiled by B. Alexandrov*

*Branchiostoma lanceolatum* Pallas, 1774

**Synonyms:** *Amphioxus lanceolatus* Pallas, 1744

**Common names:** Engl: *Amphioxus*, *Lancelet*; Bulg: *Lantsetnik*, Russ: *Lantsetnik*, Ukr: *Lantsetnyk*

**Order** AMPHIOXI

**Family** BRANCHIOSTOMIDAE

**Taxonomic description.** The *Amphioxus* belongs to the chordates. It does not have a spine, but, by possessing a notochord, it ranks only just below the vertebrates. The chorda is well differentiated and runs along the whole body. The body is segmented, dorso-ventrally flattened, spindle-shaped, and pointed at both ends. Colour pink, body semi-transparent. A membranaceous flipper along the dorsal side. The caudal end of the body has a lance-like flipper, where the name of the animal originates from. Cranium, head and central nervous system not differentiated. There is no heart, but pulsating blood vessels instead. The length of the body reaches usually 3-5 cm, rarely 8 cm.

**IUCN Status**

World level:

Black Sea Regional level:

Subregion level: VU

**Distribution, Habitat type, Critical habitats, Limiting factors.** *Amphioxus* inhabits the sandy sublittoral at depths down to 28-30 m. It is accompanied by some specific Polychaeta species (e.g. *Staurocephalus keffersteini*) in a biocoenoses called *Amphioxus* sands. It prefers sand mixed with shells. It is very rare on muddy bottoms because it is not adapted to life on bottoms with fine particles.

**Biology.** *Amphioxus* feeds on microalgae, infusoria, crustaceans, etc. Its behaviour differs according to bottom structure. In coarse sand, where water is rich in oxygen and food particles circulate freely, it buries itself entirely. In fine sand, only half of the body is buried, the other half emerges from the bottom. In muddy grounds it does not bury itself at all because it can neither feed nor breathe there. The animal is more active during the night. It reproduces during summer and lives for three to four years.

**Population trends.** Muddy areas have expanded during the last decade as a result of intensive dumping of dead organic matter. This is unfavourable for *Amphioxus* and any such change in bottom structure results in a considerable decrease in its abundance. In the 1960s, it was common along the Bulgarian coast, with the highest

abundance recorded north of Cape Maslen Nos at 21 m deep (1130 ind.m<sup>2</sup>). In 1981 it was still encountered in Varna bay, but in 1991 it had disappeared from the region. Isolated individuals of *B. lanceolatum* are found in the southern region (Sozopol) in only 1996.

Threats. The main threat is the reduction of the areas with coarse sand, by eutrophication and organic pollution.

Conservation measures taken. None so far.

Conservation measures proposed. Reduce pollution and eutrophication.

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Marinov, ., 1990. Zoobentosat ot balgarskia sector na Chernomorelo. BAN, Bulg.Akad.Nauk: 195 pp.

*Compiled by T. Konsulova*

*Burhinus oedicnemus* (Linnaeus, 1758)

**Synonyms:** *Charadrius oedicnemus*, *Oedicnemus crepitans*.

**Common names:** Engl: *Stone-curlew*; Russ: *Avdotka*; Turk: *Kocagos*; Ukr: *Lezheri*.

**Order** BURHINIDAE

**Family** BURHINUS

**Taxonomic description.** Population preliminarily estimated at around 180-240 pairs.



**IUCNStatus**

World level: **VU**

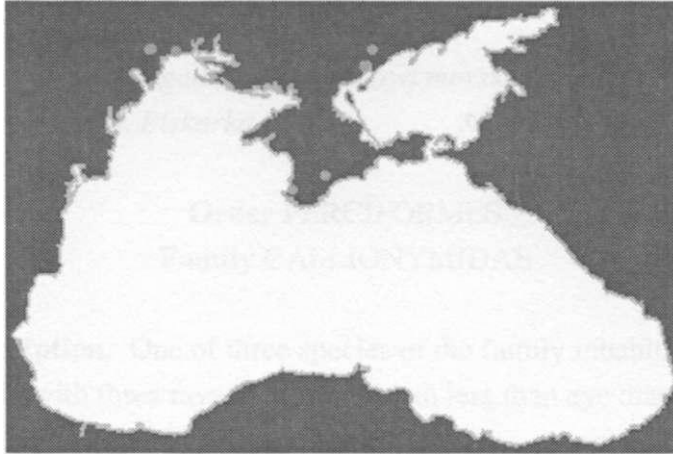
Black Sea Regional level: **VU**

Subregion level: **VU**

**Distribution, Habitat type, Critical habitats, Limiting factors.** Breeding and post-breeding habitats do not differ. They are salinas, sandy beaches, spits and islands, stony areas with low and thinned out mosaic vegetation or without any at all, including areas subjected to human transformation (pastures, agricultural fields, open-cast mines, new gardens, vineyards).

**Biology.** A breeding, summer and migratory species. In the southern parts of the region it arrives by the end of March - beginning of April. At the end of the first third of April it appears in the northern zones. The nest is a trampled plot on the ground encircled by vegetation from the previous year, small stones, clods of earth, and dry cattle droppings. Egg-laying starts from the beginning of the second ten days of April. The clutch consists of 1-3 eggs and is incubated for 26 days. Parents share the incubation duties equally. Fledglings are observed in July. In the post-breeding period birds occur in small groups (2-5, sometimes more) or solitarily. Autumn

migration from September to early October. Food mostly insects, molluscs, and small vertebrates.



**Population trends.** Insufficient breeding range, but ability to breed in agricultural fields and pastures with low grazing pressure.

**Threats.** Disturbance, clutch and chick losses due to over-grazing and recreation pressure, killing by people, predation by Crows (*Corvidae*), raccoon (*Nyctereutes procyonoides*), foxes (*Vulpes vulpes*), and domestic dogs.

**Conservation measures taken.** There is no real protection most pairs breed outside the protected areas.

**Conservation measures proposed.** Expansion of the protected areas for more breeding sites, limitation of grazing therein, reduction of predator numbers.

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Waterbirds in the Sivash, Ukraine, Spring, 1992, WTWO-report 36, Zeist, The  
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*Compiled by Y. Andryushchenko.*

*Callionymus belenus* Risso, 1826

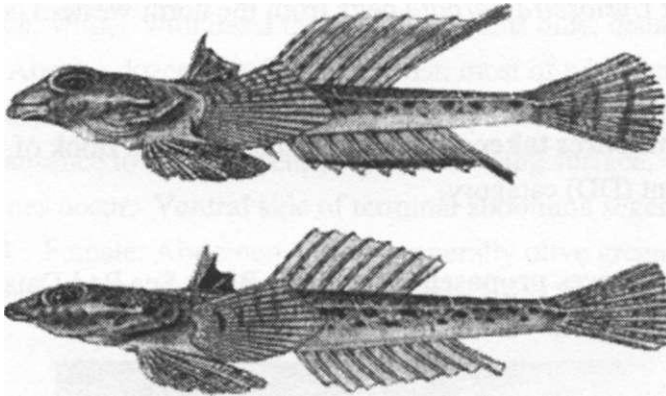
**Synonyms:** *Callionymus risso* Le Sueur

**Common names:** Engl: *Dragonet* Russ: *Malaya morskaya mysh*; Turk: *Uzgun baligi*;  
Ukr: *Mors'ka mysha mala*, *Piskarka sira*

**Order** PERCIFORMES

**Family** CALLIONYMIDAE

**Taxonomic description.** One of three species of the family inhabiting the Black Sea. Spinous dorsal fin with three rays. Rostrum length less than eye diameter and representing not more than 30% of head length.



**IUCN Status**

World level:

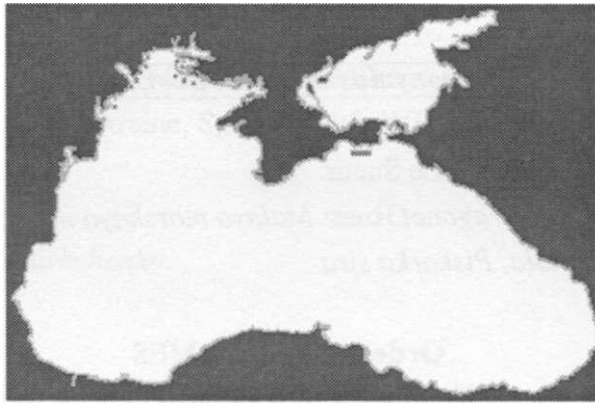
Black Sea Regional level: **EN**

Subregion level: **EN** (Ukrainian sector)

**Distribution.** Mainly sandy bottom shallow water coastal areas of the Black Sea, including low salinity areas. Mediterranean Sea.

**Habitat type, Critical habitats, Limiting factors.** Sandy and muddy grounds from surface to 10, sometimes 18 m depth. Limiting factors are the bottom hypoxia for adult fishes, surface water pollution and disappearance of *Cystoseira* belts for neustonic larvae.

**Biology.** A small bottom fish, up to 7-8 cm length, feeding on meiobenthos and laying pelagic eggs. Larvae neustonic, 4-7 mm long, covered with a dense network of dark brown melanophores, making them appear like floating fragments of brown alga *Cystoseira barbata* to which predators are indifferent.



**Population trends.** Sharp decline in population numbers since the late 1970s. The reduction estimate of 50-70% over the last 10 years is based on direct observations.

**Threats.** Pollution of the surface microlayer of water, bottom hypoxia and disappearance of *Cystoseira barbata* belts from the north-western coast of the Black Sea.

**Conservation measures taken.** Included in the Red Data Book of Ukraine (1994), in the Data Deficient (DD) category.

**Conservation measures proposed.** Include in Black Sea Red Data Book. Reduce Black Sea eutrophication.

## References

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Zaitsev, Y. P., 1993. Impact of Eutrophication on the Black Sea Fauna. Studies and Reviews 64 : 59-86.

*Compiled by Y. Zaitsev*



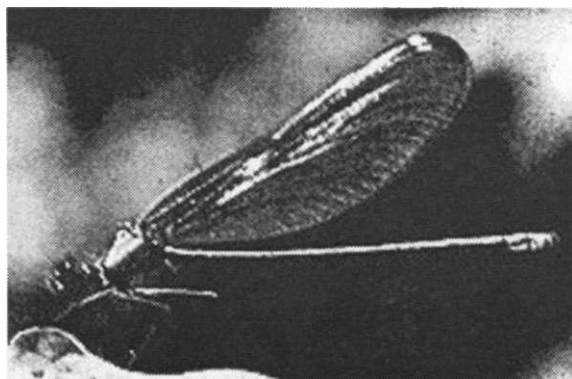
*Calopteryx splendens* - complex

**Synonyms:** *Libellula splendens* Harris, 1782:99; *Calopteryx splendens* Selys & Hagen, 1850:138; *Calopteryx splendens balcanica* Fudakowski, 1930:57-63.

**Common names:** Engl: *Banded demoiselle*; Russ: *Krasotka blestyashchaya balkanskaya*; Turk: *Yaz yusufcugu*.

**Order** ODONATA  
**Family** CALOPTERYGIDAE

**Taxonomic description.** Total body length 49-51 mm, length of hindwing 29-31 mm. Eyes hemispherical, distant, situated laterally on the head. Both wing pairs similarly shaped. Pronounced sexual dimorphism in coloration. Male: body shining metallic blue-green; wings with basal third hyaline, veins blue, distal area with a broad blue spot. About a dozen of subspecies exist, most of which can be distinguished by the extension of the coloured wing spot in the males. This may vary from a complete absence to almost occupying the full wing surface. In the Black Sea basin, both extremes occur. Ventral side of terminal abdominal segments yellow, marked with flack. Female: Abdomen slender, generally olive greenish; wings from colourless to green-brownish due to the shining green veins.



**IUCN Status**

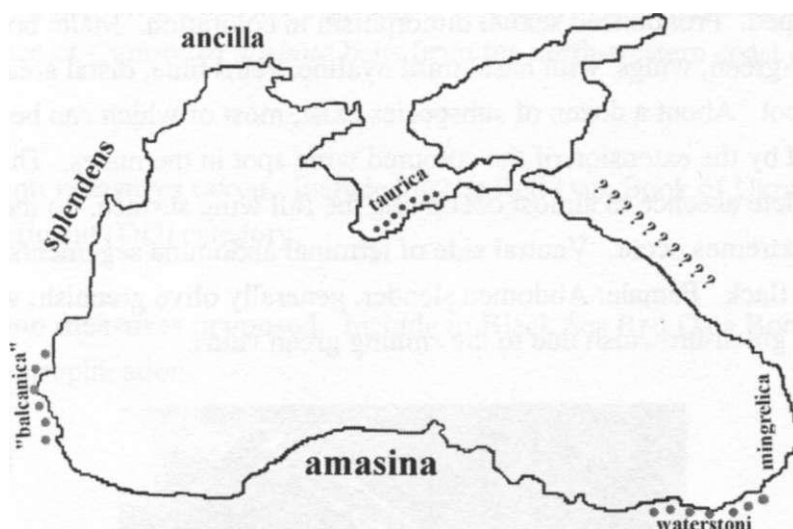
World level:

Black Sea Regional level: **LR**

Subregion level: **VU** (Bulgarian coast)

**Distribution.** A palaeartic, polytypic species, occurring in the East as far as lake Baikal. The populations Bulgaria show features transitional between the nominate *C. s. splendens*, that occurs in more or less typical form in the Danube valley and *C. s. balcanica*, a broad-banded form from the southern Balkans and coastal Greece. In the north (the Dniepr and Don valleys), a robust form occurs that may be a close relative

of *balcanica*, but has been called *ancilla* (a name that takes precedence over *balcanica*). Along the Turkish Black Sea coast, a form with average wings spots occurs (*C. splendens amasina*) as far east as Gorele (not far from Trabzon). Eastwards, it is replaced by a form with colourless wings (*C. splendens waterstoni*), that extends as far as the Coroh (Coruh) valley in Georgia. North of that, and as far as the Caucasus, it is replaced by narrow-banded *C. splendens mingrelica* (possibly a hybrid between several other forms). All these subspecific taxa freely hybridize and form clines of varying steepness and width. In the coastal rivers of the Crimean coastal mountains, finally, a very narrow-banded subspecies, *C. splendens taurica*, occurs in isolation. The populations of south Russia deserve more study. Of all subspecies listed, *C. s. waterstoni* is probably the most restricted in range and hence the most threatened one.



**Habitat type, Critical habitats, Limiting factors.** Brooks and rivers rich in vegetation and slow water velocity, from sea level to c. 1000 m a.s.l. in the mountains. The main limiting factors are water pollution and the elimination of zones rich in vegetation as a result of stream realignments.

**Biology.** Larvae rheophilous, relatively common, inhabitants of rich in vegetation localities in the rhithral and the potamal; both larvae and adults active predators. Two year life cycle. Period of emergence V-IX. Adults are relatively slow fliers.

**Population trends.** Although not measured, a trend towards a declining abundance is observed in Black Sea coastal brooks and wetlands.

**Threats.** Polluting and/or drying up of the habitats as a result of urbanization as well as of uncontrolled livestock-farming activity, both on the coastal plain and in mountainous regions.

**Conservation measures taken.** Some of the habitats in each of the Black Sea countries should be preserved from human interference.

**Conservation measures proposed.** Inclusion of *Calopteryx splendens* and its numerous Black Sea subspecies in the List of Rare and Vulnerable Species.

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Beschovski, V., 1994. Fauna of Bulgaria. Odonata. Sofia, Acad. Sei. bulg. 23: 372 pp.

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St. Quentin, D., 1965. Zur Odonatenfauna Anatoliens und der angrenzenden Gebiete. Ann. naturhist. Mus. Wien 63: 531-552.

Red Data Book of Ukraine, 1994. p. 65.

*Compiled by K. Kumanski & H. J. Dumont.*

*Calopteryx virgo* - complex

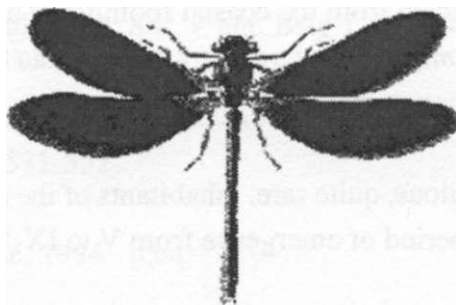
**Synonyms:** *Libellula virgo* Linnaeus, 1758:245; *Calopteryx virgo* Selys & Hagen, 1850:134; *Calopteryx virgo* race *meridionalis* Selys, 1873:509; *Calopteryx virgo meridionalis* Capra, 1945:254.

**Common names:** Engl: *Beautiful demoiselle*; Russ: *Krasotka-devushka yuzhnaya*; Turk: *Buyuk kiz bocegi*.

**Orde** ODONATA

**Family** CALOPTERYGIDAE

**Taxonomic description.** Total body length 49-54 mm, length of hindwings 31-37 mm. Eyes hemispherical, relatively small, distant, situated laterally on the head. Both wing pairs similar in shape. Wings uniformly coloured or their basal region narrowly transparent. Pronounced sexual dimorphism in colour pattern. Male: body metallic blue; wings dark-brown, with shining deep blue veins. Ventrums of terminal segments of abdomen largely live red. Female: body dull dark green-brownish; wings dull brown, veins dull metallic. Abdomen slender.



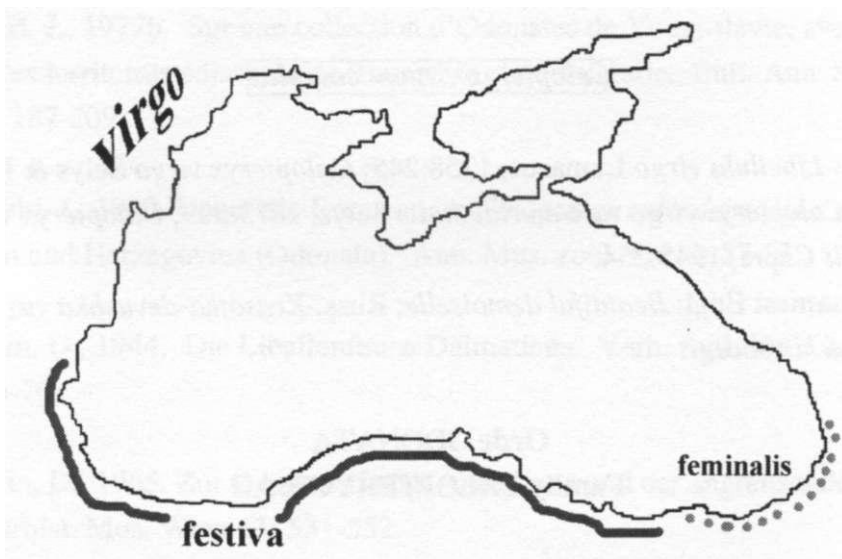
**IUCN Status**

World level: **VU**

Black Sea Regional level: **VU**

Subregion level: **VU**

**Distribution.** A transpalearctic, polytypic species with several subspecies. In the West Mediterranean area, North Africa, South France, and the Iberian Peninsula, a semi (?) species, *C. meridionalis* occurs, which looks more or less like some populations in Bulgaria that have been designated by that name, but extend to the Marmara region of Asia Minor and the Strandzha Mts. These populations are therefore more probably linked to a subspecies that occurs from Greece eastwards through Anatolia, *C. virgo festiva*. East of Trabzon, this is replaced by yet another robust subspecies, *C. virgo feminalis*, which probably extends along most of the east coast of the Black Sea. Along the north coast, *C. virgo virgo* is expected to occur.



**Habitat type, Critical habitats, Limiting factors.** Clear, small rivulets rich in vegetation, including small brooks on the sea shore line. The latter could be considered critical in connection with urbanization and sea-resort expansion. It may be added that the south-east corner of the Black Sea harbours yet a few other species of Odonata, not currently included in this Red Book, but which should be considered for the future. These include *Coenagrion ponticum*, a member of the *C. puella*-superspecies that is restricted from the coastal foothills of the Caucasus to Trabzon area, and *Cordulegaster myzmae*, a large dark anisopteran that lives in the Pontic Alps and the Caucasus mountains.

**Biology.** Larvae rheophilous, quite rare, inhabitants of the rhithral; both larvae and adults active predators; period of emergence from V to IX-X; adults relatively slow fliers.

**Population trends.** A continuing decline has recently been observed, although not quantitatively documented.

**Threats.** Polluting and/or drying up the habitats as a result of urbanization, as well as of uncontrolled stock-farming (pig, sheep etc.) activity both on the coastal plain and in the Strandzha Mts. hilly land.

**Conservation measures taken.** Some of the habitats need safeguarding from human interference.

**Conservation measures proposed.** Include *Calopteryx virgo* and its subspecies in the list of Rare and Vulnerable Species.

## References

- Bartenef, A. N., 1912. Die palaearktischen und ostasiatischen Arten und Unterarten der Gattung *Calopteryx* Leach. Lab. Arb. Zool. Kabin. Univ. Warchau, 1, 1911 (1912): 1-193 + erratum (in Russian).
- Beschovski, V., 1989. Representatives of the families Epallagidae and Calopterygidae (Odonata) in Bulgaria. Acta zool. bulg. 38: 3-8.
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- Dumont, H. J., 1977. A review of the dragonfly fauna of Turkey and adjacent mediterranean islands. Bull. Ann. Soc. r. ent. Belg 113: 119-171.
- St. Quentin, D., 1965. Zur Odonatenfauna Anatoliens und angrenzende Gebiete. Ann. Nat. hist. Mus. Wien 63: 531-552.
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*Compiled by K. Kumanski and H. J. Dumont*

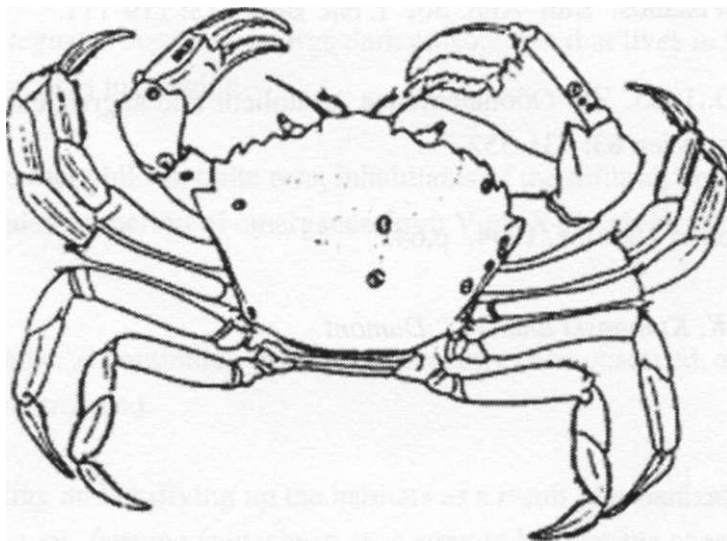
*Carcinus mediterraneus* Czerniavsky, 1884

**Synonyms:** *Carcinus aestuarii*, Nordo 1847

**Common names:** Engl: *Green crab*; Bulg: *Kriv rak*; Rom: *Crabul de iarba*; Russ: *Travyanoy krab*; Turk: *Calpara, Cingene pavuryasi*; Ukr: *Travyany krab*

**Order DECAPODA**  
**Family PORTUNIDAE**

**Taxonomic description.** A large-sized crab. Carapace smooth, more or less hexagonal. Posterolateral margin more or less straight, without armature, longer than anterolateral side, with five prominent sharps anterolateral teeth. Front produced into three low teeth. Short antennules with 25 articles. Antennae with a thin flagella. Dactylus of the fifth pleopods normal, with a long, cylindrical and slightly flattened claw, four times longer than wide; with strong hyaline tip. The top of the first pleopods straight or very slightly bent. Size: length 63 mm, width 80 mm. Colour variable; the upper side generally deep green in adults, while the under side is tinged with yellow or red.



**IUCN Status**

World level:

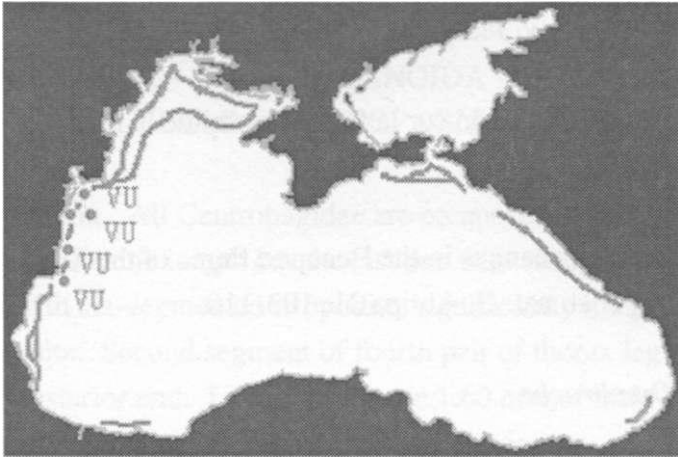
Black Sea Regional level:

Subregion level: **VU**

**Distribution, Habitat type, Critical habitats, Limiting factors.** A littoral species, found on stony algal grounds, common in *Zostera* fields. In winter, it may retreat to 30-40 m depth. Inhabits brackish lagoons also. Present throughout the Mediterranean



Sea; in the Atlantic known to occur around the Canary Islands. A decapod with a high ecological plasticity, relatively resistant to a polluted environment, and to a decrease in eelgrass beds.



**Biology.** Carnivorous, eats small fish and shrimp, usually carrion. Highly prolific, with a long period of reproduction, from May until December. In the period of reproduction it makes migrations to the shore. Its planktonic larvae (zoea and megalope) are the most resistant of all decapods of the Black Sea. An eurythermic and euryhaline species.

**Population trends.** Up to 1980 it was frequent on the Romanian littoral, after that it became more rare. A small number of individuals were found during 1991-1995 on the northern Romanian coasts.

**Threats.** Anthropic pressures from large-scale coastal hydrotechnical works, degradation of *Zoster a* communities.

**Conservation measures taken.** Included in the Red Data Book of Ukraine, 1994.

**Conservation measures proposed** Reduce eutrophication.

## References

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*Compiled by C. Dumitrache*

*Centropages kroyeri pontica* (Karawaev, 1895)

**Synonyms:** None.

**Common names:** None.

**Order** CALANOIDA  
**Family** CENTROPAGIDAE

**Taxonomic description.** All Centropagidae are composed of six segments. All segments of almost the same length but the last one with elongated side angles. Second antennae with six-segmented exopodite, significantly longer than the two-segmented endopodite. Second segment of fourth pair of thorax legs of male with large prong at its posterior end. Length of female 1.60 mm, of male 1.40 mm. Side angles of last thorax segment of female extended into wings.

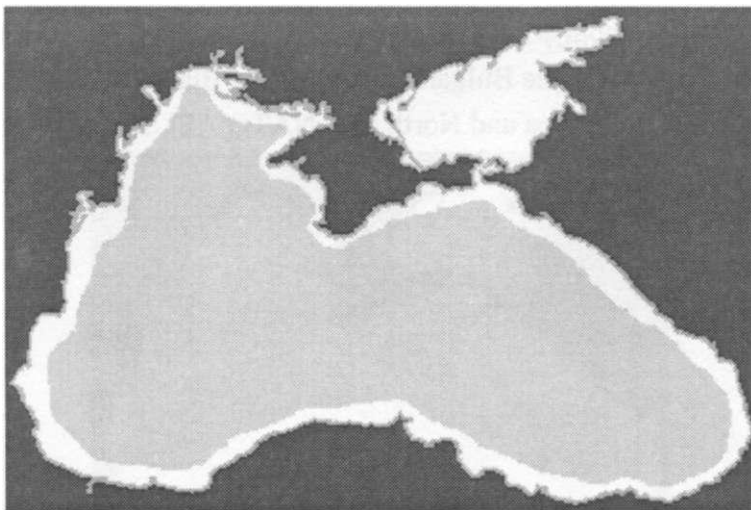
**IUCN Status**

World level:

Black Sea Regional level:

Subregion level: EN

**Distribution, Habitat type, Critical habitats, Limiting factors.** The most favourable conditions for the development of this species occur in Black Sea coastal surface waters during spring, summer and autumn, at water temperatures of 14-23°C. During the same seasons it can also be found in the open sea although in lower numbers. The strong eutrophication of the coastal zone and the ctenophore *Mnemiopsis leidyi* are limiting factors. The first is a form of contamination and the second a predator.



**Biology.** Inhabits the upper water layers (up to 50 m) and performs diurnal migrations down to the thermocline. In the Black Sea, it propagates from May to November. The number of eggs laid by a female reaches c. 200. A female lays 10 clutches of, c. 20 eggs each. *C. kroyeri* feeds mainly on phytoplankton. Infusoria are part of the food of its larvae.

**Population trends.** In coastal waters in front of the Bulgarian coast, *C. kroyeri* reached average numbers of 732 ind.m<sup>3</sup> in 1967-1988. In 1974-1988, their mean number was 236 ind.m<sup>3</sup>, in 1988-1995 only 3-4 ind.m<sup>3</sup>. After 1996, numbers in coastal waters rose back to 10-14 ind.m<sup>3</sup>.

**Threats.** High degree of eutrophication in the Black Sea coastal surface waters and the presence of the ctenophore *Mnemiopsis leidyi*.

**Conservation measures taken.** None.

**Conservation measures proposed.** Reduction of eutrophication in the coastal zone which may also limit the abundance of *M. Leidyi*.

## References

Opredelitel fauni Chernogo i Azovskogo morej, 1969. Kiev, Naukova Dumka: 2:49-50.

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*Compiled by A. Konsulov.*

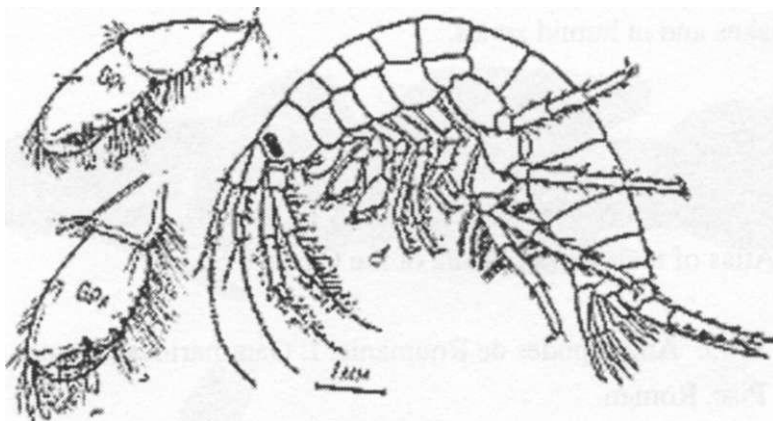
*Chaetogammarus ischnus major* (Stebling, 1898)

**Synonyms:** *C. ischnus* Stebling 1898, *Gammarus tenellus* G.O. Sars 1914, *Ch. Tenellus major* S. Carausu 1943.

**Common names:** Bulg: *Mamarets*; Russ: *Bokoplav*.

**Order** AMPHIPODA  
**Family** GAMMARIDAE

**Taxonomic description.** Length male 12-15 mm, of female 10-13 mm. On the urosome, a group of 2-3 spines on the different segments. Many groups of curved setae on antenna II as well as on pereopods I and II of the male.



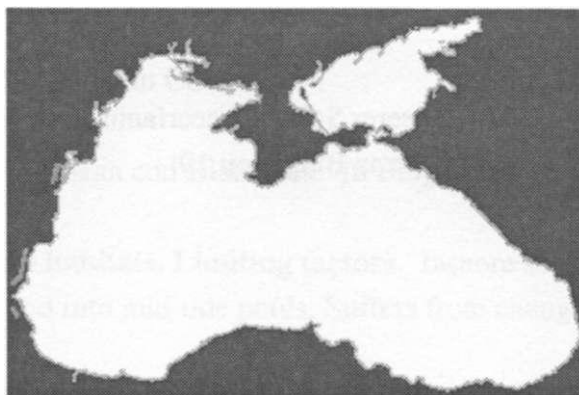
**IUCN Status**

World level: **VU**

Black Sea Regional level: **VU**

Subregion level: **VU**

**Distribution.** A pontocaspian species, found along the Bulgarian and Romanian coasts.



Habitat type, Critical habitats, Limiting factors. Brackish and fresh waters, coastal lakes, swamps and rivers; threatened by salinity increase and pollution.

Biology. Inhabits brackish and fresh water lakes. Found under stones and among water plants at a depth of up to 0.5-1 m. Breeding from April to October.

Population trends. Decreasing.

Threats. Pollution caused by urbanization and uncontrolled livestock farming.

Conservation measures taken. The Shabla lake is the only stated reserve.

Conservation measures proposed. Formation of protected territories and reserves in and around lakes and in humid zones.

## References

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*Compiled by S. Andreev.*

*Chromogobius quadrivittatus* Steindachner, 1863

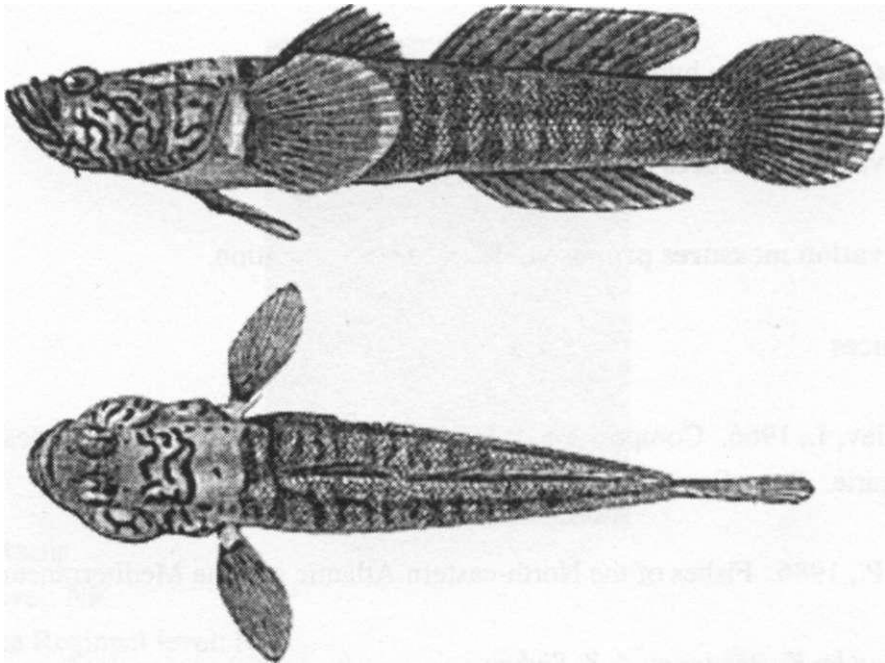
**Synonyms:** *Relictogobius kryzhanovskii* Ptchelina, 1939

**Common names:** Engl: *Banded goby*

**Order PERCIFORMES**

**Family GOBJJDAE**

**Taxonomic description.** D VI, I 8-11; A17-10. P 16-18. Scales in lateral series 56-72. Vertebrae 27 (Gheorgiev, 1966; Miller, 1986). Body spindle-shaped. Head wide 0.65-0.80 times head length. Upper lip uniformly wide. Colour pale brown, with fine reticulation and one or two pale saddles conspicuous across the back. Size up to 6.5 cm.



**IUCN Status**

World level:

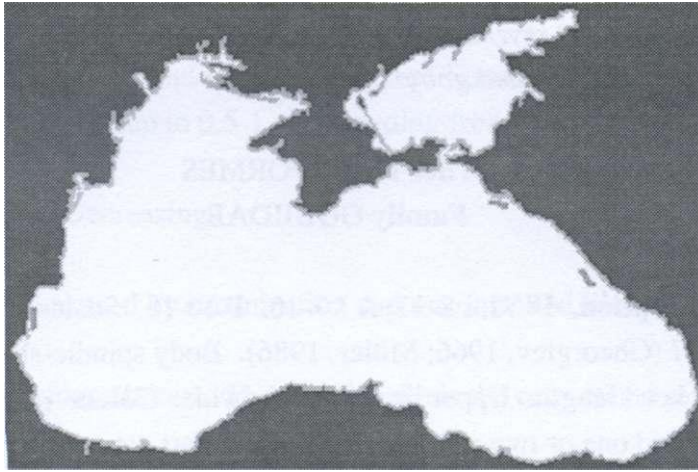
Black Sea Regional level:

Subregion level: **CR** (Bulgarian Coast)

**Distribution.** Mediterranean and Black Sea. In Bulgaria in the Bay of Varna.

**Habitat type, Critical habitats, Limiting factors.** Inshore shallows, below stones or between weed tufts, and into mid-tide pools. Suffers from changes in hydro-chemical regime.

**Biology.** Reproduction: no data. Food: crustaceans.



**Population trends.** Strongly diminishing.

**Threats.** Changes in hydrologie and chemical regime.

**Conservation measures taken.** None.

**Conservation measures proposed.** Reduce contamination.

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- Miller, P., 1986. Fishes of the North-eastern Atlantic and the Mediterranean 3: 1028.

*Compiled by K. Prodanov & Y. Sivkov*



*Ciconia nigra* Linnaeus, 1758

**Synonyms:** *Ciconia niger* Linnaeus, 1758; *Ciconia fiisca* Brehm, 1831; *Ciconia nigra vera* Brehm, 1866; *Ardea nigra* Linnaeus, 1758; *Ardea atra* Gmelin, 1789; *Ardea chrysopelargus* Lichtenstein, 1793; *Melanopelargus niger* Linnaeus, 1758

**Common names:** Engl: *Black stork*, Bulg: *Cheren scherkel*; Rom: *Cocostirc negru*; Russ: *Chorny aist*; Turk: *Siyah leylek*; Ukr: *Leleka chorny*

**Order CICONIIFORMES**

**Family CICONITDAE**

**Taxonomic description.** Black bird with white belly, red legs and a red beak. As big as the white stork (*Ciconia ciconia*). The black colour of young individuals is later replaced with dark brown.



**R7CN Status**

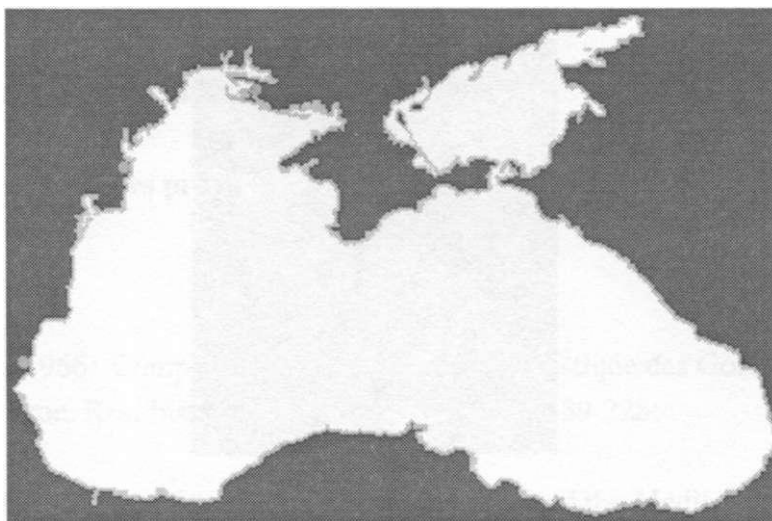
World level: NE

Black Sea Regional level: NE

Subregion level: NE

**Distribution.** Along the Bulgarian Black Sea coast, the Black stork used to nest in Dobrudja, near the town of Balchik (Simpson, 1861), in the Provadiiska valley (Elwes & Buckley, 1870), in East Stara Planina and the mountain Strandja, especially along water-courses running into the rivers Batova, Kamchia, Ropotamo, Djavolska, Kitenska and Veleka. In the last century one pair was nesting in the Romanian part of Dobrudja, near Babadat, on a rock near the edge of a wood (Elwes & Buckley, 1870). There are no nesting areas along the Black sea-coast of Ukraine and Russia and along the seashore of the Sea of Azov. According to Kostin(1983), the Black stork was breeding in the mountains of the Crimea peninsula in the nineteenth and at the beginning of the twentieth century. The last nest was found there in 1919 and later

only single specimens were recorded during their summer wandering and annual migrations. The Black stork has a wider distribution than the White stork in the Caucasus, but is rarer (Portenko, 1958). Its nesting places include the whole seashore of Georgia (Cramp & Simmons, 1977), but according to Abuladze (1993) only 2-3 pairs were breeding in West Georgia in 1980. Along the South Black Sea coast several nesting sites are known, located mostly in the Turkish part of the mountain Strandja, in the Kizilirmak delta, near Trabzon and in some areas distant from the sea (OST Bird Report, 1975). During seasonal migrations, Black storks can be seen everywhere along the shores of the Black Sea and the Sea of Azov. It is believed (Lebedeva, 1979) that migrating Black storks over the western part of the Black Sea were hatched in Lithva, Latvia, Byelorussia. Those migrating over the eastern part came from central Russia. In autumn Black storks from Lithuania, Latvia, Byelorussia, Poland, Czechia, Slovakia, Germany, Denmark and possibly specimens from Central Romania, Ukraine and Estonia concentrate along the western Black Sea coast (Nankinov, in press).



**Habitat type, Critical habitats, Limiting factors.** Settles in woods and rocky places. The choice of the nesting places depends on the proximity of basins rich in food, safe places for building nests, and lack of disturbance.

**Biology.** Some Black stork pairs are formed during spring migration. The repair of old nests and the building of new ones is accomplished after mid March. The nests are situated on trees and rocks. Egg laying in late March. The number of eggs is 1-5. The first young hatch during 5-15 May. The brood consists of an average of 3.2 young. Flying young are observed from 11 June till 18 August. The nesting period extends to 149 days (Nankinov D., in press). Black stork feed not only on fish, but also on amphibians, reptiles, small rodents, insects, crustaceans, snails and other invertebrates. To some degree the feeding regime of Black and White storks is

similar. Often the two species gather food together, especially in mixed flocks during the migrations. The joint feeding suggests that, like the White stork, the Black stork helps in the destruction of small rodent and insect pests.

**Population trends.** Old sources suggest that until the middle of the last century the Black stork was a comparatively common nesting bird along the Black Sea coast. After that, its numbers decreased, especially in the first half of the twentieth century, when the species left many areas. After 1960, a revival began. In Bulgaria the nesting pairs increased from 35 to 122, and from 1975 till 1992 they reached 257 pairs. Of these, 20 pairs breed along the seashore. About 50 pairs breed now along the whole Black Sea coast (Bulgaria, Turkey and Georgia).

**Threats.** Destruction of habitats (urbanization, cutting down of old forests, water pollution, intensive farming...), pursuit by ichthyophagous birds, egg collecting. In the past of prejudices by people in Bulgaria had a negative effect on the Black stork.

**Conservation measures taken.** The species is included in Appendix II of the Washington Convention. In Bulgaria and in some other countries in the Black Sea region the Black stork is protected for. It is included in the Red Books of Bulgaria, Ukraine, Russia and Georgia. Some nesting areas and resting places during migration along the Black Sea coast are within protected areas.

**Conservation measures proposed.** Ceasing habitat destruction, mainly the cutting down of old forests and the pollution of river basins. Ceasing shooting and egg collecting. All nesting sites along the Black Sea coast should be protected.

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*Compiled by D. Nankinov*

*Clupeonella cultriventris* Nordmann, 1840

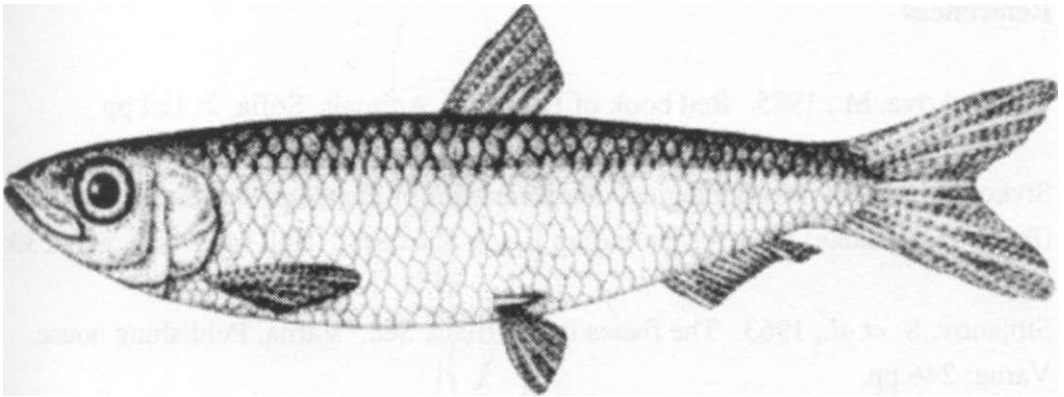
**Synonyms:** *Clupea cultriventris* Nordmann, 1840; *Clupea delicatula* Nordmann, 1840; *Clupeonella delicatula* Svetovidov, 1952

**Common names:** Engl: *Tyulka sprat*; Bulg: *Ezerna tritsona*; Rom: *Gingirica*; Russ: *Tyul'ka*; Turk: *Tilka*

**Order** CLUPIFORMES

**Family** CLUPEIDAE

**Taxonomic description.** D 14-16; A 17-21; P 13-16; V 8; C 117 I; Keeled scales 26-30. Gill rakers 41-62. Vertebrae 41-43 (16-18 + 17-19) (Sivkov, 1994). Body elongated, laterally strongly depressed. Body width 0.08-0.11 SL. Belly with a sharp edge of keeled scales. Last two anal finrays enlarged. Size up to 10.5 cm.



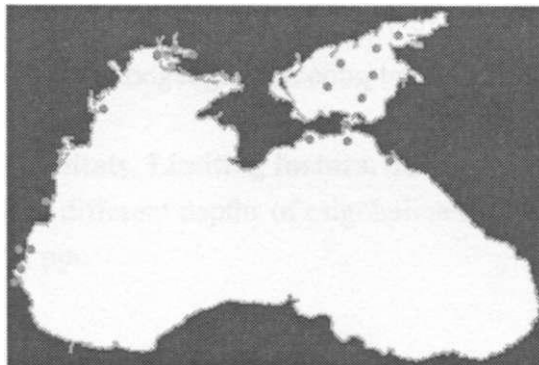
**IUCN Status**

World level: NE

Black Sea Regional level: EN

Subregion level: EN

**Distribution.** Brackish waters of the north-western part of the Black Sea and Sea of Azov and Caspian (Whitehead, 1984). In Bulgaria in Lakes Shabla, Varna, Burgas, and in the Bay of Varna (Stojanov *et al*, 1963).



**Habitat type, Critical habitats, Limiting factors.** A pelagic, euryhaline, essentially brackish water species, vulnerable to chemical pollution of coastal lakes.

**Biology.** Reproduction in April-June on the Bulgarian coast. Food: zooplankton, copepods, mollusc larvae and small fish.

**Population trends.** Declining.

**Threats.** Chemical pollution of coastal lakes.

**Conservation measures taken.** Lake Shabla has been made a reserve. The species is included in the Bulgarian Red book (Karapetkova, 1985).

**Conservation measures proposed.** Eliminate pollution.

## References

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Whitened, 1984. Fishes of the North-eastern Atlantic and the Mediterranean 1: 274 pp.

*Compiled by Y. Sivkov & K. Prodanov*

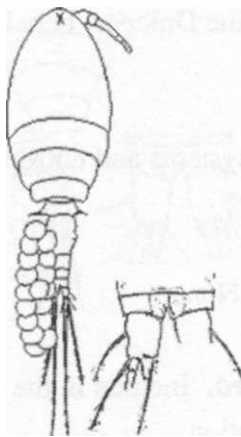
**Synonyms:** None.

**Common names.** None.

**Order** CYCLOPOIDA

**Family** CYCLOPIDAE

**Taxonomic description.** This genus displays some of the most modified and oligomerized structures known in Cyclopidae, especially in the mouth parts: the spines on the masticatory part of the mandibula, the maxillular palp, the strongly modified maxilla, which is of a prehensile type, and the maxilliped which is absent. Total female length 744-850 urn, male 498-517 urn.



**IUCN Status**

World level:

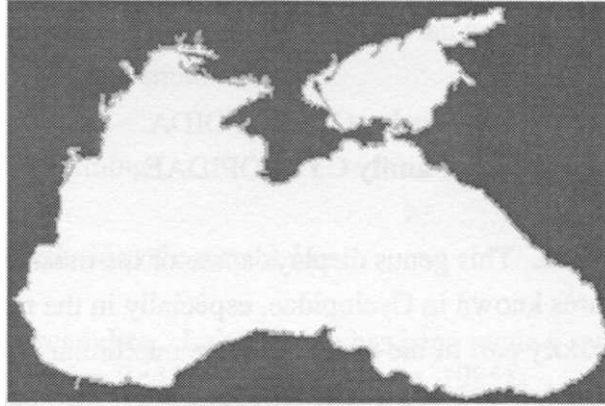
Black Sea Regional level:

Subregion level: **VU** (Ukrainian sector)

**Distribution.** In irrigation channels and water reservoirs connected with the lower Dnieper, which is considered to be its area of origin. As a result of damming of the Dnieper it was introduced to the water reservoirs of Kakhovka, Zaporozhye, Dnieprodzerzhinsk and Kremenchug. Genus allied to the Ponto-Caspian genus *Smirnoviella*. Morphology, range and halopathy provide reasons to consider it a member of the Ponto-Caspian zoogeographic complex.

**Habitat type, Critical habitats, Limiting factors.** A meiobentic species inhabiting sands and muddy sands at different depths of oligohaline to fresh waterbodies. Found at a salinity of 0.56-1.51 ppt.

**Biology.** Polycyclic development during the warm season of the year. The prehensile mouth parts suggest raptorial feeding on small invertebrates.



**Population trends.** The habitat and distribution pattern provide a rare case where the activity of man (the damming of the Dnieper) benefitted the preservation of a rare species.

**Threats.** Pollution of irrigation systems and eutrophication, causing hypoxia in the bottom layer of water.

**Conservation measures taken.** None.

**Conservation measures proposed.** Include in the Black Sea Red Data Book. A reduction of water reservoir pollution.

## References

Monchenko, V. I., 1977. About the strong modified new copepod *Colpocyclops dulcis* gen. et sp.n. (*Crutasea*, *Cyclopidae*). *Vestnik Zool.*11: 25-32 (in Russian with English Abstract).

Monchenko, V. I., 1996. A Ponto-Caspian complex of *Cyclopoida* in the Caspian, Azov and Black Seas and their predecessors. VI Int. Conference on Copepoda, Oldenburg, Aug., p.82

*Compiled by V. Monchenko.*



*Colpocyclops longispinosus* (Monchenko, 1977)

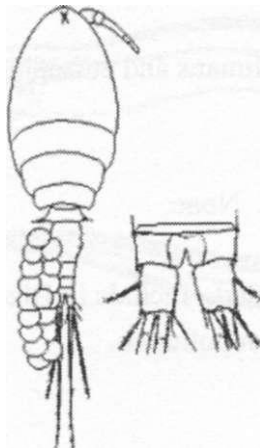
**Synonyms:** *Halicyclops longispinosus* Monchenko.

**Common names:** None.

**Order** CYCLOPOIDA

**Family** CYCLOPIDAE

**Taxonomic description.** By the structure and armature of its mouth parts, this species is among the most modified of the Cyclopidae. Female length 700-730  $\mu\text{m}$ , male 510-530  $\mu\text{m}$ .



**IUCN Status**

World level:

Black Sea Regional level:

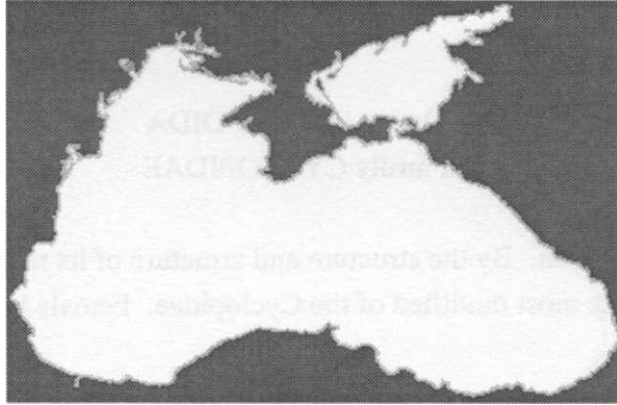
Subregion level: **EN** (Ukrainian sector)

**Distribution.** The lower part of the Dniester river liman and central part of the Dnieper-Boug river liman. Endemic to these two river limans. Genus allied to the Ponto-Caspian genus *Smirnoviella*. This generic relation, range and halopathy provide a reason to consider it a member of the Ponto-Caspian zoogeographic complex and which arose in one of the basins that preceded the Black Sea.

**Habitat type, Critical habitats, Limiting factors.** A bottom-dweller, inhabiting sands and mud-sands at different depths of oligohaline and meiomesohaline aestuarine water-bodies. Found at a salinity of 1.8-5.6 ppt.

**Biology.** Polycyclic development during the warm season of the year. The prehensile mouth parts structure suggests predation on small invertebrates.

**Population trends.** A decline in population numbers during the last 10-15 years (up to 50-60%).



**Threats.** Pollution of the river limans and eutrophication causing hypoxia in the bottom layer of water.

**Conservation measures taken.** None.

**Conservation measures proposed.** Include in Black Sea Red Data Book. Reduce Dniester and Dnieper-Boug basin pollution.

## **References**

Monchenko, V. I., 1974a. A new representative of the genus *Halicyclops* (Crustacea, Copepoda) from the Dnieper-Boug river liman. *Vestnik Zool.* 8: 47-52 (in Russian with English Abstract).

Monchenko, V. I., 1974b. *Gnathostomata Cyclopoida, Cyclopidae.* Fauna of the Ukraine. Kiev, Naukova Dumka 27: 437 pp

Monchenko, V. I., 1978. The allocation of the *Halicyclops longispinosus* to the genus *Colpocyclops* (Crustacea, Copepoda) and the first description of its males. *Vestnik Zool.* 12: 68-72 (in Russian with English Abstract).

*Compiled by V. Monchenko.*

*Conger conger* (Linnaeus, 1758)

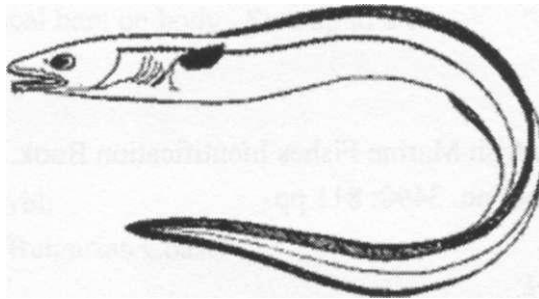
**Synonyms:** None.

**Common names:** Engl: *Conger-eel*; Russ: *Morskoy ugor*; Turk: *Migri*.

**Order** ANGUILLIFORMES

**Family** CONGRIDAE

**Taxonomic description.** Eel-shaped body with a subcylindrical front end. Elongated snout with a wide mouth and big lips. Well developed pectorals. Colour varies from blackish to whitish. Maximum length two meters.



**IUCN Status**

World level:

Black Sea Regional level: **VU**

Subregion level: **VU**

**Distribution, Habitat type, Critical habitats, Limiting factors.** This benthic species lives on sandy-muddy, rocky bottoms, to depths of 100 metres.. Marine zones near 100 meters, underwater caves and reefs for breeding.



**Biology.** This species is a carnivore, feeding on fishes, crustaceans and cephalopods, benthonic life, sexual maturity starts at five years; three to eight millions of eggs..

**Population trends.** There is no available information on population trends. But due to overfishing and pollution, a decline is probable.

**Threats.** Turbidity, food shortage and pollution.

**Conservation measures taken.** None.

**Conservation measures proposed.** Mitigate pollution, stop overfishing.

## **References**

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*Compiled by B. Oztiirk.*

*Coryphoblennius galerita* (Linnaeus, 1758)

**Synonyms:** *Blennius mongui* Fleming, 1828; *Blennius artedii* Valenciennes, 1836; *Blennius galerita*, Giinther, 1861.

**Common names:** Engl: *Montagu's blenny*.

**Order** PERCIFORMES

**Family** BLENNIIDAE

**Taxonomic description.** D XH-XIII16-17; AII17-19; P 13-14; VI 3. Vertebrae 35-36 (Stojanov *et al*, 1963). Body elongated, laterally compressed, naked. Snout short, with a slightly oblique profile. Eyes 0.20-0.23 of head length. Colour grey or brown; with dark vertical bars on body. Size up to 8 cm.

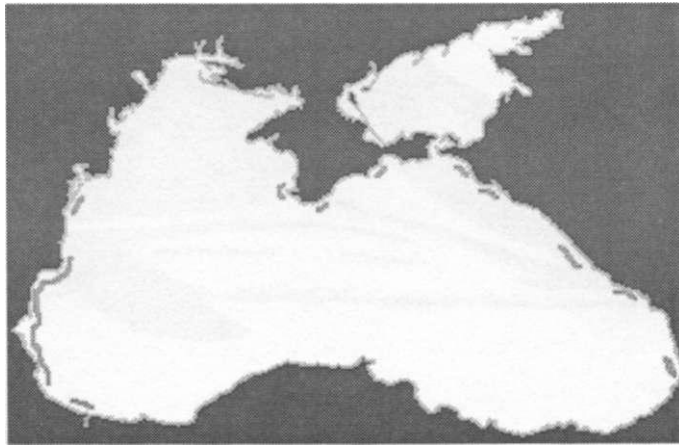
**IUCN Status**

World level:

Black Sea Regional level:

Subregion level: VU (Bulgarian Coast)

**Distribution.** Mediterranean and Black Seas (Zandar, 1986). In Bulgaria inshore, along entire coast, rare.



**Habitat type, Critical habitats, Limiting factors.** Steep rocks in the surf zone, or on stony and shelly grounds.

**Biology.** Reproduction in May-August. Males guard eggs in shells. Food: bottom invertebrates, algae.

**Population trends.** Declining.

**Threats.** Industrial pollution.

**Conservation measures taken.** None.

**Conservation measures proposed.** Stop chemical contamination.

### **References**

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Zander, C, 1986. Fishes of the North - eastern Atlantic and the Mediterranean 3: 1098-1099.

*Compiled by K. Prodanov & Y. Sivkov.*

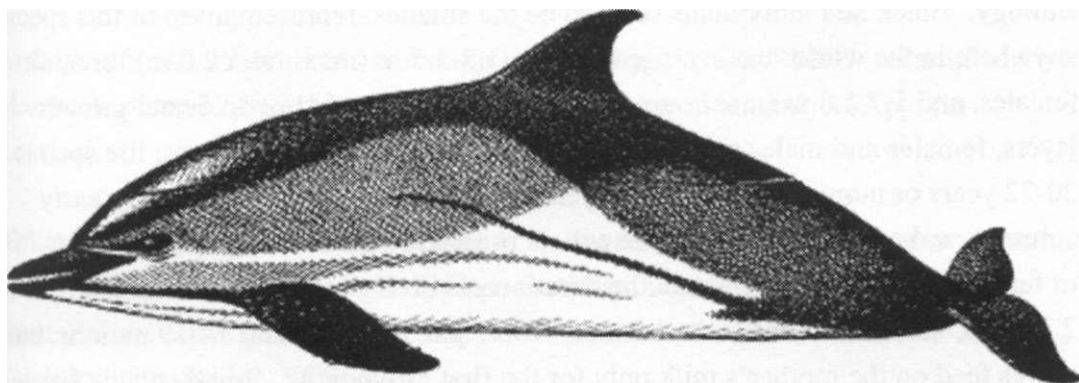
*Delphinus delphis* Linnaeus, 1758

**Synonyms:** *Delphinus delphis ponticus* Barabasch-Nikiforov, 1935

**Common names:** Engl: *Common dolphin*; Bulg: *Obiknoven delfin*, *Karakas*; Rom: *Delfin comun*; Russ: *Belobochka chernomorskaya*, *Obyknovenny deVfin* Turk: *Tirtak*; Ukr: *Bilobochka chornomors'ka*

**Order CETACEA**  
**Family DELPHINIDAE**

**Taxonomic description.** One of two extant Delphinidae and single representative of the genus in the Black Sea cetacean fauna. The Black Sea common dolphin is distinguished by some as an endemic sub-species, *D. delphis ponticus*, but more taxonomic studies are needed before this view can be confirmed or rejected. According to recent studies, the genus *Delphinus* includes two species, the long-beaked and short-beaked common dolphins. It is possible that the Black Sea population belongs to the short-beaked species. External distinctions: prominent beak with numerous small, conical teeth; tall, falcate dorsal fin; hourglass-like pattern (complex composition of grey, white, black and yellowish stripes and areas) on both sides of the body.



**IUCN Status**

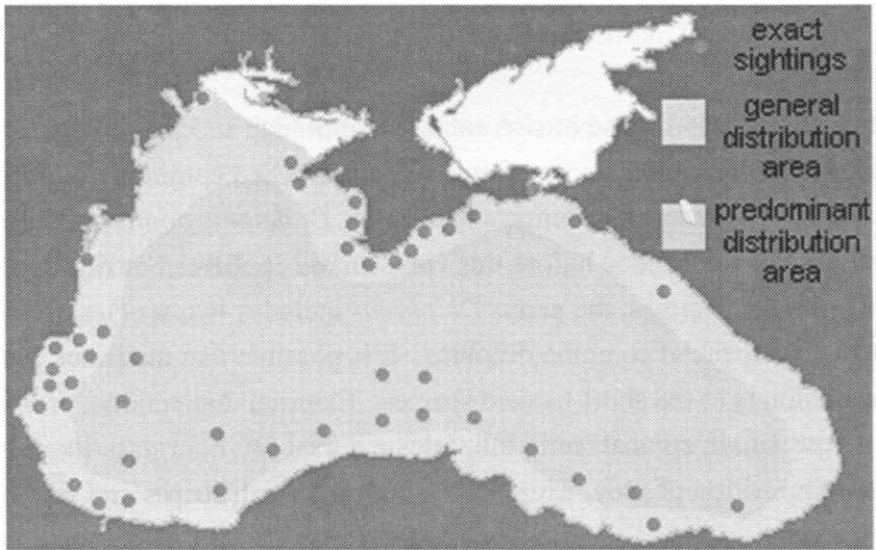
World level: **DD**

Black Sea Régional level: **DD**

Subregion level: **VU** in Bulgaria, **DD** in Ukraine, **EN** in Romania

**Distribution, Habitat type, Critical habitats, Limiting factors.** *D. delphis* predominantly lives offshore, but visits coastal waters following the seasonal aggregations and mass migrations of small pelagic fish. Common dolphins have never been recorded in the Sea of Azov although, they are observed occasionally in the Kerch Strait as well as in the Bosphorus and the Sea of Marmara, where they are quite common except in December and January. Cross-relations including exchange

movements between the Black Sea and Mediterranean populations seem possible, but no direct evidence for this has been obtained. Critical habitats are not so clear as dangerous zones (e.g. Black Sea straits and forestrait areas), where animals may get hurt by heavy marine traffic, fisheries and pollution. Two natural pathogens are known to cause mass mortality: the lung nematode *Skrjabinalius cryptocephalus* and an unidentified morbillivirus. The morbilliviral disease observed in July-September 1994 was accompanied by the stranding of sick animals.



**Biology.** Black Sea individuals seem to be the smallest representatives of this species anywhere in the world: the average length is 1.5-1.7 m (maximum 2.0 m) for adult females, and 1.7-1.8 m (maximum 2.2 m) for males. According to dental growth layers, females and males attain sexual maturity after 2-4 and 3-4 years; life span is 20-22 years or more (probably 25-30 years). The mating period (ate spring-early autumn) peaks in July-August. The annual pregnancy rate of the population (46-75% of fertilized females) depends on the duration of calving intervals, estimated at 1.3 to 2.3 years. Gestation (one foetus) and lactation take up 10-11 and 14-19 months, but calves feed on the mother's milk only for the first 5-6 months. Small pelagic fishes, forming large aggregations (sprat, anchovy, pipefish), are the basic prey of subadult and adult animals (daily ration 4-10 kg).

**Population trends.** The Common dolphin population still continues to be the most abundant cetacean in the Black Sea despite over-exploitation (mass kills on an industrial basis) during 1930s-early 1980s. However, this point of view is not more than a speculation, not based on of reliable scientific data. The stock of Common dolphins in Romanian waters is estimated at 600-800 individuals.

**Threats.** Contemporary human activities limiting the Black Sea population have not been adequately studied. By-catches in bottom-set gill nets are not frequent, and



cases of dolphins entangled in pelagic trawls are also unusual. Few animals were described to have distinct traumatic injuries. The level of organochlorine residues in *Delphinus* blubber is lower than in Black Sea harbour porpoises and bottlenose dolphins. The decline in anchovy and sprat abundance (result of overfishing and accidental introduction of the ctenophore *Mnemiopsis leidyi*) could be a reason for the problems in dolphin nutrition.

**Conservation measures taken.** The Common dolphin is listed in the IUCN Red Data Book and Red Data Book of Ukraine, and all six Black Sea states have stopped commercial hunting in their waters: Turkey in 1983, other countries since 1966. Together with other cetacean species in the region it is protected by the Berne and Bonn conventions, CITES and ACCOBAMS. The UNEP Marine Mammal Action Plan and IUCN/SSC Action Plan stress that the Black Sea population is at risk. Some conservation measures are foreseen in the Strategic Action Plan for the Rehabilitation and Protection of the Black Sea (Paragraph 62).

**Conservation measures proposed.** Adoption of ACCOBAMS by Black Sea countries; establishment of a regional program for marine mammals research and conservation, including a monitoring study on Common dolphin population.

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*Compiled by A. Birkun, Jr., M. Moldoveanu, M. Stanciu, T. Stanev & B. Ozturk*

*Dikerogammarus vilosus* (Sovinskii, 1894)

**Synonyms:** *Gammarus marinus* v. *vilosa* Sovinskii, 1894.

**Common names:** Bulg: *Mamarets*; Russ: *Bokoplav*.

**Order** AMPHIPODA  
**Family** GAMMARTDAE

**Taxonomic description.** Length of male 10-21 mm, female 8-16 mm. First and second segment of the urosome with strongly developed swellings with spines. Third uropod with long exopodite with pinnate bristles and prickles. Endopodite ; very small.

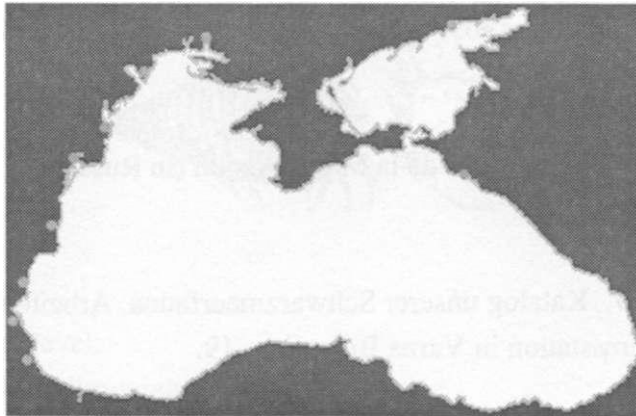
**IUCN Status**

World level: VU

Black Sea Regional level: VU

Subregion level: VU

**Distribution.** The Black Sea and the Azov Sea coast.



**Habitat type, Critical habitats, Limiting factors.** Brackish and fresh waters, coastal lakes, swamps and rivers. Threats: rising salinity, pollution.

**Biology.** Inhabits the coastal zone, under stones, sandy bottoms, among macrophytes.

**Population trends.** Decreasing.

**Threats.** Pollution caused by urbanization and uncontrolled livestock farming.

**Conservation measures taken.** Shabla lake is the only declared reserve.

Conservation measures proposed. Establishment of reserves and protected territories around lakes and humid zones.

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*Compiled by S. Andreev.*

*Diogenes pugilator* (Roux, 1828)

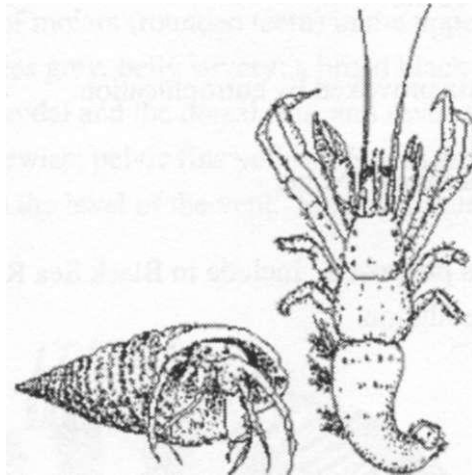
**Synonyms:** *Diogenes varions* Makarov, 1938.

**Common names:** Engl: *hermit crab*; Russ: *Rak otshel'nik diogen*; Ukr: *Rak-diogen samitnik*.

**Order** DECAPODA.

**Family** PAGURIDAE.

**Taxonomic description.** One of two species of Paguridae in the Black Sea. First left leg, with claw, much bigger than right leg. Dactylus moves in a vertical plane. The Body colour yellow. Anterior edge of carapace with acute triangular lateral projections. Internal sides of dactyli with unequal teeth. Length up to 30 mm.



**IUCN Status**

World level:

Black Sea Regional level:

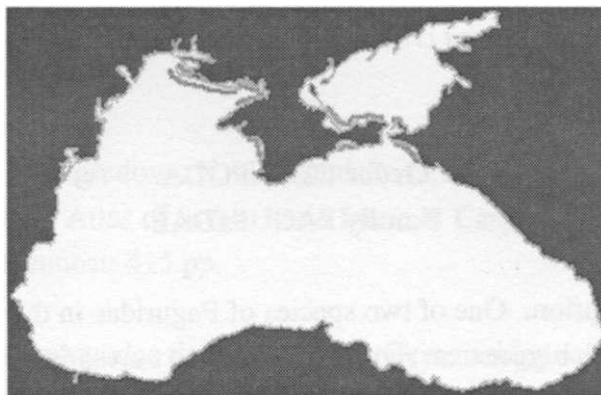
Subregion level: EN (Ukrainian sector)

**Distribution.** Black Sea coastal waters and southern Sea of Azov, Mediterranean Sea, East Atlantic coast from the North Sea to the coasts of Angola.

**Habitat type, Critical habitats, Limiting factors.** Inhabits shallow-water, sandy-bottom shelf areas. Critical habitats are the hypoxic shelf zones. The main limiting factors are oxygen deficiency and a decline of the populations of the gastropod *Tritia reticulata*.

**Biology.** A psammophilic hermit crab, inhabiting shallow biotopes including low salinity areas. Prefers sandy and shelly grounds, usually at depths of 1-10 m , but sometimes found up to 40-42 m. It is easily recognized by its habit of carrying a shell

of *Tritia reticulata*., *Ceritium vulgatum*, or, sometimes, of young *Rapana thomasiam*, in which the unarmored *Diogenes* conceals its soft abdomen.



**Population trends.** Strong decline in numbers since the late 1970s. A reduction by 60-70% over the last 10 years.

**Threats.** Bottom hypoxia provoked by eutrophication.

**Conservation measures taken.** None.

**Conservation measures proposed.** Include in Black Sea Red Data Book. Reduce Black Sea coastal zone pollution.

## References

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*Compiled by Y. Zaitsev.*

*Diplodus annularis* Linnaeus, 1758

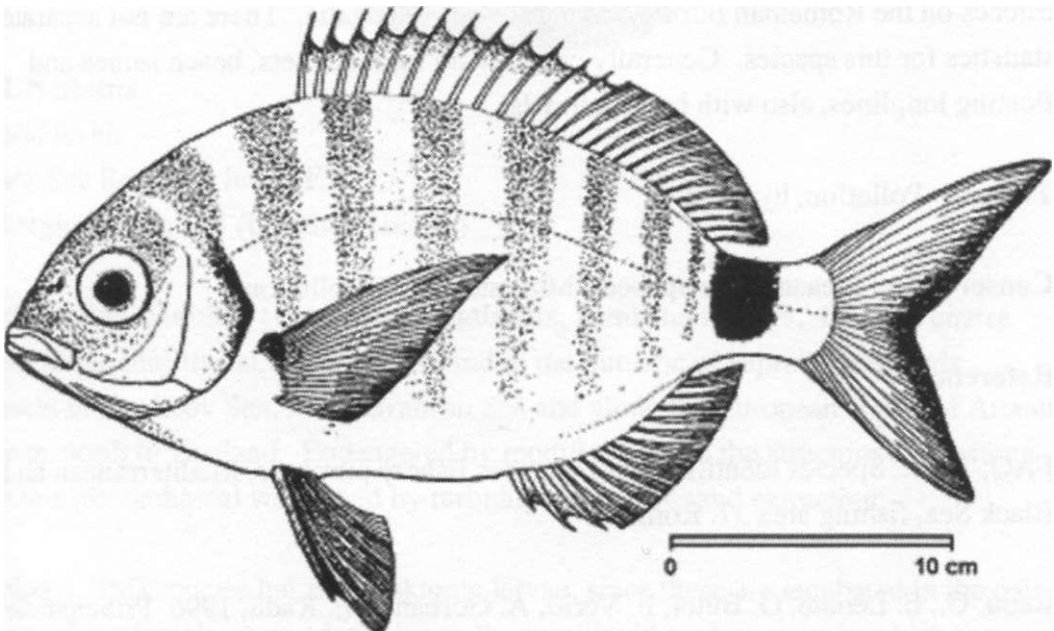
**Synonyms:** *Spams annularis* Linnaeus, 1758; *Diplodus annularis* Rafinesques, 1810; *Sargus annularis* Valenciennes, 1830; *Diplodus annularis* Fowler, 1964; *Diplodus annularis* Cadenot, 1964

**Common names:** Engl: *Annular seabream*; Bulg: *Morskiy karas*; Rom: *Sparos*; Russ: *Morskoy karas'*; Turk: *Ispari*

**Order PERCIFORMES**

**Family SPAREDAE**

**Taxonomic description.** Body oval, moderately elongate, rather deep; dorsal profile of head curved; eyes moderately developed, their diameter about 11 times the preorbital length; jaws armed in front with eight incisors (flattened, cutting teeth) followed by three rows of molars (rounded teeth) in the upper jaw and two rows in the lower jaw. Back and sides grey, belly silvery; a broad black cross band on the caudal peduncle, between the caudal and the dorsal fins, and seven to eight less distinct cross bars on the back and sidewise; pelvic fins yellow. Scales small; dorsal fin high; pectoral fins extended to the level of the vent. Size maximum: 40 cm; usually about 15 to 25 cm.



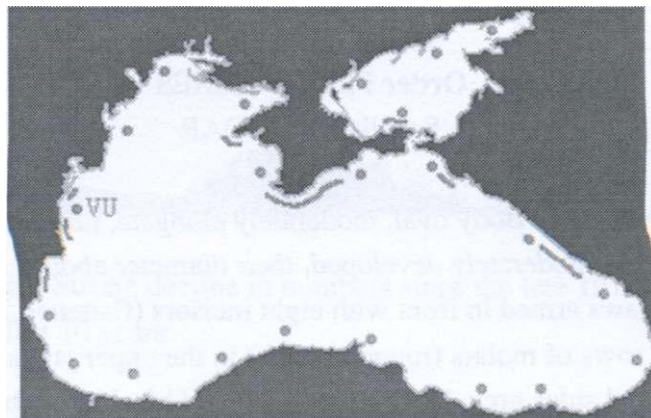
**RJCN Status**

World level:

Black Sea Regional level:

Subregion level: **VU**

**Distribution, Habitat type, Critical habitats, Limiting factors.** Shallow zones of the continental shelf, on muddy-sand and on vegetated bottoms close to the shore, as well as in deeper waters, down to about 50 m, but mostly between five and 20 m. Often enters saline littoral lagoons. Common in the Mediterranean Sea, the eastern Atlantic coast along the South African coasts of the Indian Ocean. Threatened by increasing pollution in coastal zones and by hypoxia.



**Biology.** Feeds on crustaceans, molluscs and fish. Spawning period July-September; sexual maturity at one year of age, small pelagic eggs; hermaphroditic.

**Population trends.** More frequent in the past and rare at present; only incidentally in catches on the Romanian littoral, from Portita to Mangalia. There are not separate statistics for this species. Generally caught with trammel nets, beach seines and floating longlines, also with bottom trawls.

**Threats.** Pollution, hypoxia.

**Conservation measures proposed.** Mitigate coastal pollution.

## References

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*Compiled by A. Petranu*



*Donacilla cornea* (Poli, 1791)

**Synonyms:** *Mactra cornea* Poli, 1791; *Donax elliptica* Krynicky, 1837; *Mesodesma donacilla* Middendorff, 1849; *Mesodesma cornea* (Poli) Ostroumoff, 1893.

**Common names:** None.

**Order** VENERIDA.

**Family** MESODESMATIDAE.

**Taxonomic description.** Shell flattened, elongated, triangular, with small but prominent umbo, slightly curved forward, without ribs; thin periostracum. Surface of shell smooth, with fine concentric lines and discrete growth striations. Background colour yellowish-white with rare brownish radiating pigment striations; some specimens have yellowish, reddish or mauve pigment. Length 20-24 mm; width 8 cm.



**IUCN Status**

World level:

Black Sea Regional level: **EN**

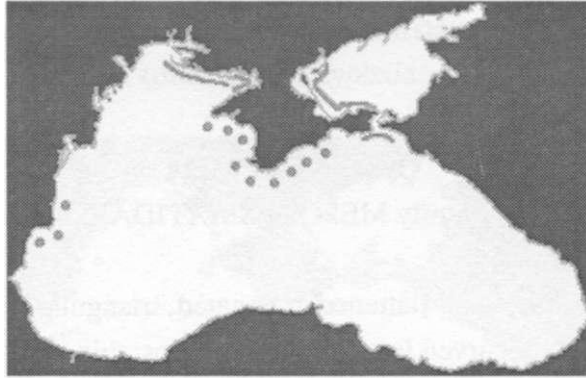
Subregion level: **EN** (Ukrainian sector)

**Distribution, Habitat type, Critical habitats, Limiting factors.** Inhabits coarse sands in the midlittoral, sometimes found in the phreatic of supralittoral sands. Present in the Azov Sea, Mediterranean Sea and along the European coasts of Atlantic Ocean, north to England. Endangered by modifications in the structure of substrata due to hydrotechnical works and by turbidity caused by sand extraction.

**Biology.** This species has no planktonic larvae, since these are incubated in the paleal cavity of the female as an adaptation to the semiliquid environment in which they live.

**Population trends.** On the Crimean littoral, densities of more than 3,000 individuals.m<sup>2</sup> occurred until the 1950s. On the southern Romanian littoral, it was frequent till 1975-1980, in the coarse-sand littoral, forming a specific community with

*Ophelia bicornis*, both forms prevailing in the midlittoral fauna with coarser sands (up to 10,000 ind.m<sup>2</sup>). After 1980 it became extremely rare, and in the last decade it has not been seen at all.



**Threats.** Changes in the granulometric structure of sand through the closing the interstitial spaces of coarse sand.

**Conservation measures taken.** None.

**Conservation measures proposed.** Limit sand extraction from sandy beaches; reduce pollution.

## References

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*Compiled by M. Gomoiu & A. Petranu.*

*Epallage fatime* (Charpentier, 1840)

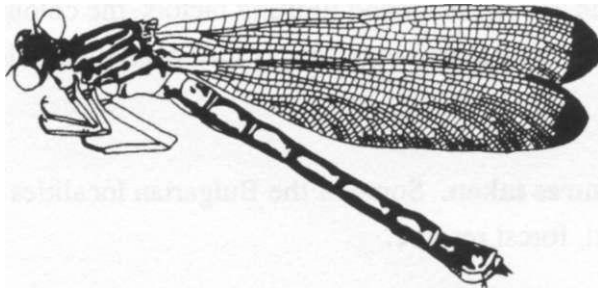
'synonyms: *Agrion fatime* Charpentier, 1840: 132; *Epallage fatime* St. Quentin, 1965 531-552.

**Common names:** None.

**Order** ODONATA

**Family** EUPHAEIDAE

**Taxonomic description.** Total body length 45-51 mm. Length of hindwing 35-37.5 mm. Eyes hemispherical. Wings equally shaped, densely reticulated, wholly transparent except for darkened wingtips; the latter marked by a brown half-moon spot. Sexual dimorphism in body colour. Male: thorax olive-green; abdomen from black to olive-green, covered by a blue-greyish film of pruinosity. Female: thorax yellow-brown, with black stripes; abdominal segments each with a broad black dorsal stripe, divided medially by a yellow line, powdered in blue-grey. Abdomen of male and female relatively slender, nearly cylindrical.



**IUCN Status**

World level: NE

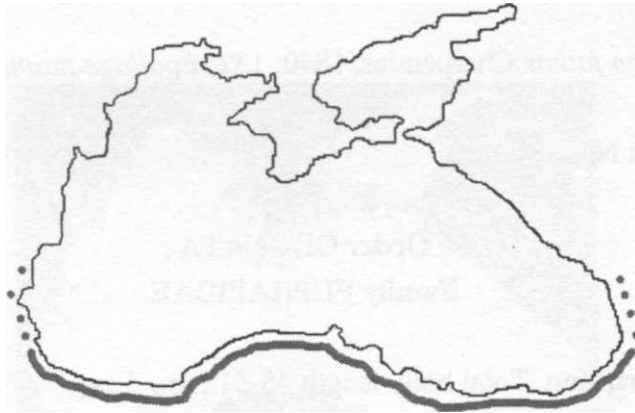
Black Sea Regional level: **DD**

Subregion level: **VU**

**Distribution.** The only representative of an otherwise Oriental family, occurring in the south of the Iranian-Turanian subregion and the east of the Mediterranean, viz. the Anatolia and European part of Turkey, south-eastern Bulgaria, Greece and Macedonia.

**Habitat type, Critical habitats, Limiting factors.** Small rivers and brooks of the plain and in hilly land. Bulgaria is at the limits of its range, where the habitats adjacent to the Strandzha Mts.-Black Sea shores are threatened because of urbanisation and the uncontrolled use of the region's water resources.

Elsewhere, in particular in Anatolia and Georgia, the species is plentiful and under no particular threat.



**Biology.** Larvae typically rheophilous, inhabiting small torrents with stony-sandy bottoms. Both larva and adult are predators. Adults emerge in June. Life-cycle biannual. Imagines relatively good fliers.

**Population trends.** In Bulgaria, a rare species with localized populations. Widespread and not rare in Anatolia.

**Threats.** Besides the above mentioned limiting factors, the colonies of this dragonfly situated at the western limit of its range, may suffer from overcollecting by amateur-entomologists.

**Conservation measures taken.** Some of the Bulgarian localities are within the limits of the Uzunbodzhakl. forest reserve.

**Conservation measures proposed.** Include *Epallage fatime* in the World List of Rare and Endangered Species.

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*Compiled by K. Kumanski and H. J. Dumont.*

*Eriphia verrucosa* Forskall, 1755

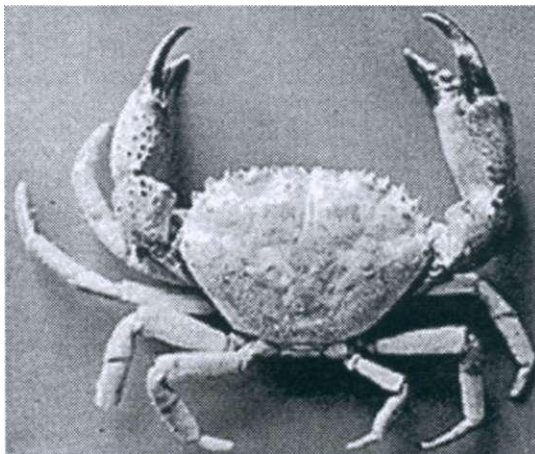
**Synonyms:** *E. spinifrons* Rathke 1837; Czerniavsky 1884, Zernov 1913; *E. verrucosa*, Holthuis & Gottlieb 1958

**Common names:** Bulg: *Pagurt*; Rom: *Pagurie*; Russ: *Kameny krab*; Turk: *Pavurya*  
Ukr: *Kamyany krab*

**Order** DECAPODA

**Family** XANTHIDAE

**Taxonomic description.** Carapace thick, its upper face slightly convex, smooth, with transverse granulous ridges behind frontal border and on lateral regions. Antero-lateral borders shorter than postero-lateral ones, armed with seven tooth-like protrusions, the first one with secondary lateral spinules, the last ones reduced. Front broad, indented in the middle, each frontal lobe armed with a comb of five or six teeth; a little behind it a second, parallel comb, consisting of four to five teeth. Orbits almost circular, their lower border denticulated. Chelipeds strong and unequal; the larger one generally bears rounded tubercles in front of the upper articulation with the carpus; the smaller one bears numerous sharper tubercles arranged in lines. Black fingers; the movable finger with a strong obtuse tooth and some smaller; immovable finger with subtriangular teeth. Pereiopods with strong hairs, rare, without spines. Female with a large, oval abdomen. Male with a narrow abdomen. A large-sized species. Length 6.5-7 cm; width 8-9 cm. Colour: brownish-red or brownish-green, with yellow spots.



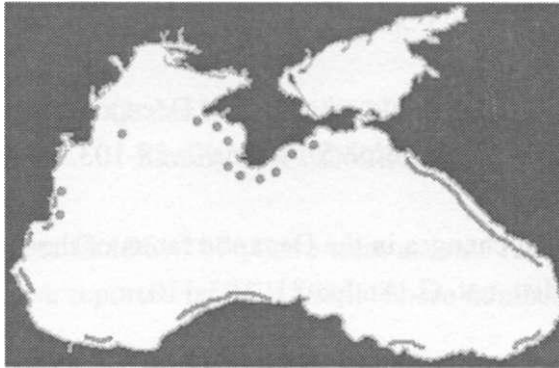
**IUCN Status**

World level:

Black Sea Regional level:

Subregion level: **EN**

**Distribution, Habitat type, Critical habitats, Limiting factors.** Shallow waters along rocky coasts, living among stones and seaweeds down to 5-15 m deep. Favorite biotope: stony bottoms. Present throughout the Mediterranean, also in the eastern Atlantic from the southern coast of Brittany to Mauritania and the Acores. Threats: Terrigenous pollution, hard frost, hypoxia.



**Biology.** A species with a high fecundity. Reproduction begins in May-June. In spring it makes migrations in the shallow waters below one meter depth. Planktonic larvae with four metamorphosis stages from zoea to megalope. Eats molluscs and polychaetes.

**Population trends.** Frequent in the past, but became very rare after the 1980s; at present, no recent specimens on record

Threats. Eutrophication (hypoxia caused by phytoplankton blooms), pollution.

**Conservation measures taken.** Included in the Ukrainian Red Data Book, 1994.

**Conservation measures proposed.** Prohibit all catching for consumption.

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*Compiled by C. Dumitrache & T. Konsulova*



*Falco cherrug* (Gray, 1834)

**Synonyms:** *Falco cyanopus* Tienemann, 1846; *Falco saker gurneyi* Menzbier, 1888; *Falco hierofalco danubialis* Kleinschmidi, 1939; *Falco hierofalco aralocaspius* Kleinschmidf, 1939.

**Common names:** Engl: *Saker*, Russ: *Baloban*; Turk: *Uludogan*; Ukr: *Baloban*.

**Order** FALCONIFORMES

**Family** FALCONIDAE

**Taxonomic description.** In 1965-1973 there were at least 12-15 breeding pairs in the Crimea; 19-25 pairs were reported in 1978-1985. These numbers remained stable across the mid 1990s.



IUCN Status

World level: **VU**

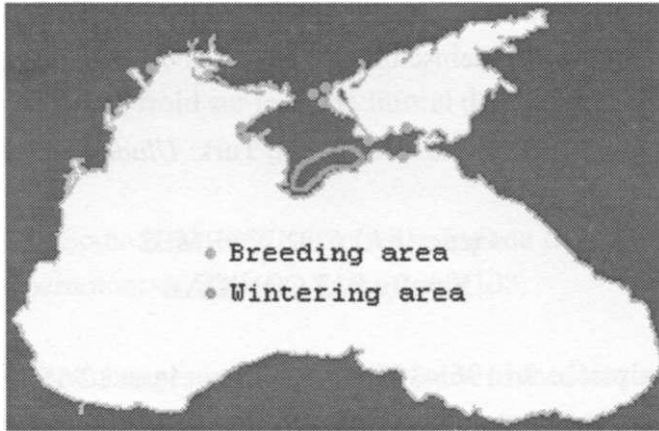
Black Sea Regional level: **VU**

Subregion level: **VU**

**Distribution.** Irregular breeding pairs occur in the sea-side districts of the Odessa region and in the northern parts of the Sivash (Kherson region). Total number of breeding pairs may be estimated to be within 25-28. *Falco cherrug* is a rather rare migrant, but occurs throughout the area. Winter-time numbers hardly reach 10 specimens.

**Habitat type, Critical habitats, Limiting factors.** In the Crimea they prefer highland plateau precipices, less frequently cliffs in old forests bordering open areas, where the species reaches an altitude of 600 metres, rocky sites in the steppe, rocky

and clay precipices on the sea shore. The forestless agricultural landscapes of the Odessa region were occupied owing to its ability to nest on pylons.



**Biology.** A breeding migratory species. Part of the Crimean population probably overwinters. In rocky areas, breeding sites include niches and ledges, when nesting on pylons *Falco cherrug* uses old raven nests. Display flights are observed in the first and second thirds of March. The earliest clutches can be found at the end of the month. Clutch size varies from 1 to 5 eggs, usually 3-4, sometimes 2-5. Incubation takes 28-30 days. Chicks appear by early April and the majority fledge out at the end of May - beginning of June. Males begin to forage on their own earlier than females, somewhere around the first third of August. From the second third of the month, males start autumn movements, whereas juvenile females stay in the breeding areas till end September. Adult birds leave in the first third of November. Single birds and pairs overwinter either in the nest surroundings or in adjacent areas. The diet consists basically of gophers (65-70% of the ration), small and middle-sized birds like larks, starlings, and crows. Rarely feeds on small mice.

**Population trends.** The first pylon nests were recorded in the late seventies (in Odessa region). Since then this has become usual. Southward expansion of the breeding range resulted in an increase of numbers in the forestless steppe areas.

**Threats.** Grazing, human disturbance, hunting of migratory birds, illegal bird-trade and extraction of the chicks, clutch loss connected with natural landscape transformation (falling of precipices), decrease in prey species, various sicknesses of the chicks (aspergillose, candidamicose).

**Conservation measures taken.** *Falco cherrug* is protected in the Karadag natural reservoir and successfully breeds in captivity in Odessa Zoo.

**Conservation measures proposed.** A special programme for the protection of each breeding pair is necessary.

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*Compiled by V. Kinda.*

*Falco peregrinus* (Tunstall, 1771)

**Synonyms:** *Falco peregrinus peregrinus* - *Falco peregrinus brevirostris* Menzbier, 1882, *Falco barbarus germanicus* Erlanger, 1903, *Falco peregrinus rhiphaeus* Buturlin, 1907; *Falco peregrinus calidus* - *Falco leucogenys* C.L. Brehm, 1854, *Falco peregrinus caeruleiceps* Stegmann, 1934; *Falco peregrinus brookei* - *Falco peregrinus caucasicus* Kleinschmidt, 1907.

**Common names:** Engl: *Peregrine*; Russ: *Sapsan*; Turk: *Gok dogan*; Ukr: *Sokil-sapsan*, *Sapsan*, *Mandrivny sokil*.

**Order FALCONIFORMES**

**Family FALCONIDAE**

**Taxonomic description.** The Crimean population of the South-European subspecies (*F. p. brokex*) is comprised of only 12-15 pairs. The tundra sub-species (*F. p. calidus*) overwinters in small numbers (10-12 specimens). During migration and winter, the nominative sub-species *F. p. peregrinus* is the most common. About 60-80 birds migrate through, and 20-30 overwinter in the region.



**IUCN Status**

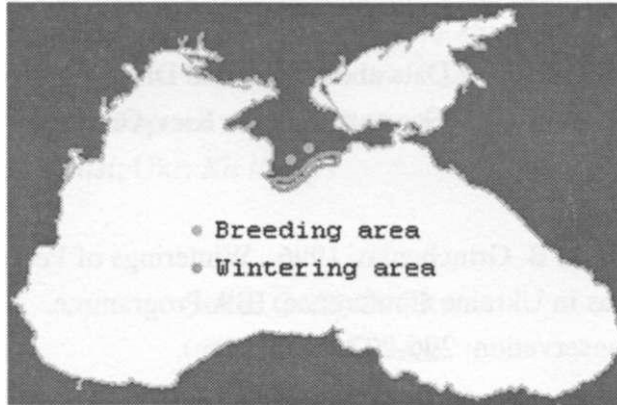
World level: **VU**

Black Sea Regional level: **EN**

Subregion level: **EN**

**Distribution, Habitat type, Critical habitats, Limiting factors.** Breeding habitats are rocky precipices in the Crimean mountain forests bordering open areas. Migratory

birds occur throughout the area: on the coast, in the inland water bodies, on the steppe, in villages and towns and their surroundings.



**Biology.** The subspecies *F. p. calidus* and *F. p. peregrinus* migrate and spend winter in the region. The South-European subspecies (*F. p. brokei*) breeds, migrates and partly overwinters. Breeding sites include niches and hardly accessible rocks. Breeding starts rather early: display flights and copulation take place from late February till mid March (22.05 -16.03). Earliest clutches in the third ten days of March. Incubation takes 30-33 days. Fledglings appear in the last ten days of April. Brood size is 2-4 eggs. Part of the population leaves for the winter grounds. Pairs and single birds move to the foothill areas and big towns where they spend winter. The diet consists basically of small and middle sized birds like larks, starlings, waders, doves and pigeons, crows, small ducks. *Falco peregrinus* preys exclusively in the air and catches its prey in flight.

**Population trends.** In the last decade a slight increase in numbers has been recorded.

**Threats.** Human disturbance, hunting of migratory birds, the illegal bird-trade and extraction of chicks, various sicknesses of chicks (aspergillose, candidamicose).

**Conservation measures taken.** *Falco peregrinus* is protected in the Karadag and Crimean natural reservoirs.

**Conservation measures proposed.** A special program for the protection of each breeding pair is necessary.

## References

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*Compiled by V. Kinda.*

*Felis silvestris* Schreber, 1777

**Synonyms:** *Felis (Catus) silvestris* Schreber, 1777; *Felis catusferus* Erxleben, 1777, *Catusferox* Martorelli, 1896,

**Common names:** Engl: *European wild cat*; Russ: *Dikaya evropeyskaya lesnaya koshka*; Turk: *Yaban kedisi*; Ukr: *Kit lisovy*

**Order** CARNIVORA

**Family** FELIDAE

**Taxonomic description.** Similar to, but more robust than striped tabby domestic cat. Chief distinguishing feature is its bushy tail, which has 3-5 completely separate broad, black rings, and a rounded/blunt black tip. Head-body length: 48-68 cm; tail length: 21-38.5 cm; hind foot length: 10-16 cm; shoulder height: 35-40 cm; weight: 1.6-8 kg. Dental formula: 3/3, 1/1, 3/2, 1/1=30.



**IUCN Status**

World level: EN

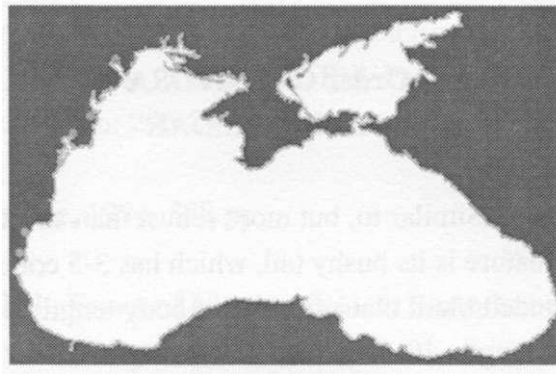
Black Sea Regional level: EN

Subregion level: EN

**Distribution.** Europe, North Africa, Asia Minor. Black Sea Coast: in coastal regions of Strandja Mts., Stara Planina Mts., Kamtchia River, Batova River.

**Habitat type, Critical habitats, Limiting factors.** Lives in deciduous forests of the plains and lower hill regions, mainly near natural clearings and in the peripheral zones of large forests. A critical and limiting factor could be the absence of old trees.

**Biology.** Carnivorous (small rodents and lagomorphs, amphibians, fish, insects taken only rarely). Largely crepuscular and nocturnal. Females sedentary and exclusively territorial. Many males, particularly young animals, are nomadic, and movements overlap females' ranges. Mating in late winter and spring, births in April-September (peaks in May). Males sexually mature after one year; females after 9-10 months. Gestation 63-69 days. Litter size averages 3.4 (range 1-8). One litter per year, occasionally a second litter in captivity.



**Population trends.** Stable populations in the reserves and in larger forests.

**Threats.** Environmental pollution, habitat fragmentation, tourist pressure.

**Conservation measures taken.** Part of the habitats are included in reserves.

**Conservation measures proposed.** Regular recording of the species numbers in the region.

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*Compiled by S. Gerasimov*



*Glareola nordmanni* Nordmann, 1842

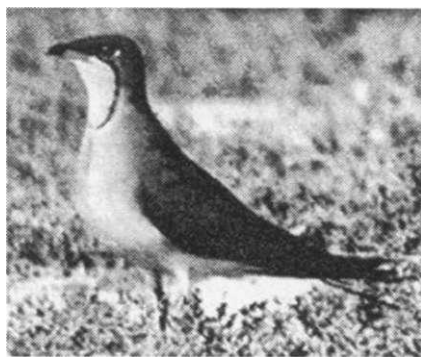
**Synonyms:** None

**Common names:** Engl: *Black-winged pratincole*; Russ: *Stepnaya tirkushka*; Turk: *Kara kanatli bataklik kirlangici*; Ukr: *Derykhvist stepovy*

**Order** CHARADRIIFORMES

**Family** GLAREOLIDAE

**Taxonomic description.** The genus is widely distributed in Africa and Southern Asia. This is one of its two members known in the Black Sea region. The population size is critically low and barely reaches 20 pairs on the entire sea coast of Ukraine.



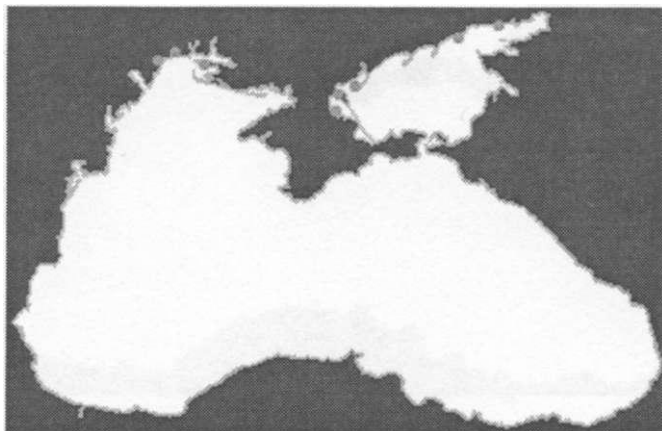
**IUCN Status**

World level: **EN**

Black Sea Regional level: **EN**

Subregion level: **EN**

**Distribution, Habitat type, Critical habitats, Limiting factors.** Habitats do not differ from those of *Glareola pratincole*, but are drier, preferably dry salinas and half-arid sites.



Biology. A breeding species, migrations non-detectable owing to extremely low numbers. Ecology to a great extent like that of *Glareola pratíncola*.

Population trends. In critical condition, with a high probability of disappearance in the very near future.

Threats. Sharp transformation of habitats, irrigation and replacing of steppe by grasslands, grazing, anthropogenic pressure, high prédation, pesticides.

Conservation measures taken. Urgent creation of reservoirs in the breeding areas.

## References

Siokhin, V. D., 1.1. Chernichko, T. B. Ardamatskaia *et al*, 1988. Colonial Hydrophilic Birds of the South of Ukraine: Charadriiformes. Kiev, Naukova Dumka: 176 pp. (in Russian).

Red Data Book of Ukraine, 1994. 354 pp

*Compiled by J. Chernichko*

*Glareola pratincola* (Linnaeus, 1758)

**Synonyms: Common names:** Engl: *Collared pratincole*; Russ: *Lugovaya tirkushka*;  
Turk: *Bataklik kirlangici*; Ukr: *Derykhvist luchny*.

**Order CHARADRIIFORMES**

**Family GLAREOLIDAE**

**Taxonomic description.** The genus is widely distributed in Africa and S Asia. Two members known in the Black Sea region. Their numbers fluctuate widely over the years. Current estimate for the sea coast of Ukraine is 500-1,100 pairs.



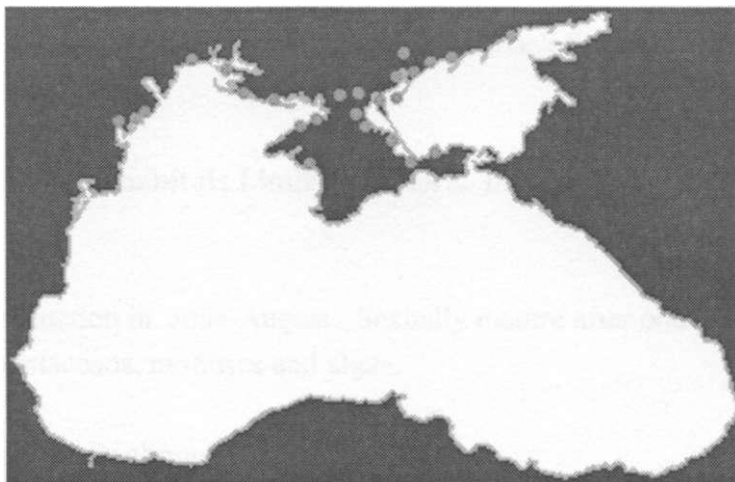
**IUCN Status**

World level: EN

Black Sea Regional level: EN

Subregion level: EN

**Distribution, Habitat type, Critical habitats, Limiting factors.** Breeds in lowland salinas of sea bays and estuaries, brackish and fresh lakes, avoiding dense vegetation. Sometimes successful in degraded perennial herbs and fallows.



**Biology.** A breeding and, in some places, a migratory species. Arrives in April, last birds in late May. Breeding begins in mid May. Normal clutch consists of three eggs (2-5), nest is a deepening in the ground with light plant bedding. Colonies are usually loose and mixed with terns and waders, although mono-species settlements can be found too. Chicks leave the nests straight after hatching. Fledglings begin to concentrate by early July, with adult birds always present. The major part of the population leaves for winter grounds in August. Some birds stay till mid October. *Glareola pratíncola* prey on flying insects, sometimes foraging on the ground picking spiders. Feeding success depends on insect concentrations, and may be very low in the areas where pesticides are applied

**Population trends.** A slow but constant decrease in breeding numbers.

**Threats.** Habitat transformation, cattle, (especially sheep) grazing, pesticides, high predation, human disturbance at the breeding sites.

**Conservation measures taken.** Expansion of national parks in coastal areas, setting up of water-body protection zones.

## References

Siokhin, V. D., I.I. Chernichko & T. B. Ardamatskaia *et al.*, 1988. Colonial Hydrophilic Birds of the South of Ukraine: Charadriiformes. Kiev, Naukova Dumka: 176 pp. (in Russian).

Red Data Book of Ukraine, 1994. 353 pp.

*Compiled by J. Chernichko.*

*Gobius bucchichi* Steindachner, 1870

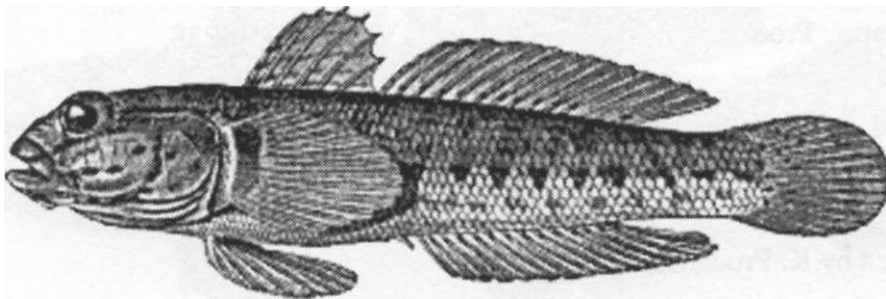
**Synonyms:** *Gobius lynx* Kessler, 1874; *Gobius fallax* Sarato, 1889; *Gobius (Zostericola) Ophiocephalus* (non Pall.) de Buen, 1930; Berg, 1949

**Common names:** Engl: *Bucchich's goby*; Turk: *Kaya baligi*

**Order PERCIFORMES**

**Family GOBIIDAE**

**Taxonomic description.** D VI, 113-14; A 112-14; P 17-20. Scales in lateral series: 50-58. Vertebrae: 28 (Gheorgiev, 1966). Head depth 0.9 to equal with width. Eye diameter 0.28-0.28 of head length. Upper lip uniformly wide. Nape scaled, cheek naked. Pectoral free rays well developed. Pelvic disc 0.24-0.25 SL. Anterior membrane without lateral lobes. Suborbital papillae with seven transverse rows. Colour grey to grey-brown, with longitudinal rows of dark spots along head and body. Size up to 10 cm.



**RJCN Status**

World level: EN

Black Sea Regional level: EN

Subregion level: **CR** (Bulgarian Coast)

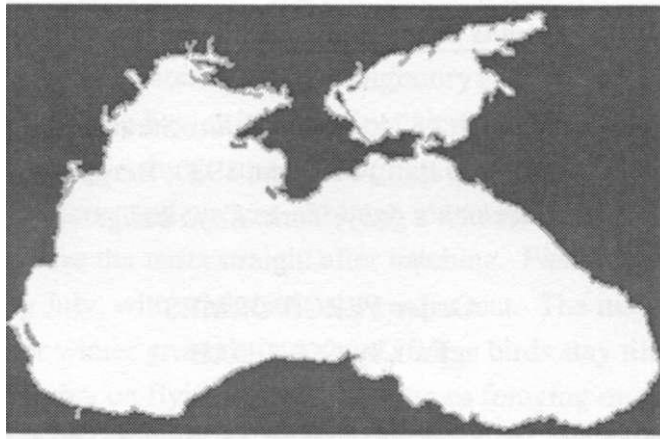
**Distribution.** Eastern Atlantic, Mediterranean and Black Sea (Miller, 1986). In Bulgaria on Maslen Cape.

**Habitat type, Critical habitats Limiting factors.** Inshore, on sand and mud, with sea-grasses.

**Biology.** Reproduction in June-August. Sexually mature after one year. Food: polychaetes, crustaceans, molluscs and algae.

**Population trends.** Declining.

**Threats.** Pollution.



**Conservation measures taken.** None.

**Conservation measures proposed.** Stop industrial pollution.

### **References**

Gheorgiev, J., 1966. Composition d'espèces et caractéristique des Gobiides (Pisces) en Bulgarie. Proc. Res. Inst. Fish. Oceanogr. Varna 7: 159-228.

Miller, P., 1986. Fishes of the North-eastern Atlantic and the Mediterranean, 3:1037 pp.

Compiled by K. Prodanov & Y. Sivkov

*Gobius cobitis* (Pallas, 1811)

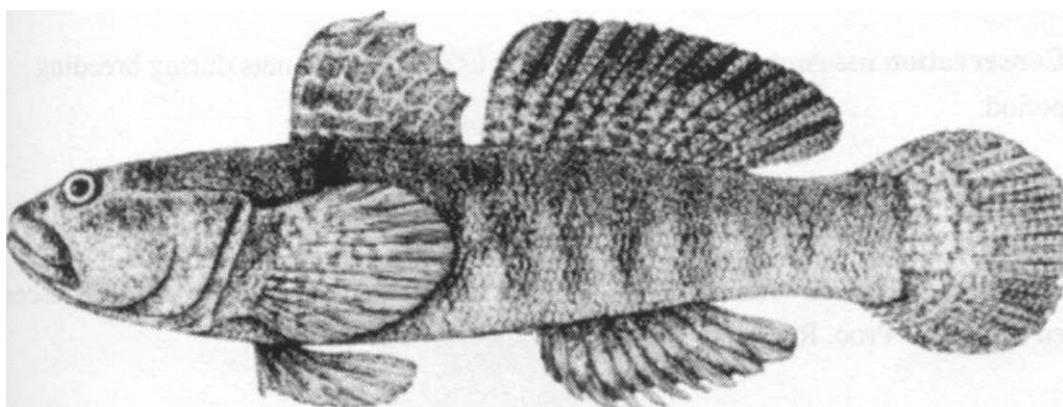
**Synonyms:** *Gobius capito* Valenciennes, 1837; *Gobius capitonellus* Kessler, 1874.

**Common names:** Engl: *Giant goby*; Russ: *Bychok-kruglyash*; Turk: *Kaya baligi*.

**Order PERCIFORMES**

**Family GOBUDAE**

**Taxonomic description.** D VI, I 11-14; A 110-13; P 18-21. Scales in lateral series: 60-66. Vertebrae: 27-29 (Gheorgiev, 1966). Head depth 0.81-0.90 of width. Eye diameter 0.17-0.23 of head length. Upper lip uniformly wide, comparatively short. Nape scaled, cheek naked. Pectoral free rays well developed Pelvic disc 0.18-0.21 **SL.** Anterior membrane with lateral lobes. Suborbital papillae with seven transverse rows. Colour grey-brown to yellow. Size up to 27cm.



**IUCN Status**

World level:

Black Sea Regional level:

Subregion level: **EN**

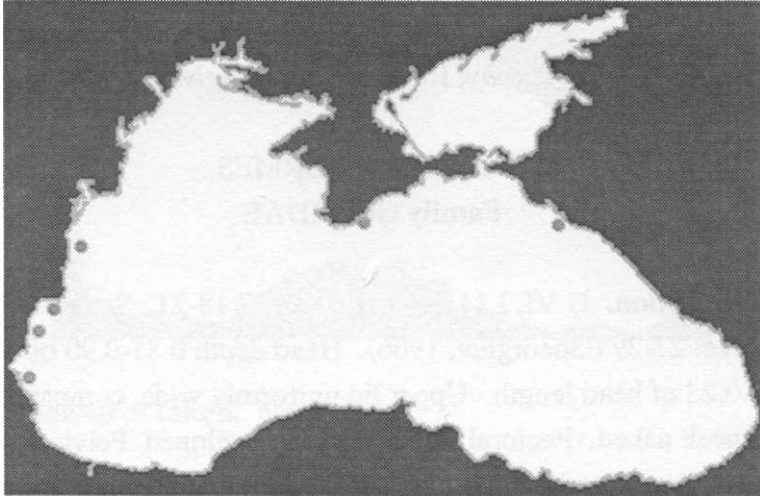
**Distribution.** Eastern Atlantic, Mediterranean and Black Sea (Miller, 1986). In Bulgaria: along the whole Black Sea coast.

**Habitat type, Critical habitats, Limiting factors.** Inshore, on stone and weedy ground, two to 10m deep; inshore zone.

**Biology.** Reproduction from May to early July. Eggs below stones. Sexually mature after 2-3 years. Food: green algae, crustaceans, polychaetes, insects.

**Population trends.** Declining.

**Threats.** Chemical contamination.



**Conservation measures taken.** None.

**Conservation measures proposed.** Defend use of fishing-nets during breeding period.

### **References**

Gheorgiev, J., 1966. Composition d'espèces et caractéristique des Gobiides (Pisces) en Bulgarie. Proc. Res. Inst. Fish. Oceanogr. Varna 7: 159-228.

Miller, P., 1986. Fishes of the North-eastern Atlantic and the Mediterranean 3: 1038 pp.

*Compiled by Y. Sivkov & K. Prodanov.*



**Synonyms:** None

**Common names:** Bulg: *Syv zhurav*; Rom: *Cocor mare*; Engl: *Crane*; Russ: *Sery zhuravl'*; Turk: *Turna*; Ukr: *Siry zhuraveV*

**Order** GRUIFORMES

**Family** GRUIDAE

**Taxonomic description.** The species is included in Appendix I of Birds Directive 79/409/EEC, Appendix II of the Bonn Convention and Appendix II of the Bern Convention. At present the nesting of Common Crane in the Black Sea Region is limited to the Danube Delta (Radu, 1979) and the Northern Sivash (Siokhin,1982). In all other parts of the Black Sea region, the species is migratory, summer visiting and overwintering.



**R7CN Status**

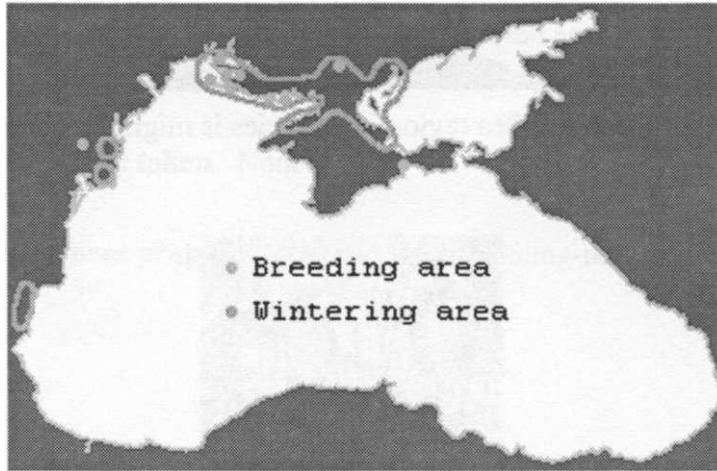
World level: **LR**

Black Sea Regional level: **LR**

Subregion level: **VU** in Ukraine

**Distribution.** The main direction of spring migrations are north-east, north, and east. In autumn, the first young birds arrive in the northern Black Sea region at the end of August. The mass passage begins in late September and continues to mid-October. The last third of October and mid-November are the period for separate birds or small flocks of several individuals to appear. Several migration routes can be distinguished over the territory of Black Sea region. In the north-western part the main direction is south-western and southern, in the Crimea it is southern; it is south-western in the valley of the Dnieper, along the coastline of the Black Sea. The biggest gathering site

in the Black Sea region is situated in the zone between the biosphere reserve Askania-Nova and Sivash where more than 40,000 Common crane arrive. During autumn migration of 1996, more than 50,000 cranes flew through Askania-Nova. The second largest gathering and resting area is situated in North Sivash (Djankoy region), with 10,000 cranes every autumn. Many small crane assemblages are scattered over the region. In winter some groups stay till mid-December and a few birds stay throughout winter. Nearly 100,000 cranes fly through the Black Sea region every autumn. About 20,000 - 30,000 cranes fly along the western Black Sea coast through Romania and Bulgaria; 50,000 - 60,000 fly through the Crimea Peninsula, and probably 10,000 fly along the Caucasian coast.



**Habitat type, Critical habitats, Limiting factors.** Valleys of large rivers and swamps, relatively shallow lakes covered by reeds. Premigratory gathering of cranes are situated on the saline bays of Sivash, sand-bars. The cranes feed on winter and spring crops, on harvested cornfields, and on pastures.

**Biology.** The arrival time is between February 20th and March 5th with two peaks. A first peak is in mid-March and the second in the first half of April.

**Population trends.** The number of birds in the region is stable.

**Threats.** Habitat transformation, human disturbance, hunting, poisoning.

**Conservation measures taken.** At present the main gathering places are not protected.

**Conservation measures proposed.** Expansion of the area of the Azov-Sivash National Park and some places in Northern Sivash to be included in it.

## References

Grinchenko, A .B., 1987. Cranes in the Crimea. Communications of the Baltic Commission for the study of bird migration. Tartu 19: 75-79.(in Russian).

Grinchenko, A. B., 1989. Common Crane migration in the Crimea in 1983 and 1984. Communications of the Baltic Commission for the study of bird migration. Tartu 21: 134-136.(in Russian).

Radu, D., 1979. Pasarile din Delta Dunarii. Bucuresti, Editura Academiei.

Red Data Book of Ukraine, 1994. 341 pp.

Siokhin, V. D., 1982. Distribution and number of the cranes on the northern coast of the Azov Sea and the Sivash. Cranes in the USSR: 141-144 pp. (in Russian).

*Compiled by P. Gorlov*

*Haematopus ostralegus* (Linnaeus, 1758)

**Synonyms:** None.

**Common names:** Bulg: *Stridoyad*; Engl: *Oystercatcher*; Rom: *Scoicar*; Russ: *Kulik-soroka*, Turk: *Poyraz kusu*; Ukr: *Kulyk-soroka*.

**Order** CHARADRIIFORMES

**Family** HAEMATOPODIDAE

**Taxonomic description.** *Haematopus ostralegus* is one of four (according to other sources 7-8) species of *Haematopus* (Linnaeus, 1758). The Black Sea region is populated by the nominal subspecies, *H. o. ostralegus*. The Azov-Black Sea population is subject to annual fluctuations related to weather conditions during the year. Its size is estimated at between 250 and 400 pairs.



**IUCN Status**

World level: **VU**

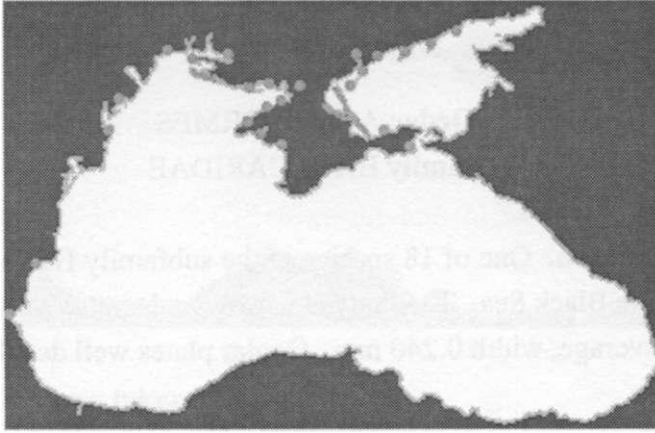
Black Sea Regional level: **VU**

Subregion level: **VU**

**Distribution, Habitat type, Critical habitats, Limiting factors.** Breeding habitats are sandy sites on islands, spits and big rivers, coasts and estuaries. The species was recorded breeding on agricultural lands (bare fallow, degraded fallow, perennial herbs) in recent years. Feeding birds occur exclusively in shallow areas and along the water-line.

**Biology.** A breeding, usually migratory species. Arrival depends on weather conditions and has been recorded from late February till late March. Breeding begins in mid April. The nest is a small deepening in the ground, almost without any bedding. The clutch consists of three eggs. Chicks hatch from the end of May till early June, fledglings occur from late June. Autumn migration is prolonged from August and lingers till early October. As a rule, *Haematopus ostralegus* preys on

small molluscs and copepods along the shore-line. Large invertebrates comprise their basic food in agricultural lands.



**Population trends.** A slight decrease has been recorded, though in some sub-regions their numbers have remained stable across the last two decades.

**Threats.** Low breeding numbers and the vulnerability of the habitats pose a clear risk for the Black Sea *Haematopus ostralegus* population. Recreation development, sand extraction at the seaside and in the estuaries, constant human disturbance and prédation may destroy its relative population stability in future.

**Conservation measures taken.** Creation of the Sivash and Azov Sea National Parks System, which will greatly contribute to species protection in the region.

**Conservation measures proposed.** None.

#### References

Siokhin, V. D., I.I. Chernichko & T.B. Ardamatskaia *et al*, 1988. Colonial Hydrophilic Birds of the South of Ukraine: Charadriiformes. Kiev, Naukova Dumka: 176 pp. (in Russian).

Red Data Book of Ukraine, 1994. 348 pp.

*Compiled by J. Chernichko.*

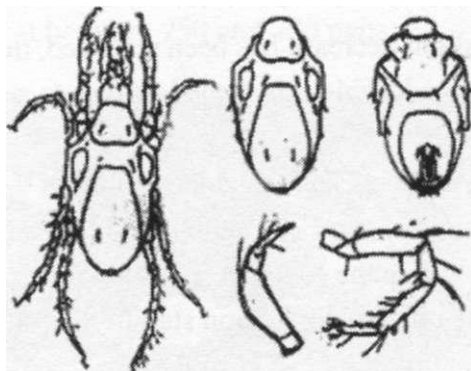
*Halacarellus procerus* (Viets, 1927)

**Synonyms:** None.

**Common names:** None.

**Order** ACARIFORMES  
**Family** HALACARIDAE

**Taxonomic description.** One of 18 species of the subfamily Halacarinae, and one of seven species in the Black Sea. The body is narrow and stretched. Length from 0.475 to 0.580 mm on average, width 0.240 mm. Ocular plates well developed and stretched in length.



**IUCN Status**

World level:

Black Sea Regional level:

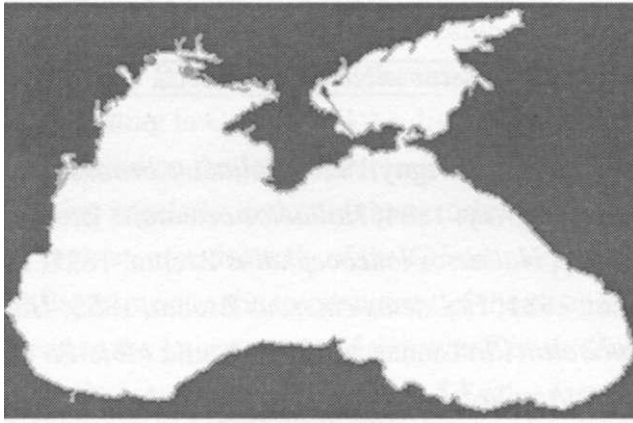
Subregion level: **EN** (Ukrainian shelf)

**Distribution, Habitat type, Critical habitats, Limiting factors.** The species occurs in the Black Sea and the North Sea. In the north-west of the Black Sea it was only discovered in 1973. It is a typical representative of the interstitial meiofauna of the sandy beaches. Its only habitat is the pseudolitoral (mediolitoral) and supralitoral zone on beaches with coarse sand. Threats: pollution of the sea shore, man-made changes in granulometric composition of the sand.

**Biology.** As all Halacaridae, *H. procerus* is a creeping animal, dispersed by water currents. It feeds on liquid food.

**Population trends.** A sharp decline in abundance (80-90%) since the 1980s.

**Threats.** Pollution of the pseudolitoral (mediolitoral) zone and changes in the granulometric composition of the sand



**Conservation measures taken.** None.

**Conservation measures proposed.** Include in Black Sea Red Data Book and prohibit pollution of the seashore.

### **Reference**

Sokolov, I.I., 1952. Paukoobraznye (Arachnida). In Fauna SSSR. Moscow:, AN SSSR Publ.5 (5): 200 pp. (in Russian).

*Compiled by L. Vorobyova.*

*Haliaeetus albicilla* (Linnaeus, 1758)

**Synonyms:** *Haliaeetus nisus* Savigny, 1826; *Haliaeetus brooksi* Hume, 1870; *Haliaeetus hypoleucus* Ridgway, 1884; *Haliaetos orientalis* Brehm, 1831; *Haliaetos islandicus* Brehm, 1831; *Haliaetos leucocephalus* Brehm, 1831; *Haliaetos groenlandicus* Brehm, 1831; ***Haliaetos einereus*** Brehm, 1855; *Haliaetos funereus* Brehm, 1855; *Vulture albicilla* Linnaeus, 1758; *Aquila albicilla* Nilson, 1858; *Aquila borealis* Brehm, 1824; *Aquila Islandica* Brehm, 1824; *Aquila Groenlandica* Brehm, 1824; *Falco albicilla* Linnaeus, 1758; *Falco melanaetos* Linnaeus, 1766; *Falco Ossifragus* Linnaeus, 1766; *Falco albicaudus* Gmelin, 1788; *Falco hinnularius* Latham, 1790; *Falco pygargus* Daudin, 1800.

**Common names:** Engl: *White-tailed eagle*; Bulg: *Morski orel*; Rom: *Codalb*; Russ: *Orlan-belokhvost*; Turk: *Beyaz kuyruklu kartal*, *Ak kuyruklu kartal*; Ukr: *Orlan-bilohvist*.

**Order FALCONIFORMES**

**Family ACCIPITRIDAE**

**Taxonomic description.** A very large eagle with wide, long wings, a massive yellow beak and short wedge-shaped white tail. In flight the primaries are flung out like fingers. It has a brown-grey plumage, but the head and throat are lighter. Young have a dark brown head and tail and dark grey beak, and barred underwings and belly.



**IUCN Status**

World level: **NE**

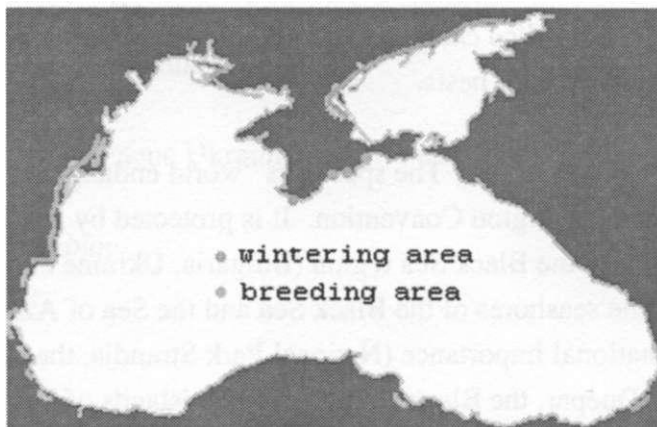
Black Sea Regional level: **VU**

Subregion level: **VU**

**Distribution.** Along the Bulgarian Black Sea coast nesting areas are located near Lake Mandra, on the rivers Djavolska and Ropotamo (and on the marsh Arkutino), and in Dobrudja - to the west of Lake Shabla. Several pairs nest in the Danube delta,



on the large basins in the Romanian part of Dobrudja (Puscariu, 1968). In the past nests were found on Lake Serbanul by Braila, near Chilia Veche, near Lake Sinoe and to the south of Gridul Lupitor (Lintia, 1954). According to Zubarowskii (1977), the White-tailed Eagle was nesting in Odessa and the districts of Hersonska and Zaporojka. Nests were found on the lower courses of the rivers Dnestar and Dniepr. Several pairs were nesting regularly in the southern rocky part of the Crimean mountains and in the high-stemmed woods of the Crimean reserve (Kostin, 1983); 7-8 pairs of White-tailed Eagles nest in the lower course of the river Don (Golushin, 1983). Two pairs breed in the lower course of the river Kuban (Zabalotnii & Hohlov, 1995). During the breeding season, one White-tailed Eagle was also observed in the Ahtanizolski firth (Tilba *et al*, 1990). Nesting areas along the Georgian coast are unknown. In the northern regions of Turkey, White-tailed eagles nest to the west and east of Istanbul and mainly in the river Kizilirmak delta (OST Bird Report, 1975; Cramp & Simmons, 1980). During migrations and especially in winter, the basins along the whole Black Sea coast become important habitats for White-tailed eagles from northern populations (from the Scandinavian peninsula and the European part of Russia).



**Habitat type, Critical habitats, Limiting factors.** In the breeding season as well as during migrations and overwintering, birds keep close to wooden and rocky areas near the seashore or lakes and rivers. They are attracted by clear water basins full of fish and water birds.

**Biology.** A monogamous bird which starts breeding after its fourth year. Pairs build nests on high trees or on rocks at a distance of several km. from each other. They lay 3-4 eggs in February - March, brood more than one month, young remain in the nest 2-3 months and afterwards stay one more month in the area, where parents continue to feed them. Omnivorous. Beside fish and water birds it also feeds on mammals, rats, rabbits, foxes, wandering dogs and cats, and tortoises. It also scavenges. In winter it stays close to concentrations of water birds (geese, ducks, coots, herons, grebes, gulls

and others) and feeds on ill, weak or frozen birds. By the seashore it picks up carcasses of dolphins, fish, and birds.

**Population trends.** A common nesting species along the coasts of the Black and the Sea of Azov and along the valleys of the big rivers emptying into these seas in the past. There was a major decline in the population during 1960-1965. After that, the number slowly increased again. This was a result of the successful breeding and resettlement of the species in Central Europe (Hlorig, 1986), the huge increase of the population in Germany, Poland and Czechoslovakia. From the Danube, the White-tailed Eagle resettled its previous habitats along the Black Sea. The feeding of birds in Scandinavia, the decrease environmental pollution and the decline in hunting in Eastern Europe during the last 10th years has also helped. Currently, about 30 pairs breed along the coasts of the Black and the Sea of Azov.

**Threats.** Threats include pollution of water basins with different kinds of poisons, the drainage of marshes, the cutting down of woods and the tourist invasion along the seashore, the use of poisonous baits and traps for wolves and foxes, the meaningless shooting of birds and the destruction of their nests. Among the enemies of the *Haliaeetus albicilla* are *Falco cherrug* and large colonies of ants, which sometimes force the eagles to leave their nests.

**Conservation measures taken.** The species is "world endangered" and is listed in Appendix II of the Washington Convention. It is protected by law in many European countries, including in the Black Sea region (Bulgaria, Ukraine and Russia). Many of its habitats along the seashores of the Black Sea and the Sea of Azov are protected wetlands of international importance (National Park Strandja, the deltas of the rivers Danube, Dnestar, Dnepar, the Black Sea reserve, the islands of Lebiajie, the river Kizilirmak delta and others).

**Conservation measures proposed.** Ban pollution with poisons and industrial waste. Promote preservation of woods, restrict of hotel building and tourist invasion of habitats along the seashore. Protective propaganda among the human population, especially among hunters.

## References

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- Hörig, H., 1986. Seeadlerbestand weiter angewachsen. *Unsere Jagdle* 36: 148-149.
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- Ornithological Society of Turkey, 1975. *Bird Report* 3: 1-319.
- Puscariu, V., 1968. Observations sur la reproduction et l'écologie de *Haliaeetus albicilla* dans le delta du Danube. *Trav. Mus. hist. nat. G. Antipa* 8: 959-968.
- Red Data Book of Ukraine, 1996. 333 pp.
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- Zabolotnii, N. & A. Hohlov, 1995. Zametki o nekotoryh redkih pticah ptitsah nizovid Kubani. *Kavkazskii orn. vestniks* 7: 16-17.
- Zubarowskii, V., 1977. *Fauna Ukraini*. Tom 5. Ptah,. Kiev, Naukova Dumka: 331 pp.
- Compiled by D. Nankinov.*

*Halichondria panicea* (Pallas, 1766)

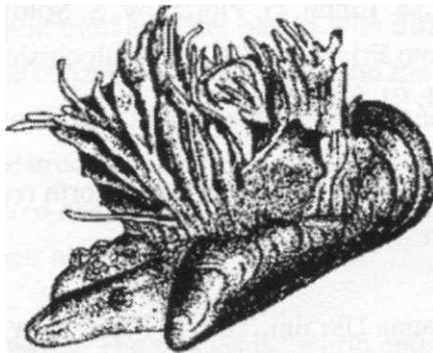
**Synonyms:** *Spongia panicea* Pallas, 1766; *Pellina semitubulosa* Czerniavsky, 1880; *Pellina longispicula* Czerniavsky, 1880; *Halichondria grossa* Swartschewsky, 1905.

**Common names:** None.

**Order** CORNACUSPONGIDA

**Family** HALICHONDRIIDAE

**Taxonomic description.** An encrusting sponge provided with numerous, low upright tubules (H=2-5 cm) each terminating in an oscule (A =5-6 mm), dermal skeleton a regular network of multispicular tracts. Colour orange-yellow to greenish.



**IUCN Status**

World level:

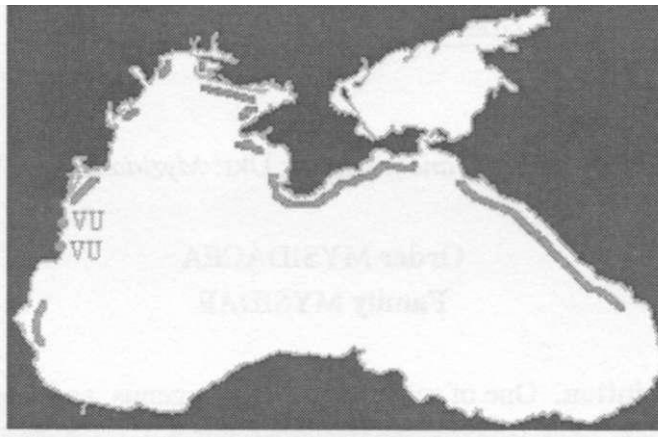
Black Sea Regional level:

Subregion level: VU

**Distribution, Habitat types, Critical habitats, Limiting factors.** A rock species of the superior infralittoral, including artificial dams; epibiont on mussels; eurybathic, at depths of two up to 65 m, but rare below 10 m.

**Biology.** Plenty of algae inhabit the sponge body, some ending up as food, other symbiotic and giving rise to the external colour. Feeds on organic particles which enter with the water current through the pores and through the oscula. An hermaphrodite, with sexual elements embedded in the mesenchyme. Ovules fecundated on the spot, the first phases of the larval development take place in the parenchyma of the mother.

**Population trends.** Species frequently cited during the 1960s-70s in the mussel biocoenosis living on rocks along the Constantza and Agigea coasts, but in rather low numbers.



**Threats.** Turbidity in shallow zones; hypoxia.

**Conservation measures proposed.** Construction of artificial reefs in degraded nearshore areas; reduce eutrophication.

### References

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Borcea, I., 1937. Les résultats de l'expédition de recherches dans la mer Noire dès 28 Août - 1er Sept., 1935. *Ann. Sci. Univ. Jassy* 23.

Chichkoff, G., 1912. Contribution à l'étude de la faune de la mer Noire. Animaux récolté sur les côtes bulgares. *Arch. Zool. exp. Gén. S 5. Notes et Revues* 10:

Gomoiu, M. T., 1963. Kizucheniya gubok zapadnoy chasti Chernogo Morya. *Rev. roum. Biol.* 8: 252-264.

Kaminsaya, L. I., 1968. Tip gubki - Porifera. In *Opredeliteli fauni Chernogi i Azovskogo moreilo*. Kiev, Naukova Dumka 1: 35-54.

Valkanov, A., 1957. Katalog na nashata Cernomorskata fauna. *Tr. Morsk. Biol. St. Varna*.

*Compiled by M.-T. Gomoiu & A. Petranu.*

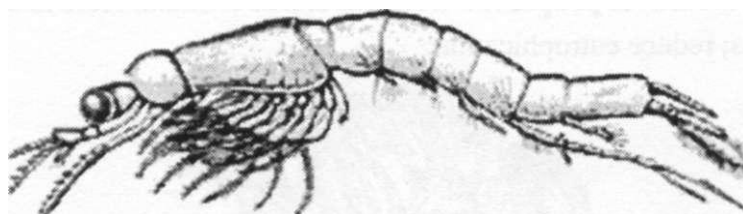
**Synonyms:** None

**Common names:** Russ: *Myzida anomaVnaya*; Ukr: *Myzida anomaVna*

**Order** MYSIDACEA

**Family** MYSIDAE

**Taxonomic description.** One of seven species of its genus and close to *Hemimysis serrata*. All ventral appendages in females are reduced, in males only the first and second pairs of pleopods reduced. Telson with shortened apex and serrated along the whole length of the edges.



**IUCN Status**

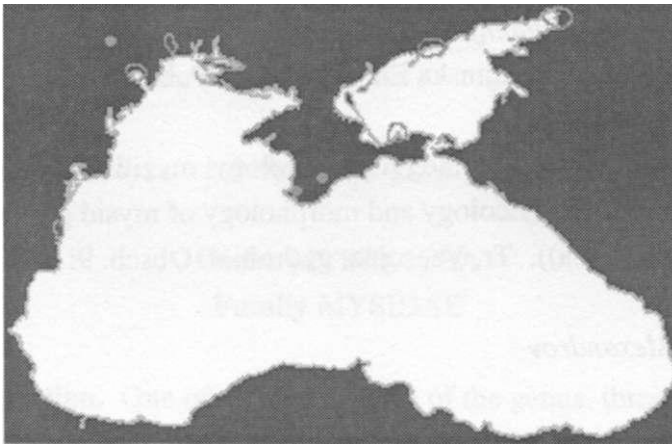
World level: Endemic of the Azov-Black Sea basin

Black Sea Regional level: **EN**

Subregion level: **EN** (Ukrainian sector)

**Distribution.** One of the few Ponto-Caspian endemics living both in the sea and in freshwater bodies. Inhabits the Azov and Black seas, as well as the lower reaches of the Dniepr, Dniestr and Don. Encountered on the west coast of the Caspian Sea. Acclimatized in water reservoirs: Dnieprovsk, Sympheropolsk, Chernorechens (Ukraine); Dubossarsk (Moldova) and Kaunas (Lithuania).

**Habitat type, Critical habitats, Limiting factors.** Near-bottom lithophilic organism. Inhabits shells, rocky, rarely silty sediments; prefers firm sediments, more often rocky, rarely shells and sandy. Also encountered in river estuaries, in silty sinks. Benthic during the day, rising to the pelagic zone in the evening.



**Biology.** A euryhaline organism, living in at a salinity of 0.5-18.0 ppt. Euryphagous. Reproduction from April to October. After fertilization, the female carries 9-31 embryos (18 on average) in the brood pouch. Not less than two generations a year. In the Black Sea it reaches a length of 8-10 mm, in the Sea of Azov and freshwater only 6.7-8.5 mm. Blood-red in colour. The species is capable of changing colour due to chromatophores and become completely transparent.

**Population trends.** Low abundance, with only single specimens encountered.

**Threats.** Pollution and silting of water bodies, reduction in river deltas, areas of seabed with hard sediments.

**Conservation measures taken.** Included in Red Data Books of Ukraine. Acclimatized to Dniepr and Dniestr reservoirs. Recently invaded drinking water reservoirs in The Netherlands, Belgium and Germany, where it may soon become a pest species.

**Conservation measures proposed.** Extension of reserve areas in the limans and deltas of rivers, measures to reduce water pollution and increase river water flow.

## References

Bacescu, M., 1969. Order Mysidacea. In *Opredelelitel fauny Chernogo i Azovskogo more (Key of Black Sea and Sea of Azov fauna)*. Kiev, Naukova Dumka 2: 363-381 (in Russian).

Komarova, T. I., 1991. *Vyschie rakoobraznie. Mysidae (Mysidacea) (Higher crustaceous. Mysidae (Mysidacea), Fauna Ukrayni*. Kiev, Naukova Dumka 26 (7): 104 pp.

Komarova, T. I., 1994. *Hemimysis anomala*. Chervona Knyga Ukrayiny (Red Data Book of Ukraine). Kijiv, Ukrajinska Encyklopediya Publ.: p. 39 (in Ukrainian).

Reznichenko, O. G., 1959. K ekologiyi y morfologiyi myzid roda *Hemimysis* (Crustacea, Malacostraca) (Ecology and morphology of mysid genus *Hemimysis* (Crustacea, Malacostraca)), Tr. Vsesojuz. gidrobiol. Obsch. 9: 320-343 (in Russian).

*Compiled by B. Alexandrov*



*Hemimysis serrata* (Bacescu, 1938)

Synonyms: None.

Common names: Russ: *Myzida zubchataya*; Ukr: *Myzida zubchasta*.

Order MYSIDACEA

Family MYSIDAE

Taxonomic description. One of the four species of the genus, three of which are encountered in the Azov-Black Sea basin. A close relative of *Hemimysis anomala*, but the scale of antenna II is longer than the stalk of antenna I and has 8-12 spicules on its external edge.



IUCN Status

World level: EN

Black Sea Regional level: EN

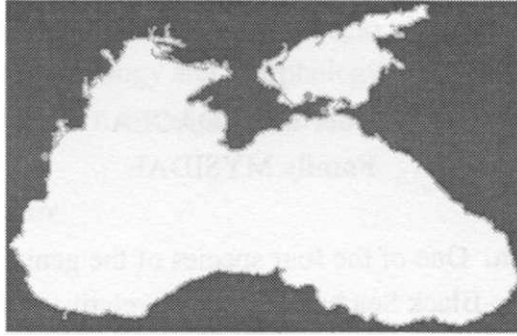
Subregion level: EN (Ukrainian sector)

Distribution. Endemic of the Azov-Black Sea basin. Inhabits the coastal areas of the Sea of Azov, and the Romanian coastal area of the Black Sea.

Habitat type, Critical habitats, Limiting factors. A Photophobic species, inhabiting crevices in rocks and cliffs. The species is euryhaline and eurythermic, very resistant to changes in salinity and to a lesser extent to different temperature regimes.

Biology. Euryphagous, although preferring animal food (polychaetes, crustaceans). Reproduces in the warm part of the year. After fertilization females carry from 7-47 (average 33) embryos in the brood pouch. One summer generation. Life span about 14 months. Length of adult female 9-11 mm, male 7-8 mm. Bright red in colour.

Nocturnal, benthic, non migratory animal, inhabiting rocky bottoms overgrown with algae.



**Population trends.** Low abundance. Single specimens encountered only.

**Threats.** Anthropogenic influence, in particular pollution of coastal zones.

**Conservation measures taken.** Included in Red Data Books of Ukraine and the Black Sea.

**Conservation measures proposed.** Protect the habitat of the species, for example Cape Kazantip (Sea of Azov, Ukraine).

## References

Bacescu, M., 1969. Order Mysidacea. In *Opredețitel fauny Chernogo i Azovskogo more (Key of Black Sea and Sea of Azov fauna)*. Kiev, Naukova Dumka 2: 363-381 (in Russian).

Komarova, T. I., 1991. *Vyschie rakoobraznie. Mysidae (Mysidacea) (Higher crustaceans. Mysidae (Mysidacea))*, In *Fauna Ukrayni*. Kiev, Naukova Dumka 26 (7): 104 pp.

Komarova, T. I., 1994. *Hemimysis serrata*. *Chervona Knyga Ukrayni (Red Data Book of Ukraine)*. Kijiv, Ukrajinська Encyklopediya Publ.: 40 pp.(in Ukrainian).

Reznichenko, O. G., 1959. *K ekologiyi y morfologiyi myzid roda Hemimysis (Crustacea, Malacostraca) (Ecology and morphology of mysid genus Hemimysis (Crustacea, Malacostraca))*. *Trudy Vsesojuz. gidrobiol. obsch.* 9: 320-343 (in Russian).

*Compiled by B. Alexandrov.*

*Hesionides arenarius* (Friedrich, 1936)

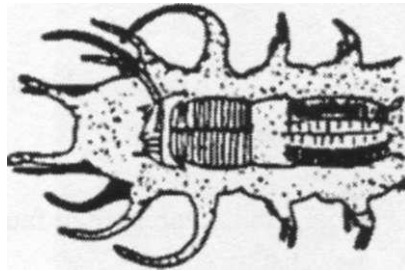
**Synonyms:** None.

**Common names:** None.

**Order** NEREIMORPHA

**Family** HESIONIDAE

**Taxonomic description.** One of three species of Hesionidae in the Black Sea. Length from 1.7 to 3.0 mm, with brownish pigmentation, up to 19-25 segments, eyes absent. Pygidium with two distinctly separated anal lamellae, which do not overlap but distally broaden and fan-shaped. Two long, threadlike anal cirri



**IUCN Status**

World level:

Black Sea Regional level:

Subregion level: EN (Ukrainian and Romanian sectors), VU (Romanian sector)

**Distribution.** *Hesionides arenarius* has a worldwide distribution in tropical and subtropical beaches; it also inhabits boreal regions. In the Black Sea, it was reported on the Bulgarian, Romanian and Ukrainian shelves. This species belongs to the characteristic forms of the interstitial meiofauna of bare-washed sandy beaches.

**Limiting factors.** Limiting factors are the size of sand grains, the pollution of the sand on the sea shore, and man-made changes in the granulometric composition of sand.

**Biology.** Species of *Hesionides* form a common element in the interstitial animal community.

**Population trends.** A sharp decline in population numbers (80-90%) since the 1980s.

**Threats.** Pollution of the mediolittoral and supralittoral zones, changes in the granulomere composition of sand.

**Conservation measures taken.** None.

**Conservation measures proposed.** Include in the Black Sea Red Data Book.

## **References**

Bacescu, M, G. I. Muller & M. T Gomoiu, 1971. *Ecol. mar.* 4: 7-259.

Bacescu, M, M. T. Gomoiu & E. Dumitrescu, 1968. Quelques considérations sur la dynamique des organismes de la zone médiolittorale sableuse en Mer Noire. *Rapp. Comm. int. Mer Médit.* 10: 117-119.

Gomoiu, M-T., 1969. Some aspects of the Black Sea benthos. *Hidrobiologia* 10: 256-277.

Vinogradov, K.A. & E. Losovskaja, 1968. *Opredeliteli fauna Cernogo i Azovskogo Morei.* Kiev, Naukova Dumka 1: 251-359.

*Compiled by C. Dumitrache & L. Vorobyova.*

*Himantopus himantopus* Linnaeus, 1758

Synonyms:

**Common names:** Bulg: *Kokilobegach*; Engl: *Black-winged Stilt*; Rom: *Piciorong*;  
Russ: *Khodulochnik*; Turk: *Uzun bacak*; Ukr: *Khodulychnyk*

**Order** CHARADRIDIFORMES  
**Family** RECURVIROSTRITAE

**Taxonomic description.** A monotypic genus; the only species and nominative subspecies, *H. himantopus*, occurs in the Black Sea region. Numbers have increased lately to 2,000 breeding pairs.



**IUCN Status**

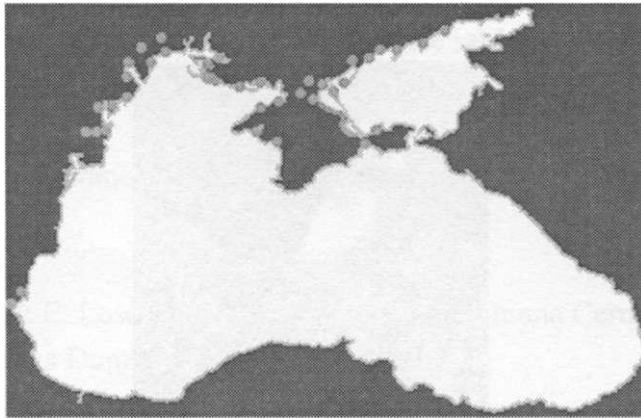
World level: VU

Black Sea Regional level: VU

Subregion level: EN

**Distribution, Habitat type, Critical habitats, Limiting factors.** Breeding habitats are fresh and brackish shallow waters, where large nests are made in the water, or on elevations of various origin. Avoids dense vegetation.

**Biology.** A breeding and migratory species. Spring migration takes place in April and is over by early May. Mass egg-laying is in late May, early clutches appear by the middle of the month. Breeds in loose colonies, often together with terns and other waders. Clutch size is always four, double clutches of 6-8 eggs may be found in places of high concentration. Hatching peaks in mid June, or in the second ten days of the month. Fledglings occur from mid July onwards. Autumn migration is hardly detectable, post-breeding movements gradually become migration. A sharp decrease follows in August, the majority leaves by early September. Single birds may stay till early October. Surface or plankton aquatic invertebrates form the basic diet of Black-winged stilts, but birds can forage on the ground for insects and spiders as well.



**Population trends.** Probably a stabilization of numbers in the years ahead.

**Threats.** Water pollution, cattle grazing, human disturbance, high prédation risk.

**Conservation measures taken.** Creation of reservoirs within the ranges of water protection zones in estuaries and coastal lakes.

## References

Red Data Book of Ukraine, 1994. 347 pp.

Siokhin V. D., I.I. Chernichko, T. B. Ardamatskaia *et al*, 1988. Colonial Hydrophilic Birds of the South of Ukraine: Charadriformes. Kiev, Naukova Dumka: 176 pp. (in Russian).

*Compiled by J. Chernichko*

*Hippocampus guttulatus microstephanus* Slestenenko, 1937

**Synonyms:** *Hippocampus brevirostris* Slestenenko, 1936

**Common names:** Engl: *Sea horse*; Bulg: *Morsko konche*; Georg: *Zghvis tskheni*; Rom: *Calut de mare*; Russ: *Morskoy konyok*; Turk: *Karadeniz deniz aygiri*; Ukr: *Mors'ky konyk*

**Order SYNGNATHIFORMES**

**Family SYNGNATHIDAE**

**Taxonomic description.** The only subspecies of *Hippocampus* in the Black Sea. Body articulate, of unusual form. Head forms an angle with body axis. Reverse part of tail section turned down. Dorsal fin 18-21 soft rays. Body rings 11, tail rings 34-38, subdorsal rings 3-2. Length of adult fishes up to 13 cm.



**IUCN Status**

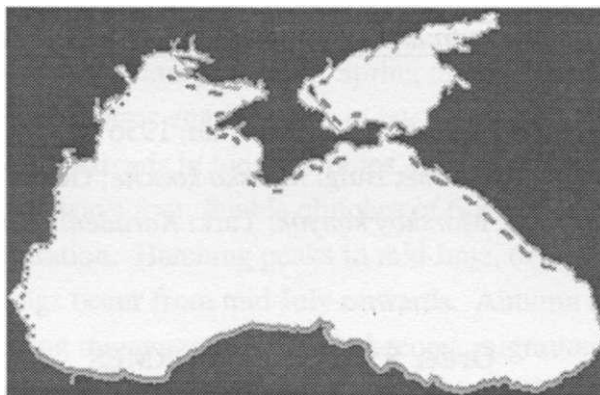
World level:

Black Sea Regional level: EN

Subregion level: EN

**Distribution.** Northern part of the Black Sea (Crimean, Russian, Caucasian, Romanian and Bulgarian coasts, western part of Azov Sea, Kerchensky Strait).

**Habitat type, Critical habitats, Limiting factors.** Coastal waters. Adult fishes most common among *Zostera* belts. The critical habitat is therefore the *Zostera* thicket. The main limiting factors are the reduction of this *Zostera* biocenosis.



**Biology.** A coastal fish with restricted mobility feeding mainly on plankton. Adult fish are most common among *Zostera* belts or floating algal fragments. Spawning from May to September. Eggs develop in the male brood pouch.

**Population trends.** Population numbers unknown. Common in the 1960s.

**Threats.** Freshening of habitat areas, fragmentation of *Zostera* meadows.

**Conservation measures taken.** Entry in Ukrainian Red Data Book.

**Conservation measures proposed.** Include Black Sea Red Data Book. Protect *Zostera* belts.

## References

Fauna Ukraini (Fauna of Ukraine). Kiev, Naukova Dumka 8 (5): 320 pp. (in Russian)

Svetovidov, A. N. Ryby Chernogo morya (Fishes of the Black Sea). Moscow-Leningrad, Nauka: 551 pp. (in Russian).

Compiled by A. Komakhidze, B. Oziirk & S. Khutornoy.



*Hydroprogne caspia* (Pallas, 1770)

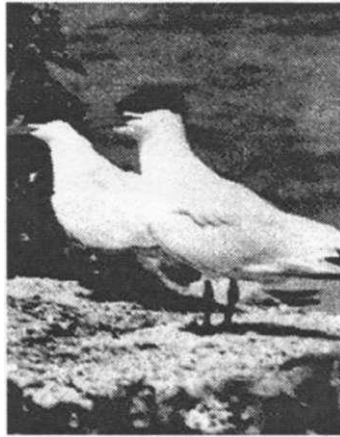
**Synonyms:** *Sterna caspia* Pallas, 1770, *Hydroprogne tschedrava* Lep.

**Common names:** Engl: *Caspian Tern*; Russ: *Chegrava*; Turk: *Hazer sumrusu*; Ukr: *Chegrava*.

**Order CHARADRIIFORMES**

**Family LARIDAE**

**Taxonomic description.** Around 400-950 pairs in the region.



**IUCN Status**

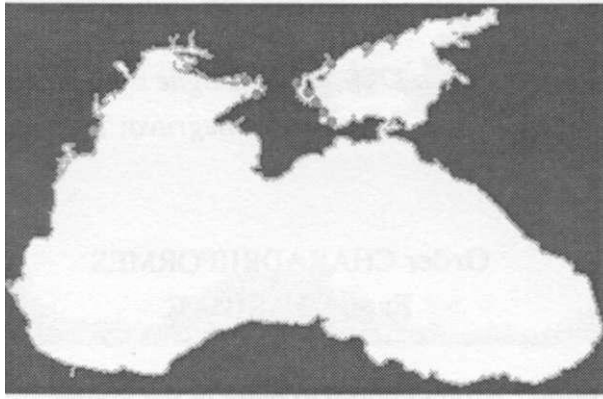
WorldlevelLR

Black Sea Regional level: EN

Subregion level: EN

**Distribution, Habitat type, Critical habitats, Limiting factors.** Mostly bare shell-covered areas on accumulative islands in brackish shallow waters and estuaries. Numbers limited by human disturbance of the colonies and by storms.

**Biology.** A breeding, migratory species. Arrival in early April. Egg-laying in late April - early May. Formed colonies recorded between the 20th and 25th of May. In the post breeding period, birds either stay in the colony or move eastwards and westwards. Migration to the winter grounds takes place in September-October. At the end of October Caspian terns already occur in the Mediterranean. Colonies of Caspian terns are always apart from other colonial birds and characterized by a high nesting density. Its nest is a flat shallow scab on the shell substrate. Clutch size varies from one to three eggs. The egg-laying period is rather prolonged. If first clutches are lost, replacements are normally laid. Under favourable conditions breeding success is high. Exclusively ichthyophagous (sea and fresh-water fish). Forages up to 20 km from colony, quickly responds to the mass availability of food.



### **Population trends.**

Numbers are fluctuating. A general decline has been recorded. Only two out of four existing colonies have stable numbers and favourable breeding conditions. The numbers of Caspian terns are critical and colonies are likely to disappear.

### **Threats.**

Disturbance and unfavourable weather conditions leading to overcrowding.

**Conservation measures taken.** One of the two main colonies is in a reserve protected.

**Conservation measures proposed.** Obligatory protection of all breeding colonies.

### **References**

- Kistiakivs'ki, O .B., 1957. Fauna of Ukraine. Birds. Kiev, AN USSR 4: 432 pp.(in Russian).
- Kostin, Y. V., 1983. Birds of the Crimea. 241 pp. (in Russian).
- Siokhin V. D., 1.1. Chernichko & T. B. Ardamatskaia *et al.*, 1988. Colonial Hydrophilic Birds of the South of Ukraine: Charadriiformes. Kiev, Naukova Dumka: 176 pp. (in Russian).
- Red Data Book of Ukraine, 1994. 356 pp.

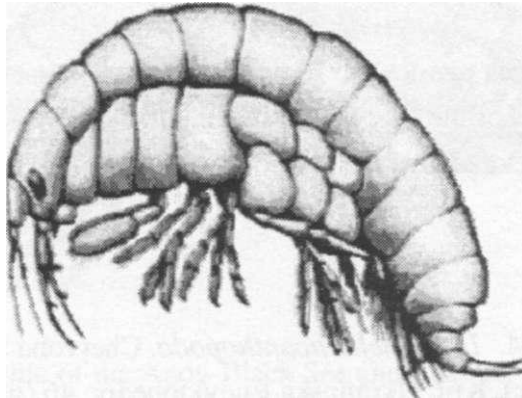
*Compiled by V. Siokhin.*

**Synonyms:** None

**Common names:** Russ: *Ifiginella koluchkonogaya*; Ukr: *Ifiginella kolyuchkonoga*

**Order** AMPHIPODA  
**Family** GAMMARIDAE

**Taxonomic description.** One of the three species of an endemic Ponto-Caspian genus. Propoduses of I-V pereopods half nipping, claw-shaped; claw very short, slightly longer than wide lower ventral corner of third epimeral plate elongated and sharp.



**IUCN Status**

World level: VU (Endemic of the Azov-Black Sea basin)

Black Sea Regional level: VU

Subregion level: VU (Ukrainian sector)

**Distribution.** Inhabits the lower Danube, Dniestr, Dniepr and South Bug including the Dnieprovsky, Dniepr-Bug and Kuchurgansky limans. Also in rivers discharging to the Sea of Azov. Range includes the Caspian Sea.

**Habitat type, Critical habitats, Limiting factors.** Freshwater and brackish parts of limans, deltas and rivers. The main biotopes are silty-sandy, silty-rocky and muddy-sandy sediment.

**Biology.** An oligohaline and freshwater species, tolerant of significant variation in water temperature. In the coastal zone of waterbodies. Commensal with the river crayfish *Astacus leptodactylus*. Adults reach a length of 8-9 mm.

**Population trends.** Abundance low (1-3 ind.m<sup>2</sup>).



**Threats.** Water pollution, erosion of shores.

**Conservation measures taken.** Included in Red Data Book of Ukraine

**Conservation measures proposed.** Reduce Black Sea coastal pollution. Study biological peculiarities of the species, protect characteristic biotopes, including the Danube, Dniestr and Don deltas.

#### **References**

Polischuk, V. V., 1994. *Iphigenella acanthopoda*. Chervona Knyga Ukrayiny (Red Data Book of Ukraine). Kiji, Ukrajinska Encyklopediy: 46 (in Ukrainian).

Opredelitel fauny Chernogo i Azovskogo morey (Key of Black Sea and Sea of Azov fauna). Kiev, Naukova Dumka 2: 536 pp(in Russian).

*Compiled by B. Alexandrov*

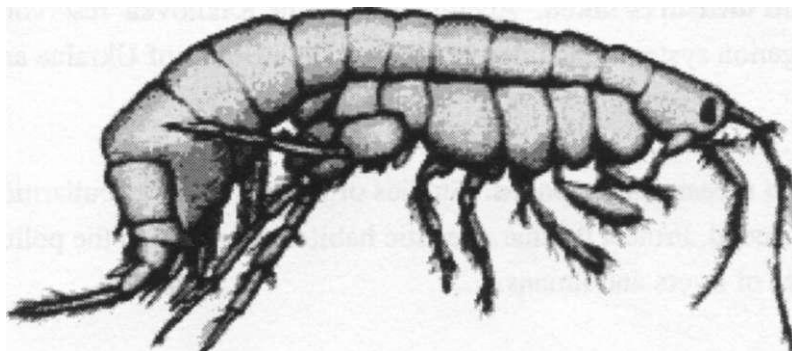
*Iphigenella andrussovi* (Sars, 1896)

Synonyms: *Gammarus andrussovi* Sars 1896, Martinov 1924, Carausu 1943.

Common names: Bulg: *Mamarets*; Russ: *Bokoplav*.

**Order AMPHIPODA**  
**Family GAMMARTDAE**

**Taxonomic description.** One of the three species of an endemic Ponto-caspian genus. Propoduses of I-V pereopods half nipping, clawshaped; claw longer than wide; third epimeral plate with a straight angle on lower its back edge.



**RJCN Status**

World level: **LR** (Endemic of the Azov-Black Sea and Caspian basins)

Black Sea Regional level: **LR**

Subregion level: **LR** (Ukrainian sector)

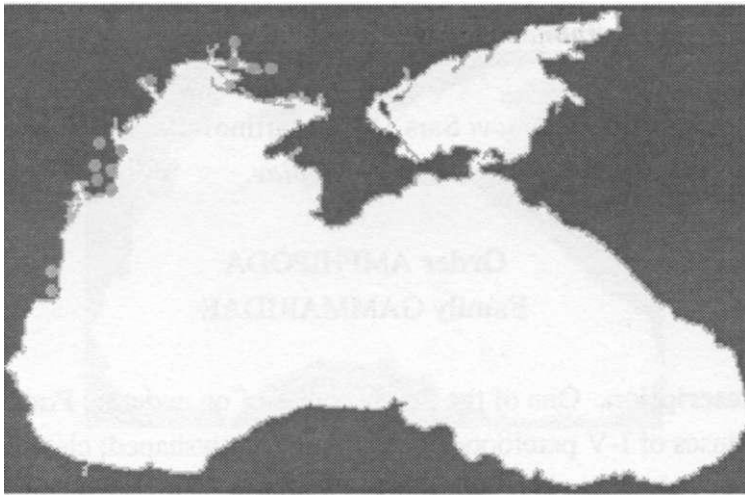
**Distribution.** Found in the lower reaches of the Danube, including limans of the Dniestr, Dniepr and South Bug. Acclimatized to Kakhovka reservoir and water bodies of the Ingulets River irrigation system. An isolated population lives in the central part of the Caspian Sea at the latitude of Krasnovodsk (Turkmenistan).

**Habitat type, Critical habitats, Limiting factors.** Freshwater and brackish parts of limans and lower, reaches of rivers; prefers biotopes of sandy, silty-sandy and sandy-shelly sediments; at depths of up to 5 m.

**Biology.** Eurythermic. Length of female 4-5 mm, of male - 4-6 mm.

**Population trends.** Low abundance (1-3 ind.m<sup>2</sup>).

**Threats.** Pollution of water bodies.



Conservation measures taken. Acclimatized to the Kakhovka reservoir and Ingulets irrigation system. Included in the Red Data Books of Ukraine and the Black Sea.

Conservation measures proposed. Studies of the biological peculiarities of the species are needed. Protect its characteristic habitats. Reduce in the pollution of lower reaches of rivers and limans.

#### References

Birstein, I. A., L. G. Vinogradov, N. N. Kondakov, M. S. Kun, T. V. Astakhova & N. N. Romanova, 1968. Atlas of invertebrate fauna of Caspian Sea. Moscow: 415 pp.

Carausu, S., 1943. Amphipodes de Roumanie. I. Gammarides de types caspien. Bull. Inst. Cercet. Pise. Roman.

Carausu, S., E. Dobreanu & C. Manolache, 1955. Amphipoda forme solmastre si de apadulce. Fauna R.P.Romania 4 (4).

Kaneva-Abadjieva, V., 1972. A Contribution to the Study of the Amphipod Fauna in the Black-Sea-Coast Lakes and River Mouths (in Bulgarian). Bull. Zool. Mus. 35: 164-168.

Mordukhai-Boltovskoi, F., 1969. Guide book to the fauna of the Black Sea and Azov Sea. Crustacea, Amphipoda.

Valkanov, A., 1957. Katalog unserer Schwarzmeerfauna. Arbeiten aus der Biologischen Meeresstation in Varna Bulgarien, 19.

Polischuk, V. V., 1994. *Iphigenella andrussowi*. *Chervona Knyga Ukrayiny (Red Data Book of Ukraine)*. Kijiv, Ukrajinska Encyklopediya Publ.: p. 47 (in Ukrainian)

Oprelitel fauny Chernogo i Azovskogo morey (Key of Black Sea and Sea of Azov fauna). Kiev, Naukova Dumka 2: 536 pp. (in Russian).

*Compiled by S. Andreev & B. Alexandrov.*

*Iphigenella shablensis* (Carausu, 1943)

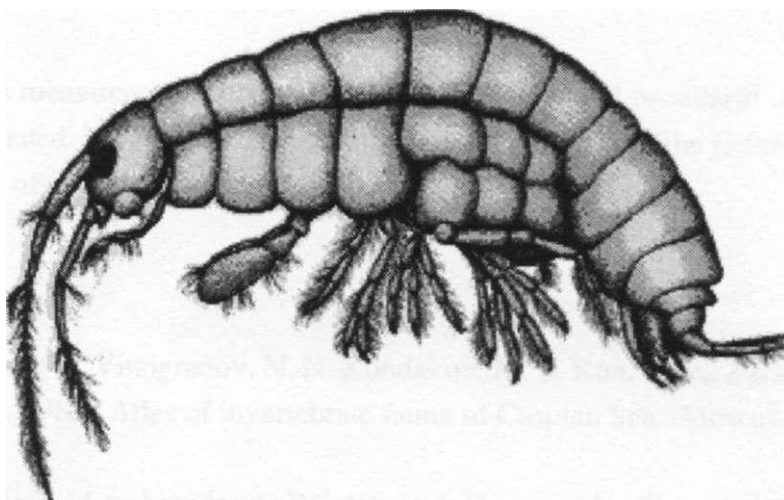
**Synonyms:** *Gammarus shablensis* Carausu, 1943; *Shablogammarus shablensis* Carausu, 1943.

**Common names:** Bulg: *Mamarets*; Russ: *Bokoplav*.

**Order AMPHIPODA**

**Family GAMMARIDAE**

**Taxonomic description.** Length male 3-5 mm, female 2.5-3.5 mm. Flagellum of antenna is 2.5 times as long as antennal base width. Gnathopods oval. Palmar edge skewed. Third gnathopod elongated. Coxal plates high. Basal segment of fifth, sixth and seventh pereopods broadened.



**IUCN Status**

World level: **VU**

Black Sea Regional level: **VU**

Subregion level: **VU**

**Distribution.** Bulgaria-Shabla lake, Dniepr river, Caspian Sea.

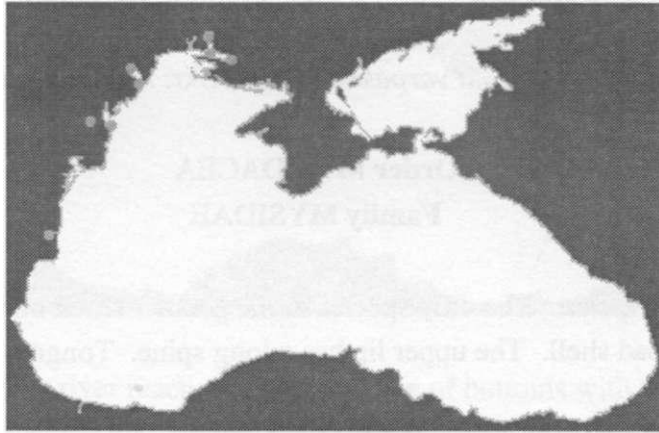
**Habitat type, Critical habitats, Limiting factors.** In brackish and freshwater.

Threats: salinity increase, pollution.

**Biology.** Widely distributed in the middle and eastern part of Shabla lake, especially in the zone with *Dreissena polymorpha*. Found under stones, on sandy bottoms and among macrophytes. Sometimes reaching 15,400 specimens m<sup>-2</sup>. A mass development occurs in spring.



Population trends. Stable in the reserve of Shabla lake.



Threats. Pollution caused by urbanization and excessive livestock farming.

Conservation measures taken. Shabla lake is the only established reserve.

Conservation measures proposed. Create protected territories and reserves around the lakes and in humid zones where this species is found.

#### References

Carausu, S., 1943. Amphipodes de Roumanie. I. Gammarides de types caspien. Bull. Inst. Cercet. Pise. Roman.

Carausu, S., E. Dobreanu & C. Manolache, 1955. Amphipoda. Forme solmastre si de apa dulce. Fauna R. P. Romania 4 (4).

Kaneva-Abadjieva, V., 1972. A Contribution to the Study of the Amphipod Fauna in the Black-Sea-Coast Lakes and River Mouths (in Bulgarian). Bull. Zool. Mus. 35: 164-168.

Mordukhai-Boltovskoi, F., 1969. Guide book to the fauna of the Black and Azov Sea. Crustacea, Amphipoda.

Valkanov, A., 1957. Katalog unserer Schwarzmeerfauna. Arb. Biol. Meeresst. Varne:19.

*Compiled by S. Andreev.*

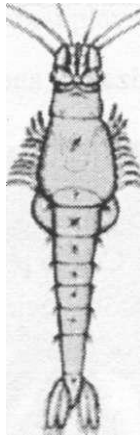
**Synonyms:** None

**Common names:** Russ: *Myzida varpakhovskogo*; Ukr: *Myzida varpakhovskogo*

**Order** MYSIDACEA

**Family** MYSIDAE

**Taxonomic description.** The only species in the genus. Thick body with exceptionally broad shell. The upper lip has a long spine. Tongue-shaped telson.



**IUCN Status**

World level: EN (Endemic of the Azov-Black Sea basin)

Black Sea Regional level: EN

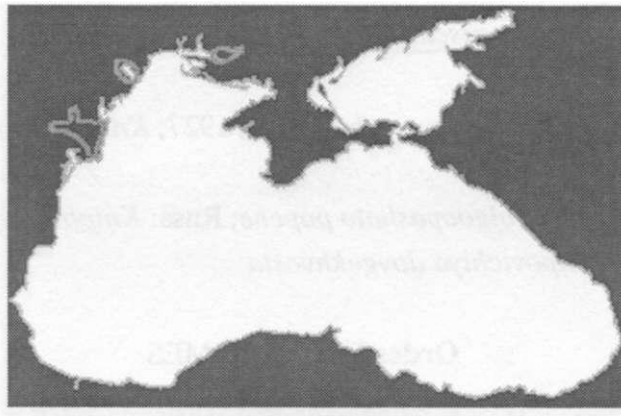
Subregion level: EN (Ukrainian sector)

**Distribution.** Endemic of the Azov-Black and Caspian seas. Encountered in the lower reaches of the Dnieper, Dniester and Danube. Can swim up to 150 km against the current. Its range includes the Caspian Sea and Volga Delta (Russia). Acclimatized to the Dubossarsky reservoir (Moldova), where it is rare today.

**Habitat type, Critical habitats, Limiting factors.** Bathypelagic. Encountered at 0.34-1.00 ppt salinity in sandy or shelly sediments, sometimes in overgrowths of aquatic plants.

**Biology.** Euryphagous. Reproduces from the beginning of March to October. After fertilization, the female carries 10-22 embryos in a brood pouch. The number of generations is unknown. Length 4.2-6.8 mm. Colour dark brown.

**Population trends.** Low abundance (single specimens).



**Threats.** Silty lower river reaches; disappearance of bottoms with hard sediments.

**Conservation measures taken.** Included in Red Data Book of Ukraine. Acclimatized to Dubossarsky reserve (Moldova).

**Conservation measures proposed.** Study the biology of the species. Reduce pollution by water treatment, increase water flow in rivers.

#### **References**

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Komarova, T. I., 1991. *Vyschie rakoobraznie. Mysidae (Mysidacea) (Higher crustaceous. Mysidae (Mysidacea)). Fauna Ukrayni.* Kiev, Naukova Dumka 26 (7): 104 pp.

Komarova, T.I., 1994. *Katamysis warpachowskyi.* Chervona Knyga Ukrayiny (Red Data Book of Ukraine). Kijiv, Ukrajinska Encyklopediya Publ.:p. 41 (in Ukrainian).

*Compiled by B. Alexandrov*

*Knipowitschia longicaudata* Kessler, 1877

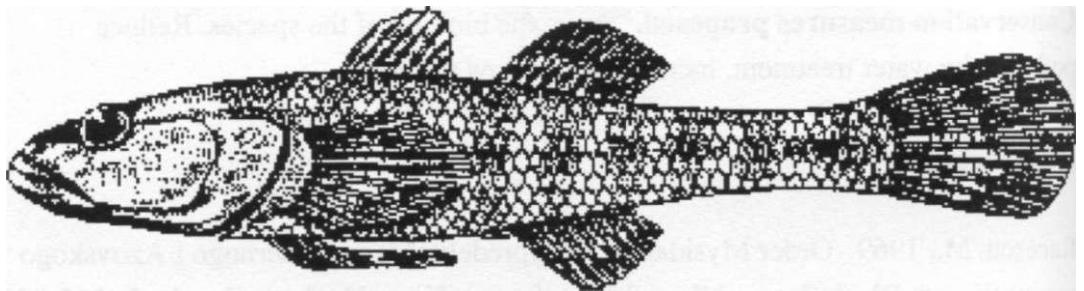
**Synonyms:** *Pomatoshistus knipowitschi* Beling, 1927; *Knipowitschia georghievi* Pinchuk, 1978

**Common names:** Bulg: *Dolgoopashoto popche*; Russ: *Knipovichiya*; Turk: *Kaya baligi*; Ukr: *Bychok knipovichiya dovgokhvosta*

**Order PERCIFORMES**

**Family GOBIIDAE**

**Taxonomic description.** One of two species of *Knipowitschia* in the Black Sea. Body spindle-like but not flattened. First dorsal fin with 5-7, usually 6 spiny rays, second fin with one spiny and 7-9 soft rays, anal fin with one spiny and 7-9 (10) soft rays. Length of adult fishes does not exceed 5 cm., usually 3 cm.



**IUCN Status**

World level:

Black Sea Regional level: EN

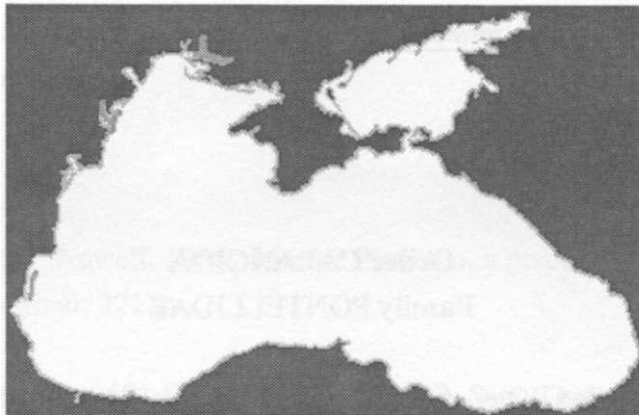
Subregion level: EN

**Distribution.** Brackish and fresher parts of the Black Sea, Danube delta, Dnieper delta, Southern Bug delta, Azov Sea and Caspian Sea.

**Habitat type, Critical habitats, Limiting factors.** In coastal waters. Spawning on sandy-shellstone bottom in the coastal zone. Its critical habitat is the bottom biocoenosis. Main limiting factors are a decrease in river flow, degradation of the bottom biocoenosis, and rarefaction of spawning areas.

**Biology.** A small coastal pelagic migratory fish, feeding mainly on Copepoda and Cladocera. Cannot expand into sea areas and rivers above 50-60 km inland from the sea. Spawning from May to July. Eggs spawn in a nest under stones.

**Conservation measures taken.** None



**Conservation measures proposed.** Include in Black Sea Red Data Book, preserve natural river regime in habitat areas.

#### References

Gheorgiev, J., 1966. Composition d'espèce et caractéristique des Gobiides (Pisces) en Bulgarie. Proc. Res. Inst. Fish. Oceanogr. Varna 7: 159-228.

Miller, P., 1986. Fishes of the North-eastern Atlantic and the Mediterranean 3: 1047.

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*Compiled by K. Prodanov, Y. Sivkov & S. Khutornoy*

*Labidocera brunescens* (Czernjavsky, 1868)

**Synonyms:** None.

**Common names:** None.

**Order** CALANOIDA

**Family** PONTELLIDAE

**Taxonomic description.** One of three species of Pontellidae in the Black Sea, Sea of Azov, and salty coastal wetlands. Head ovoid without lateral hooks and with one pair of dorsal ocular lenses. A middle sized, rather transparent copepod. The length of the females is 2.0-2.1 mm; that of the males 1.65-1.70 mm.

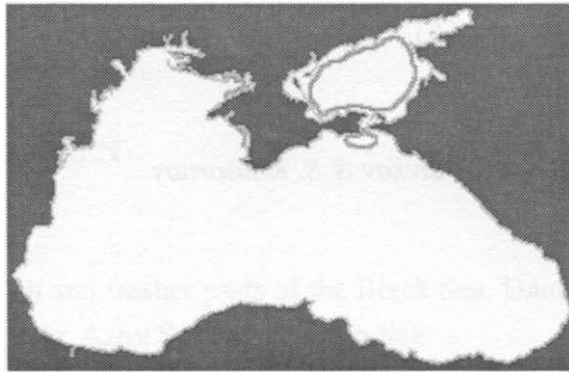
**IUCN Status**

World level:

Black Sea Regional level: **EN**

Subregion level: **EN** (Ukrainian sector)

**Distribution.** Coastal waters of the Black Sea, the Sea of Azov, coastal lagoons and limans, Mediterranean Sea, Atlantic Ocean.



**Habitat type, Critical habitats, Limiting factors.** A neustonic species inhabiting the surface layer (0-5 cm) of water. Winter eggs are laid on the bottom. Limiting factors are pollution of the water surface and bottom hypoxia.

**Population trends.** A reduction by 60-70% over the last 10 years.

**Threats.** Pollution of the water surface and bottom hypoxia.

**Conservation measures taken.** None.

**Conservation measures proposed.** Include in Black Sea Red Data Book. Reduce Black Sea pollution.

## **References**

Newell, G. E. & R. C. Newell, 1966. Marine Plankton, a practical guide. London, Hutchinson Educational: 221 pp.

Dolgopolskaya, M. A., 1969. Otryad Calanoida GO. Sars (Order Calanoida GO. Sars), In: Opredelitel fauny Chernogo I Azovskogo morey (A key to Black Sea and the Sea of Azov fauna). Kiev, Naukova Dumka 2: 34-48 (in Russian).

Zaitsev, Y. P., 1971. Marine Neustonology. Jerusalem, Israel Program for Scientific Translations: 207 pp.

Zaitsev, Y. & V. Mamaev, 1997. Marine Biological Diversity in the Black Sea. A study of Change and Decline. New York, United Nations Publications 15: 208 pp.

*Compiled by Y. Zaitsev.*

*Lipophrys pavo* Riso, 1810

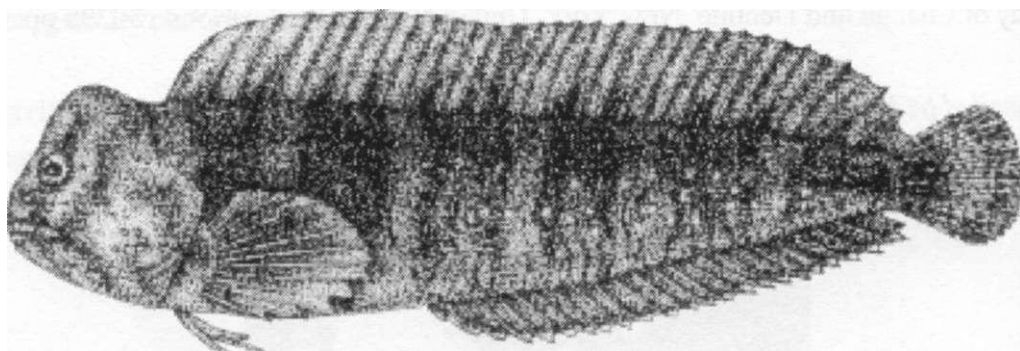
**Synonyms:** *Blennius lepidus* Pallas, 1811; *Blennius pavo* Risso, 1826

**Common names:** Georg: *Parshevangi*, *Zgvis pinia*; Turk: *Horozbina*

**Order** PERCIFORMES

**Family** BLENNTTDAE

**Taxonomic description.** D XH-XHI 21-24; AII23-25; P 13-15; VI 3. Vertebrae 40-41 (Stojanov *et al.*, 1963; Svetovidov, 1964). Body naked, laterally compressed. Snout short with protruding profile. Males with high crest on dorsal part of the head. Basic colour yellow-greenish; vertical bright bars and specks on the body. Size up to 13 cm.



**IUCN Status**

World level:

Black Sea Regional level:

Subregion level: **VU**

**Distribution.** Mediterranean, Black Sea and Atlantic coast, from Morocco to mouth of Loire, France (Zander, 1986). In Bulgaria comparatively rare along entire coast.

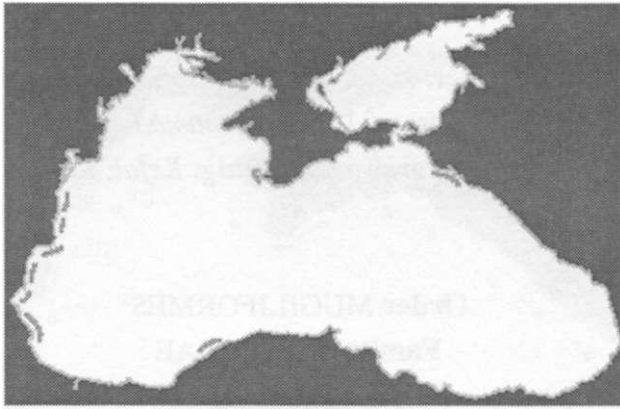
**Habitat type, Critical habitats, Limiting factors.** Pelagic and euryhaline, essentially in brackish waters; vulnerable to changes in hydrochemical regime.

**Biology.** Reproduction in May-July. Males guard eggs between stones. Food: benthic invertebrates, molluscs, algae.

**Population trends.** Declining.



Threats. Breakdown of the hydrochemical regime.



**Conservation measures taken.** None.

**Conservation measures proposed.** Reduce industrial pollution.

#### **References**

Stojanov, S. *et al.*, 1963. The fishes of the Black Sea. Varna, Publishing house Varna: 246 pp.

Svetovidov, A., 1964. The fishes of the Black Sea. Publ. House Science: 550 pp.

Zander, C, 1986. Fishes of the North-eastern Atlantic and the Mediterranean 3: 1104.

*Compiled by Y. Sivkov & K. Prodanov*

*Liza ramada* Risso, 1826

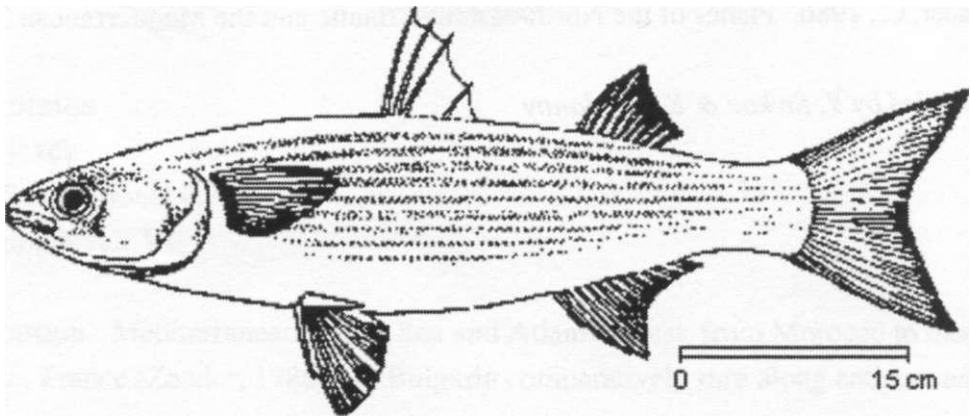
**Synonyms:** *Mugil capito* Cuvier, 1829; *Mugil capito* Bonaparte, 1834; *Liza capito* Popov, 1930; *Mugil aramada* Borcea, 1934; *Liza tamada* Buen, 1935

**Common names:** Engl: *Thin lip grey mullet*; Bulg: *Kefal*; Rom: *Platarin*; Russ: *KefaV*; Turk: *Pulatarina*

**Order MUGILIFORMES**

**Family MUGILIDAE**

**Taxonomic description.** Body elongate, fusiform, slightly compressed; head short and flattened with a broad terminal mouth; teeth very small, hardly visible; upper lip thin (its greatest depth less than half the eye diameter) and smooth (without tubercles); two dorsal fins: the first one short with four slender spines, taller than longer; the second as tall as the first; ventral fins inserted at mid-distance between pectoral and first dorsal fin; pectoral fin short; anal fin usually with nine soft rays; caudal fin deeply forked; no external lateral line; scales large and adherent; scales on the top of the head extending forward to anterior nostrils (almost to upper lip); eye not covered by a thick adipose lid; a scaly appendix at base of pectoral fin; colour grey-dark brown on the back, belly whitish-grey, often with 6-7 lengthwise stripes. Size: maximum 60 cm; average 20-40 cm.



**IUCN Status**

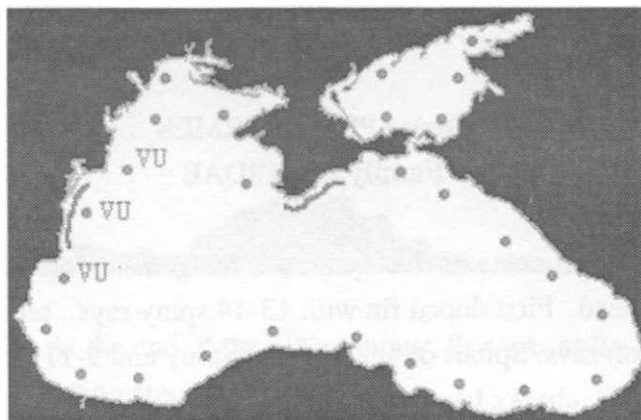
World level:

Black Sea Regional level:

Subregion level: **VU**

**Habitat type, Critical habitat, Limiting factors.** Schools of *L. ramada* occur mostly in shallow water, especially in brackish and coastal lagoons of varying salinity. Common throughout the Mediterranean and along the northwestern

coast of the Black Sea; also in the eastern Atlantic, from southern Norway to Natal (South Africa).



**Biology.** A fast swimmer, leaping out of the water when disturbed; enters estuaries and rivers for feeding but spawns in the sea; juveniles often concentrate in the vicinity of freshwater outflows; feeds on minute bottom-living or planktonic organisms (diatoms, amphipods); also on suspended organic matter. Two spawning periods: first one during spring and early in summer and second one late in summer and autumn;

**Population trends.** Caught mainly with gill nets, trammel nets, beach seines, cast nets and occasionally with purse seines. In recent decades the catches in the northwestern part of the Black Sea are decreasing. On the Romanian coasts it occurs more and more rarely. All mugilid species are included in a single statistical category: 1989 - Bulgaria - 3 t; Romania - 8 t; Turkey - 2843 t; 1990 - Bulgaria - 1 t; Turkey - 1741; Russia - 26 t; 1991 - Bulgaria - 11; Turkey - 40261; Russia - 9 t.

**Threats.** Heavy pollution of coastal waters and of many coastal lagoons.

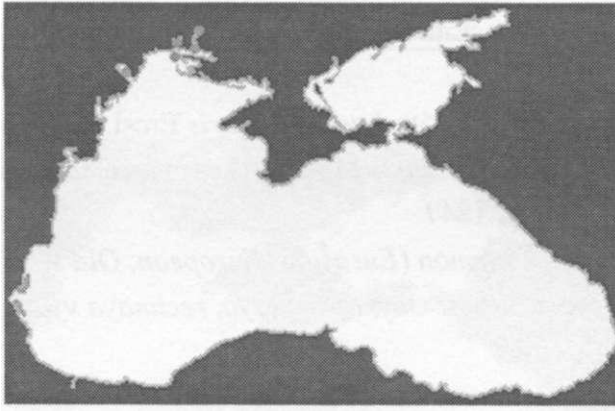
**Conservation measures proposed.** Reduce eutrophication and pollution.

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*Compiled by G. Radu & F. Verio*



**Population trends.** At the end of the 19th century, this was still a mass species. Significant catch-reduction since the 1950s.

**Threats.** Degradation of habitats and spawning areas as a result of changes in the hydrological regime and the hydrochemical composition of runoff and pollution, hydrotechnical construction and overfishing.

**Conservation measures taken.** Included in the Red Data Book of Ukraine, 1994, Bulgaria and the Black Sea. Aquacultured in Krasnovodsk (Turkmenistan).

**Conservation measures proposed.** Reduce Black Sea coastal zone pollution, especially in the Dnieper-Bug estuary (main breeding and feeding area). Artificial reproduction of the species.

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Compiled by B. Alexandrov & S. Khutornoy

*Lutra lutra* Linnaeus, 1758

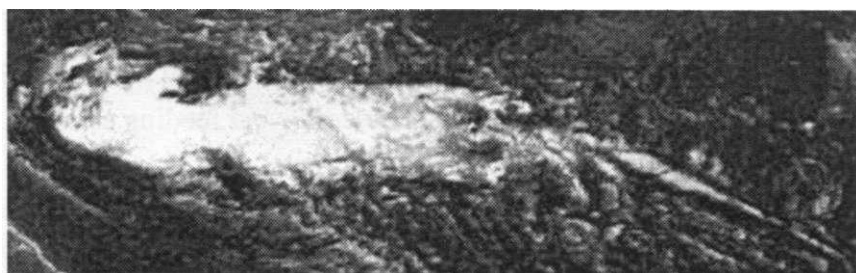
**Synonyms:** *Mustela lutra* L., 1758; *Lustra vulgaris* Ercekl., 1777; *Mustela lutra piscatoria* Kerr., 1792; *Lutra nudipes* Melch., 1834; *Lutra roensis* Ogillby, 1834; *Lutronectes whiteleyi* Gray, 1847

**Common names:** Engl: *Common (Eurasian, European, Old World, river) otter*; Bulg: *Vidra*; Rom: *Lutra*; Russ: *Obyknovennaya, rechnaya vydra*; Ukr: *Vydra richkova*

**Order** CARNÍVORA

**Family** MUSTELIDAE

**Taxonomic description.** Body long and slender, legs short, tail long with thick base and tapering evenly. Broad muzzle, small ears, all four feet webbed. Swims smoothly, watching from the water with only the eyes and nose above the surface. Head-body length: male 60-90 cm; female 59-70 cm. Tail length: male 36-47 cm; female 35-42 cm. Hind-foot length: 1-13.5 cm. Shoulder -height: 30 cm. Weight: 6-17 kg. Dental formula: 3/3, 1/1, 4/3-4, \_ = 36-38.



**IUCN Status**

World level: **EN**

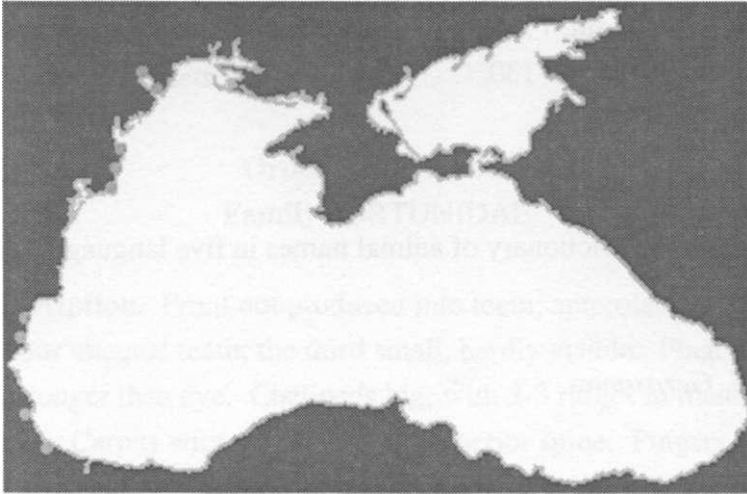
Black Sea Regional level: **EN**

Subregion level: **EN**

**Distribution.** Throughout Europe, but not on Mediterranean islands. In Algeria and Morocco, Asia Minor, India, Indo-China, China and Japan, and Central Asia and South Siberia. Black Sea Coast: in the rivers flowing into the Black Sea. On the Bulgarian Black Sea Coast in the rivers Rezovska, Veleka, Diavolska, Ropotamo, Kamtchia, Batova, and some coastal lakes and swamps.

**Habitat type, Critical habitats, Limiting factors.** Fresh water (rivers, lakes, canals, marshes, sometimes ditches with only a few centimeters of water); also marine environment (coasts and estuaries). Lives in cavities in banks, hollow trees, between

roots, rocky clefts or tunnels in peat. Largely nocturnal, with a period of inactivity in the middle of the night.



**Biology.** Carnivorous. Catches fish and occasionally other vertebrates (water rodents, especially Water voles, amphibians and invertebrates - crabs, worms, insects). Lives in family groups of one or more females and cubs of the year occupying a group territory, otherwise adults solitary and coming together only for a few days for mating. Breeding any time of year but mostly in summer. Earliest known breeding: male-1.5 year; female- 1 year 10 months. Gestation: 61-63 days. Litter size - 1-5 (usually 2-3). Taken to water and encouraged to swim around three months of age. Weaning age 16 weeks. Parental care by female only. Cubs remain with mother for 10-12 months.

**Population trends.** Relatively stable in clear rivers but highly sensitive to water pollution and poaching.

**Threats.** Environmental pollution, habitat fragmentation, poaching.

**Conservation measures taken.** Some of the habitats are included in reserves and protected wetland areas.

**Conservation measures proposed.** Regular monitoring of numbers in the region; water quality control.

#### References

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Publ. Green Balkans and PHARE Programme, Annex II, p. 97.

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352 pp.

*Compiled by S. Gerasimov*

*Macropipus arcuatus* Leach, 1814

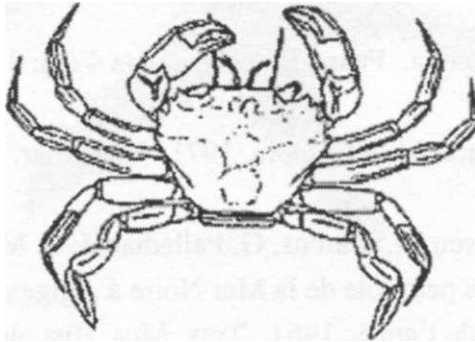
**Synonyms:** *Portunus rondeletii* Risso, 1816; *P. longipes* Rathke, 1837

**Common names:** Bulg: *Rak plubet*; Rom: *Crabul rosu*; Russ: *Krab-plavunets*; Turk: *Calpara*; Ukr: *Krab-plavunets'*

**Order DECAPODA**

**Family PORTUNIDAE**

**Taxonomic description.** Front not produced into teeth; anterolateral margin of carapace with four unequal teeth; the third small, hardly visible. Flagellum of antenna about 2.5 times longer than eye. Chelipeds big, with 2-3 ridges in male, smaller and smooth in female. Carpus with strong postero-superior spine. Fingers with few teeth (2-3); terminal teeth small. Dactylus of the fifth pereopods like a lance, consolidated by a longitudinal ridge. Female with abdomen larger than male, yet not covering the eggs completely. Size: length - 18 mm; width - 22 mm. Colour red-purple in specimens from *Phyllophora* fields.



**IUCN Status**

World level:

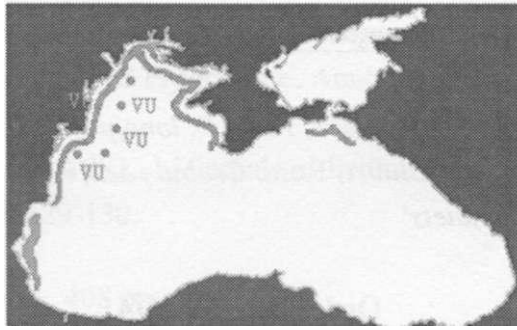
Black Sea Regional level:

Subregion level: **VU**

**Distribution, Habitat type, Critical habitats, Limiting factors.** An iliophilic species, found down to depths of 30-70 m. Favourite biotope: very deep bottoms covered by *P/iyfibp/iora* ooze. Threatened by shrinking of *Phyllophora* fields.

**Biology.** A species with a high fecundity (up to 3,000 eggs); reproduction begins in spring. Eggs yellow, in clusters, with 3-4 eggs into a verticillum.





**Population trends.** Abundant in the past, in *Phyllophora* fields. Found on the entire Romanian littoral (hundreds of ind.m<sup>-2</sup>). However, in the last 20 years, the species has become very rare.

**Threats.** Hypoxic conditions on the shelf.

**Conservation measures taken.** None.

**Conservation measures proposed.** Mitigation of negative environmental impacts.

### References

Bacescu M. 1967. Decapoda. Fauna R. S. Romania 4 (9): 335 pp.

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*Compiled by C. Dumitrach*

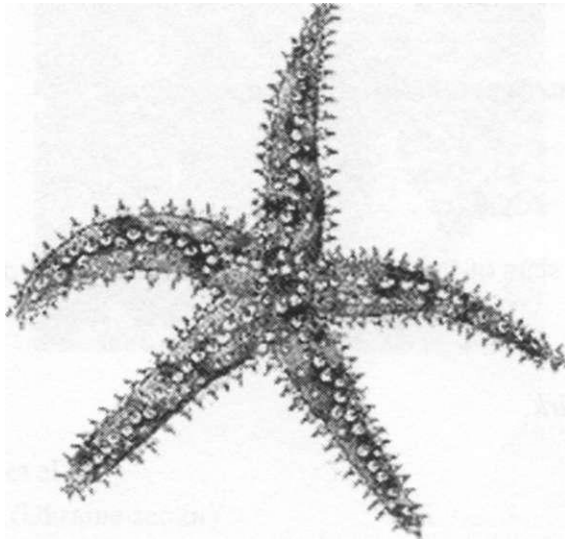
*Marthasterias glacialis* (Linnaeus, 1765)

**Common names:** Engl: *Spiny star fish*; Russ: *Morskaya zvezda*; Turk: *Adi deniz yildizi*.

**Order** FORCIPULATA

**Family** ASTERIIDAE

**Taxonomic description.** A starfish with large subcylindrical, pointed arms. Body covered with large protuberances set in longitudinal series and with strong spines. Colour from greenish to reddish-brown. Size up to 70-80 centimeters.



**IUCN Status**

World level:

Black Sea Regional level: VU

Subregion level: VU

**Distribution, Habitat type, Critical habitats, Limiting factors.** Found on rocky and detrital bottoms 3-180 meters deep. This species is associated with mussels and oysters and feeds on them. Common in the prebosphoric area and the western Black Sea. Distributed through the Mediterranean Sea, Marmara Sea and Black Sea. Marine zones near the coast at depths of 50 metres are where they reproduce. Threatened by siltation, sand dredging and trawling.

Biology. Feeds on mussels and oysters.

**Population trends.** No data on numerical trends, but currently rare in the Black Sea.

**Threats.** Sand dredging, trawling.

**Conservation measures taken.** No conservation measures.

**Conservation measures proposed.** Ban sand dredging.

### **Reference**

Artuz, I., 1967. Sea stars of the Turkish waters. Turk biyoloji dergisi (J. turk. Biol.) 1: 11-24.

*Compiled by B. Oztürk.*

*Mergus serrator* (Linnaeus, 1758)

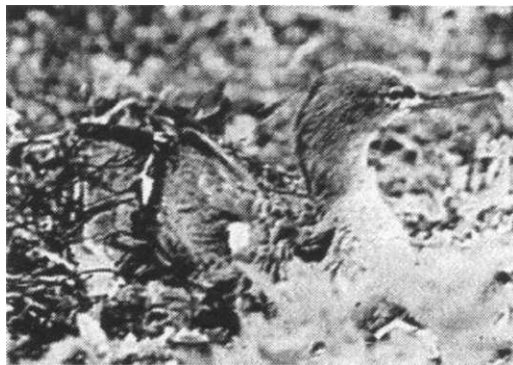
Synonyms: None.

**Common names:** Engl: *Red-breasted merganser*; Russ: *KrokhaV dlinnonosiy*; Rom: *Ferestras*; Turk: *Sutlabi*; Ukr: *KrokhaV dovgonosy*.

**Order** ANSERIFORMES

**Family** ANATIDAE

**Taxonomic description.** NB - numerous, CB -common.



**IUCN Status**

World level:

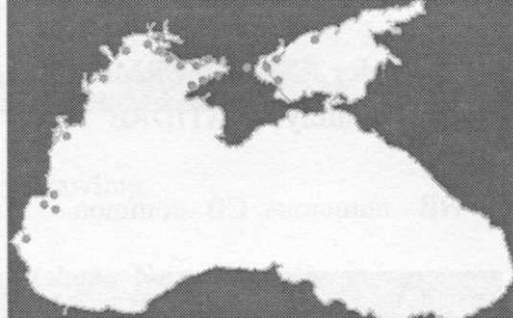
Black Sea Regional level:

Subregion level: VU (Ukraine sector)

**Distribution, Habitat type, Critical habitats, Limiting factors.** An inhabitant of brackish shallow waters and salinas. Breeding habitats include islands and spits with dense, sometimes thinned-out grasses. Coastal reed-beds are preferred. Feeding habitats are deep areas of bays and the sea.

**Biology.** *Mergus serrator* is a partly resident, late-breeding species. Despite the early display and fighting of the males, starting end of March, the first nests appear only by late April. Clutches are laid at the end of May and can be found till mid July. Incubation takes 30-32 days. Nests are made in the reed-beds (up to 43.3%) or growths of *Atriplex tatarica* and other shore vegetation. The species shows a strong nesting conservatism: some females breed in the same locations annually. Clutch size is 16-22 eggs; the larger clutches are either mixed or laid by two females. Hatching begins in the second third of June, and fall brooding is in the last third of June. Unfledged juveniles can be found till the second half of October. Can normally breed anew after clutch loss, but clutch size is reduced to 5-8 eggs. Breeding habitats are often destroyed by floods, which may wipe off parts of the shore. In cold winters

*Mergus serrator* of Black Sea origin occur in the Aegean. Probably, part of the population overwinters in the Balkans, where they concentrate in large numbers, but this has not been confirmed by ringing data. Usually birds leave their winter quarters in early March. *Mergus serrator* is typical ichthyophagous (gobies constitute their basic diet). Chicks forage on copepods and aquatic insects.



**Population trends.** In the past the species was never found in large numbers. Now it has become common, and even numerous in some locations (e.g. on the islands of Tendra Bay).

**Threats.** Reduction of breeding habitats, water pollution and food scarcity, nest predation by Yellow-legged gull.

**Conservation measures taken.** The species is protected in the "Chernomorski" and "Krymski" reserves.

**Conservation measures proposed.** Stop eutrophication of marine bays, strengthen the protection regime in the Chernomorski reserve, increase public awareness.

## References

Chervona Knyga Ukrayiny (Red Data Book of Ukraine). Kijiv, Ukrajinska Encyklopediya Publ.: 319 pp.(in Ukrainian).

Kostin Y.V., 1983. Birds of the Crimea. 241 pp. (in Russian).

Rudenko Y. G., O. A. Yaremchenko & K. I. Rybachuk, 1996. The state of the "Chernomorski" biosphere reserve ornithocomplexes in 1994. Kiev, 148-142 (in Russian).

*Compiled by T. Ardamatzkaia.*

*Mesogobius batrachocephalus* Pallas, 1811

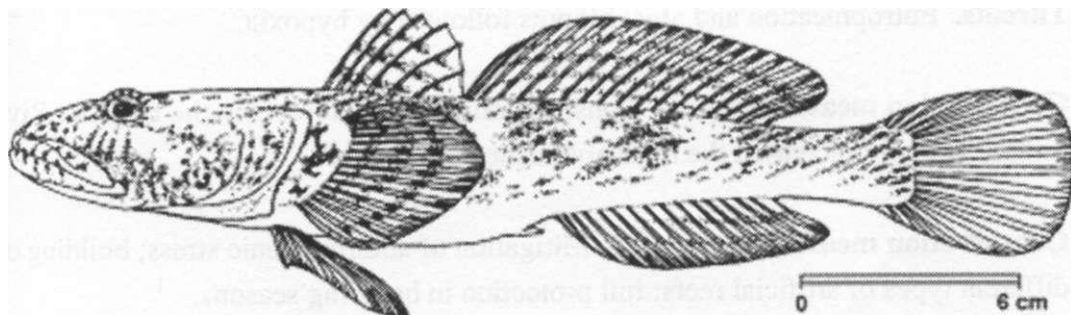
Synonyms: *Gobius batrachocephalus*, Pallas, 1811; *Gobius (Mesogobius) batrachocephalus* Bleeker, 1874

**Common names:** Engl: *Flat-head goby*; Bulg: *Stronghil*; Rom: *Harms*; Russ: *Bychok knut*; Turk: *Kurbaga kayasi baligi*; Ukr: *Bychok zhaba*

**Order** PERCD70RMES

**Family** GOBIIDAE

**Taxonomic description.** Two dorsal fins, the second a little longer than the anal fin; no scales on the upper side of the head. The gills cover the throat and bases of the pectoral fins. Head flattened and rather pointed, with prominent lower jaw. Body of yellowish ground colour; back yellow-brown with five broad cross bands; pelvic fins fused by a membrane which extends across the front of these fins as a skin fold, forming a sucking disc; posterior border of the sucking disc well before the vent. None of the dorsal rays sharp and spiny; no lateral line on the sides of the body. Size: maximum 35 cm; average about 19 cm (male) and 21 cm (female).



**IUCN Status**

World level:

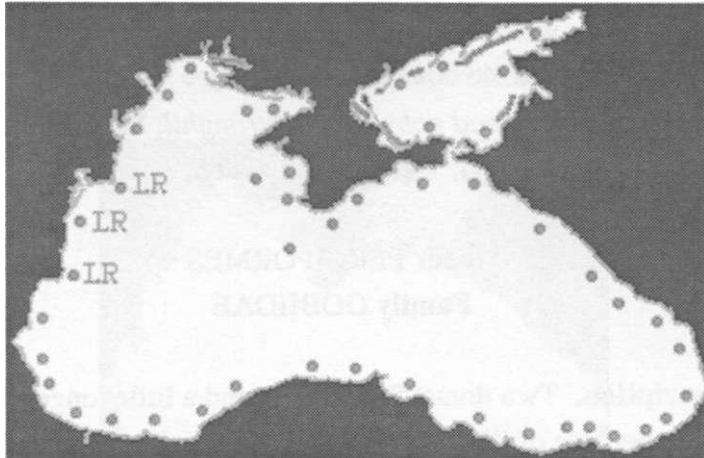
Black Sea Regional level:

Subregion level: **LR**

**Distribution, Habitat type, Critical habitats, Limiting factors.** A brackish water fish, inhabiting sandy bottoms, in inshore waters down to a depth of 40 m. Common in coastal waters of the Black and Azov Seas and in the estuaries of the Dnieper, Bug, Dniestr and Don rivers; also in the Bosphorus. Threats: increasing pollution, hypoxia; destruction of breeding grounds (sand covering stony egg substrates).

**Biology.** Feeds mainly on small fish (sand smelt, anchovies, stripped mullet, scad, gobiids); spends the winter in deeper waters. Migrates towards the shore in April-

May for reproduction (at 6 °C); reaches sexual maturity at three years of age. The largest and most tasty goby!



Population trends. Rather abundant, caught with stake nets and drag seines; **1989** landings on the Romanian littoral 23 t, on the Bulgarian littoral - 23 t; in Turkey **2101**, in Russia 810 t. Stocks endangered by periods of hypoxia following algal blooms, when hundreds of dead specimens are thrown on the beaches. In August **1989**, massive numbers of dead fish were recorded along the Romanian littoral.

Threats. Eutrophication and algal blooms followed by hypoxia.

Conservation measures taken. Construction of artificial reefs in the Dniester River estuary strongly increased the local abundance of gobiids.

Conservation measures proposed. Mitigation of anthropogenic stress; building of different types of artificial reefs; full protection in breeding seasons.

#### References

Borcea, I., 1933. Révision systématique et distribution géographique des Gobiidés de la Mer Noire et particulièrement des eaux roumaines. Ann. Sci. Univ. Jassy, **19**.

Gomoiu, M.-T., 1983. Sur la mortalité en masse des organismes benthiques du littoral roumain de la Mer Noire. Rapp. Comm. int. Mer médit. 28: 203-204.

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*batrachocephalus*, *G. cephalarges* and *G. melanostomus*) from the Romanian waters of the Black Sea. *Hidrobiologia* 3: 271-282. (in Romanian).

Zaitsev, Y., 1992. Recent changes in the trophic structure of the Black Sea. *Fish. Oceanogr.* 1 (2).

*Compiled by A. Petranu*



*Moerisia maeotica* (Ostroumov, 1896)

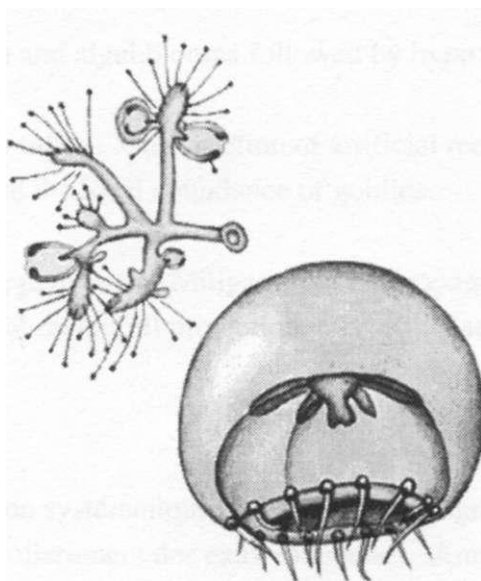
**Synonyms:** *Thaumantias maeotica* Ostroumov, 1896; *Moerisia inkermanica* Paltchikowa-Ostroumova, 1925; *Ostroumovia inkermanica* Valkanov, 1933; *Pontia ostroumovi* Paspalev, 1936; *Odessia maeotica* Paspalev, 1937.

**Common names:** None.

**Order (HYDROZOA) LEPTOLIDA**

**Family MOERISIIDAE**

**Taxonomic description.** The species has both a polyp and a planktonic medusa stage. The polyp may be solitary or in bipolar colonies, formed by fusion of two polyps. The body has 3-12 tentacles with an irregular arrangement. The medusa develops only on the polyps. It has a spherical shape and a diameter up to 20 mm (at sexual maturity). On the borders of its umbrella, it has up to 36 tentacles with ocelli at the base. Medusae have four radial canals and an oral cavity with four lobes. The gonads at the base of the oral cavity descend in the radial canals, on the margins of the umbrella. Mesoglea thick and transparent



**IUCN Status**

World level:

Black Sea Regional level: **VU**

Subregion level: **EN** (Romanian sector), **VU** (Romanian and Ukrainian sector)

**Distribution.** In the Sea of Azov, Black Sea, limans of the Azov-Black Sea basin. Its range includes brackish-water areas bordering the Mediterranean Sea (in particular the

east and the Adriatic Sea), and the Atlantic coast of Africa. After the opening of the Volga-Don Canal in 1952, the species also penetrated the Caspian Sea.



**Habitat type, Critical habitats, Limiting factors.** The polyps occur in the upper sublittoral. They attach to rocks, wood, and different types of floating objects. Jellyfish inhabit the near-surface layers.

**Biology.** Lives at temperatures of 15-25°C and at a salinity of 0.5-3.5 ppt. Feeds on zooplankton. The life cycle includes a succession of polypoid and jellyfish stages. In the Black Sea, budding of polyps occurs in August - September, forming weakly branched laminated colonies. The polyp has a thin long stalk. The jellyfish becomes mature 30-40 days after separating from the polyp.

**Population trends.** Abundance unknown. Probably rare.

**Threats.** Increasing salinity, pollution.

**Conservation measures taken.** Included in Red Data Book of Ukraine.

**Conservation measures proposed.** Create conditions for normal reproduction, including the prevention of pollution of brackish coastal areas.

## References

Borcea, I., 1930-1931. Nouvelles contributions a l'étude de la faune benthonique dans la mer Noire, près du littoral roumain. Ann. Sci. Univ. Jassy. 16: 655-750.

Naumov, D. V., 1960. *Gidroidy i gidromeduzy morskikh, solonovatovodnykh presnovodnykh basseinov SSSR* (Hydroids and hydromedusae of marine, brackish and freshwater reservoirs of the USSR). Moscow Leningrad: Nauka: 626 pp.

Opredelitel fauny Chernogo i Azovskogo morey (Key to Black Sea and Sea of Azov fauna). Kiev, Naukova Dumka 1: 437 pp. (in Russian).

Müller, G. I., 1991. Composition of benthic fauna from the Black Sea littoral lakes Sinoe and Istria, in the conditions of the increasing eutrophication. (Annual study, RMRI, Constantza) (in Romanian).

Stepanyants, S. D. & V. V. Murina, 1994. *Moerisia maeotica*. Chervona Knyga Ukrayiny (Red Data Book of Ukraine). Kijiv, Ukrajinska Encyclopediya: 17 (in Ukrainian).

Teodorescu-Leonte, R., 1977. Le complex Raelm-Sinoe, un système typiquement saumâtre. MAMBO/IRCM 2: 78-92.

*Compiled by B. G. Alexandrov & A. Petranu.*

*Monachus monachus* (Hermann, 1779)

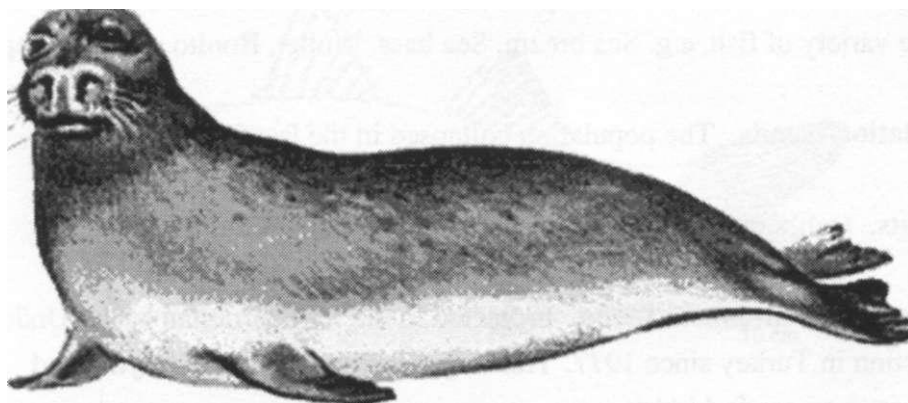
**Synonyms:** None.

**Common names:** Engl: *Mediterranean monk seal*; Russ: *Tyulen'*; Turk: *Akdenizfoku*.

**Order** CARNIVORA

**Family** PHOCIDAE

**Taxonomic description.** Adult *Monachus monachus* are robust mammals, with short flippers, a long fusiform body, and a proportionally small head. The head is wide and somewhat flat, with the eyes widely paced. The muzzle is particularly wide, but compressed from top to bottom. The nostrils are situated at the top of the muzzle. The vibrissae are smooth. Females with four retractable teats. Colour varies in isolated subpopulations. Most animals are dark brown. Some have a large white belly patch.



**rUCN Status**

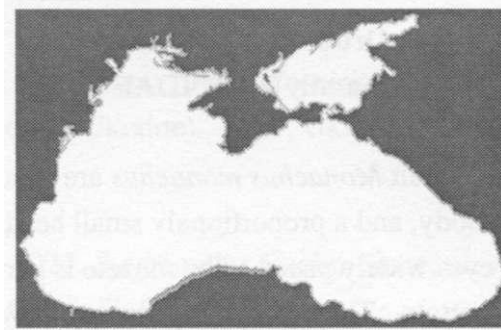
World level: **CE**

Black Sea Regional level: **CE**

Subregion level: **CE**

**Distribution, Habitat type, Critical habitats, Limiting factors.** *Monachus monachus* is sedentary. Underwater caves, shelters and long quiet beaches suit it best. Marine zone up to depths of 50 metres in the Black Sea. Underwater caves and gravel beaches are the critical habitat for this animal. Loss of habitat, incidental killings, pollution, catching in nets, overfishing and coastal degradation all contributed to its decline. However, live capture was one of the main reasons for the collapse of the Black Sea population. On the Turkish coasts, 20 animals were captured in the Zonguldak and Akcakoca areas before legal protection measures were taken in 1978 (Oztiirk, 1996). These animals were kept in zoos. All are now dead. A few

individuals still live between Zonguldak and Dogankent (see Oztiirk, this volume: introduction). In addition, there are some sporadic observations in the Danube delta and at Cape Caliacra. The creation of a nature reserve for the monk seal is an urgent priority for Turkey. A special public awareness programme should be aimed at fishermen and other local people.



**Biology.** Sexual maturity at four years of age. Newborn pups have been found at different times of year, but most often in summer and early fall. Observations suggest that whelping is asynchronous and may take place around the year. Gestation takes c. 11 months. This mediterranean species is a shallow-water feeder. Its diet consists of a large variety of fish, e.g. Sea bream, Sea bass, Mullet, Bonito, and also cephalopods.

**Population trends.** The population collapsed in the last 20 years.

**Threats.** Deliberate killing, incidental catch, loss of habitat.

**Conservation measures taken.** Protected in the Mediterranean basin. Under protection in Turkey since 1977. Hunting, harvesting, selling, buying and transportation are forbidden.

**Conservation measures proposed.** Include in Black Sea Red Data Book. *In situ* protection on central south Black Sea coast. Designation of special protected areas between Doganyurt and Cide. Mass public awareness campaigns.

## References

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Red Data Book of Ukraine. 411 pp.

*Compiled by B. Oztiirk.*

*Mullus barbatus ponticus* (Esipov, 1927)

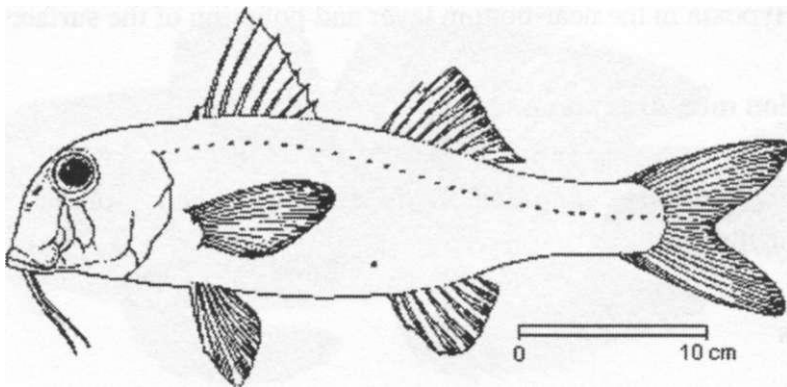
**Synonyms:** *Mullus barbatus* Linnaeus, 1758; *Mullus barbatus* Pallas, 1811.

**Common names:** Engl: *Red mullet*; Bulg: *Barbunja*; Rom: *Barbun*; Russ: *Sultanka*; Turk: *Barbunya*; Ukr: *Barabulya*.

**Order PERCIFORMES**

**Family MULLEDAE**

**Taxonomic description.** Head deep and short, c. 20 % of total length, with a pair of long barbels under the chin; profile of snout nearly vertical, mouth reaching level of the eyes. Under the orbit, two large scales preceded by a smaller suborbital scale. Upper jaw toothless; back and sides reddish-pink without yellow lengthwise bands. First dorsal fin without dark spots or bands. Body rather compressed, two well separated dorsal fins, the first with 8-9 spines, the second with one spine and eight soft rays. Scales large and easily detached. Size maximum 30 cm; on average 10 to 15 cm.



**IUCN Status**

World level:

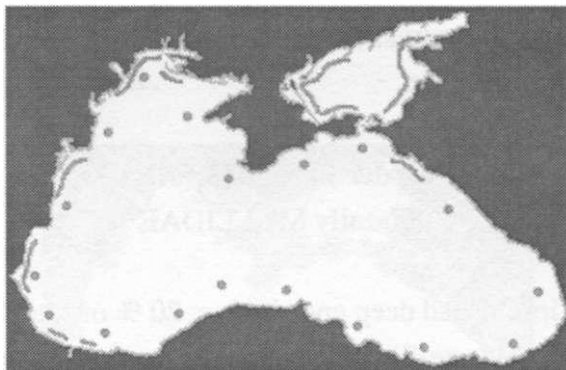
Black Sea Regional level: **EN**

Subregion level: **EN**

**Distribution, Habitat type, Critical habitats, Limiting factors.** A bottom fish of shallow sands and mud bottoms, but may occur down to depths of between 20 and 200 m. Common in the Mediterranean, Azov Seas, eastern Atlantic from the British Isles to the coast of Senegal. Hypoxia and pollution are limiting factors.

**Biology.** Feeds predominantly on small bottom-living invertebrates (crabs, worms...), but also zooplankton, fish larvae and vegetal debris. Small schools live in deep waters in the summer, coming to the coasts at 7-8 °C in spring; after that, at 15-16 °C they sink again to deeper waters. Reproduction takes place in June-September, at 9-

23 °C. First reproduction at the age of one year (8-11 cm). Females longer than males; pelagic eggs.



**Population trends.** Catches during recent decades on the Romanian littoral were generally small; the catches in stake nets were 5 t (1989), 8 t (1990), 25 t (1991). The catches in Turkish waters were 5,641 t (1989), 2,344 t (1990), 2,712 t (1991). For Russia: 384 t (1989), 236 t (1990), 255 t (1991).

**Threats.** Hypoxia in the near-bottom layer and pollution of the surface microlayer.

**Conservation measures taken.** None.

**Conservation measures proposed.** Reduce eutrophication; prohibit dredging/trawling.

## References

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Radu, G., E Leonte, G. Butoi, F. Verioti & E. Radu, 1996. Principalele specii de pesti si mamifere din Marea Neagra (Determinator) (Fish and mammal species of the Black Sea) (identification sheets) (in Romanian).

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*Compiled by G. Radu, F. Verioti & S. Khutornoy.*

*Neogobius ratan* Nordmann, 1840

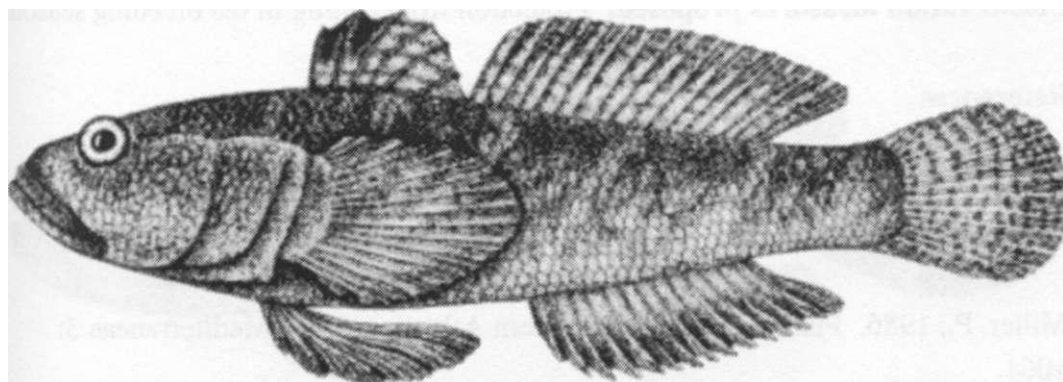
**Synonyms:** *Gobius ratan* Nordmann, 1840; *Gobius trautwetteri* Kessler, 1884

**Common names:** Engl: *Ratan goby*; Bulg: *Ratan*; Russ: *Bychok-rotan*; Turk: *Kaya baligi*; Ukr: *Bychok-ratan*

**Order PERCIFORMES**

**Family GOBHDAE**

**Taxonomic description.** D VI, 115-19; A 112-15; P 18-21. Scales in lateral series 52-61. Vertebrae 32-34 (Gheorgiev, 1966). Head depth 0.91-0.95 of width. Upper lip thin and long. Its length 0.40-0.45 and width 0.07-0.09 of head length. Angle of jaws below pupil. Pelvic disc 0.18-0.21 SL. Anterior membrane with large, angular lateral lobes. Suborbital papillae with 8 (rarely 7) transverse rows. Colour dark-brown. First dorsal-fin with upper yellow or orange edge. Size up to 23cm.



**IUCN Status**

World level:

Black Sea Regional level:

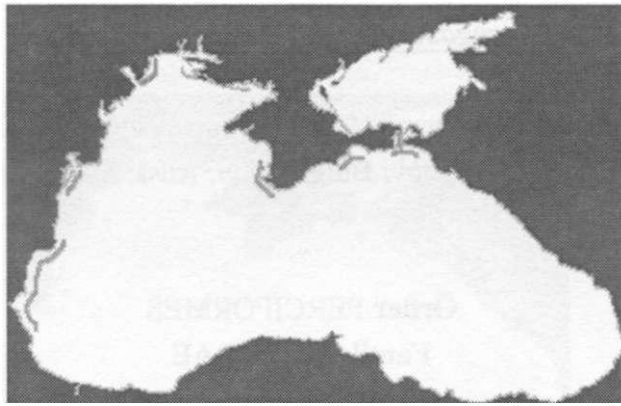
Subregion level: VU

**Distribution.** Black sea, Sea of Azov and Caspian Sea. A Pontian relict. In Bulgaria along the whole coast.

**Habitat type, Critical habitats, Limiting factors.** On inshore rocks, stones, gravel, at 5-19 m of depth; near inshore zone. Threats: chemical contamination and fishing with nets in the breeding-season.

**Biology.** Reproduction in March-April. Eggs beneath stones. Sexually mature at two years of age. Food: crustaceans and fishes (Miller, 1984).





**Population trends.** Declining.

**Threats.** Chemical contamination and fishing with nets in the breeding season.

**Conservation measures taken.** None.

**Conservation measures proposed.** Protection from fishing in the breeding season.

### **References**

Gheorgiev, J., 1966. Composition d'espèces et caractéristique des Gobiides (Pisces) en Bulgarie. Proc. Res. Inst. Fish. Oceanogr. Varna 7: 159-228.

Miller, P., 1986. Fishes of the North-eastern Atlantic and the Mediterranean 3: 1064.

*Compiled by Y. Sivkov & K. Prodanov*

*Neogobius syrman* Nordmann, 1840

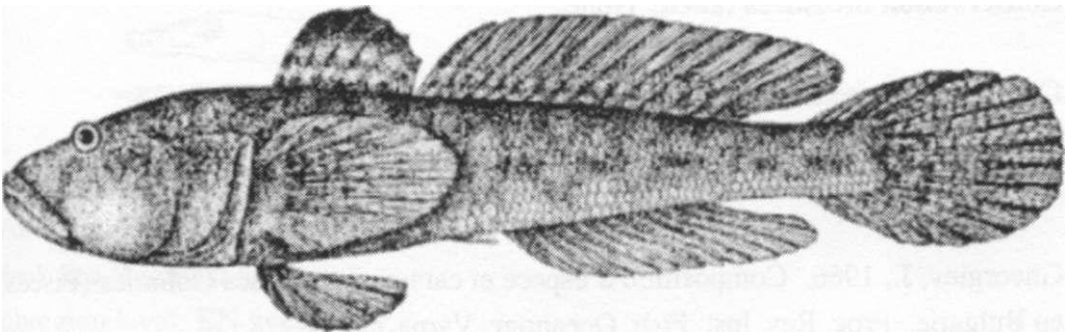
Synonyms: *Gobius syrman* Nordmann, 1840; *Gobius trautwetteri* Kessler, 1859

**Common names:** Engl: *Syrman goby*; Bulg: *Sirman*; Russ: *Shirman*; Turk: *Kaya baligi*; Ukr: *Shirman*

**Order** PERCIFORMES

Family GOBITDAE

**Taxonomic description.** D VI, 115-19; A 112-15; P 18-21. Scales in lateral series 59-67. Vertebrae 33-36. Head depth 1.1-1.2 of width. Eye diameter 0.16-0.26 of head length. Upper lip thin and long. Angle of jaws below anterior part of pupil. Pelvic disc 0.19-0.24 SL. Anterior membrane with shallow, rounded, lateral lobes. Caudal peduncle depth about half its own length. Suborbital papillae with eight transverse rows. Colour: body grey to grey-brown with large brown spots in staggered rows. Size up to 22 cm (Gheorgiev, 1966).



**IUCN Status**

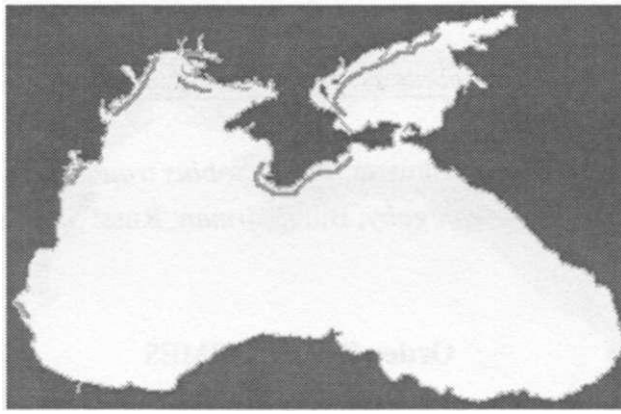
World level:

Black Sea Regional level:

Subregion level: **CR** (Bulgarian Coast)

**Distribution.** Estuaries of Black Sea, Sea of Azov and Caspian Sea (Miller, 1986). In Bulgaria in Lakes Burgas and Mandra.

**Habitat type, Critical habitats, Limiting factors.** Lives inshore, on stony gravels, sand, muddy sand or mud; in slightly brackish, rarely in freshwater; Lakes Mandra and Burgas.



**Biology.** Reproduction from March to end of April. Eggs below and between stones. Sexually mature after one or two years. Food: crustaceans, small fish, bivalves, polychaetes.

**Population trends.** Declining rapidly.

**Threats.** Chemical contamination.

**Conservation measures taken.** None.

**Conservation measures proposed.** Decrease pollution.

## **References**

Gheorgiev, J., 1966. Composition d'espèce et caractéristique des Gobiides (Pisces) en Bulgarie. Proc. Res. Inst. Fish. Oceanogr. Varna 7: 159-228.

Miller, P., 1986. Fishes of the North-eastern Atlantic and the Mediterranean 3: 1065.

*Compiled by Y. Sivkov & K. Prodanov*

*Nerophis ophidion* (Linnaeus, 1758)

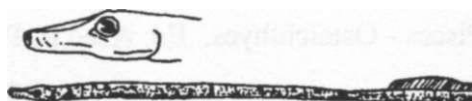
Synonyms: *Syngnathus ophidion* Linnaeus, 1758; *Scyphius littoralis* Risso, 1826; *Scyphius teres* Rathke, 1837; *Nerophys ophidion* Slastenenko, 1956; *Nerophis ophidion* Banarascu, 1964.

**Common names:** Engl: *Straight-nosed pipefish*; Rom: *Ata de mare*; Russ: *Morskoye shilo*, *Igla zmeyevidnaya*; Turk: *Deniz ignesi*.

**Order SYNGNATHIFORMES**

**Family SYNGNATHIDAE**

**Taxonomic description.** Body cylindrical, anterior part flattened, thread-like posterior part; no edges; dorsal fin two times longer than head; snout tubular, with superior mouth; body greyish-yellow or greenish-brown; small dots on dorsal fin. During spawning, individuals have the body covered by blue stripes and spots. Size maximum 25 cm.



**R7CN Status**

World level:

Black Sea Regional level:

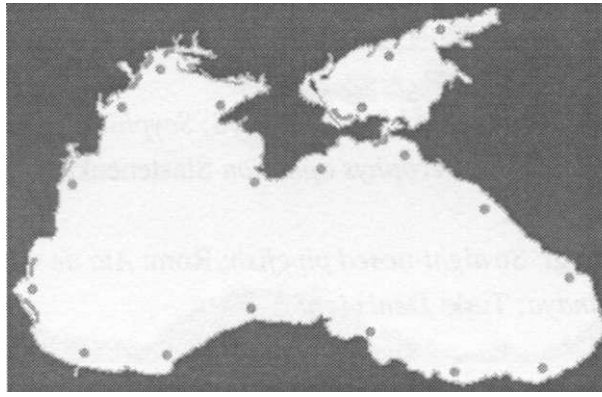
Subregion level: EN

**Distribution, Habitat type, Critical habitats, Limiting factors.** Inhabits the marine coastal zones among algae, in which the species is perfectly camouflaged. Also in brackish waters. Juveniles are pelagic. Common along the western Atlantic coasts, from Norway to North Africa; Mediterranean and Azov Seas. In Romania also in Sinoe lagoon. Threats: pollution of coastal shallow waters, limans and lagoons.

**Biology.** Feeds on crustaceans and vegetal debris; females spawn on the male abdomen during June-July.

**Population trends.** Formerly rather frequent in algal and *Zoster a* fields; currently rare; occurs in catches with stake nets.

**Threats.** Pollution of littoral waters; hypoxia; impoverishment of algal communities and *Zoster a* fields.



**Conservation measures taken.** None.

**Conservation measures proposed.** Reduce eutrophication and pollution by improving the quality of riverine input and reducing pollution from point and non-point sources.

### References

Banarescu, P., 1964. Fauna of RPR. Pisces - Osteichthyes. Ed. Acad.R. P. Romania.

Müller, G. I., V. H. Skolka & N. Bodeanu, 1969. Preliminary data regarding the algal and animal algae associated with *Cystoseira barbata* fields from the Romanian Black Sea littoral. Hidrobiologíá 10: 270-289.

Stojanov, S. *et al.*, 1963. Fishes in the Black Sea. Varna Publ.house: 246 pp.

Rass, T. S., 1987. Present state of Black Sea ichthyofauna composition and its changes. Voprosy Ikhtiologii 27: 179-187 (in Russian).

*Compiled by G. Radu, F. Verioti, K. Prodanov & Y. Sivkov.*

*Numenius arquata* (Linnaeus, 1758)

Synonyms: None.

**Common names:** Engl: *Curlew*; Rom: *Culic mare*; Russ: *Kronshnep bolshoy*; Turk: *Kervan cullugu*; Ukr: *Kronshnep velyky*.

**Order** CHARADRIIFORMES

**Family** SCOLOPACIDAE

**Taxonomic description.** Resident population size not more than eight pairs. During migration, local concentrations of up to 70 specimens may occur.

**IUCN Status**

World level:

Black Sea Regional level: EN

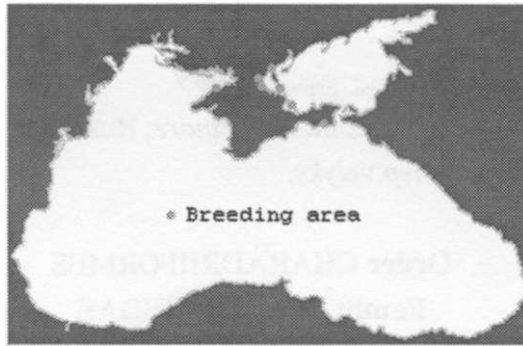
Subregion level: EN

**Distribution, Habitat type, Critical habitats, Limiting factors.** Lowland estuaries, brackish lake shores, and marine sandy beaches are the main breeding habitats. The nest has been found on fallow land. Concentrates in coastal and shallow areas during migration.

**Biology.** A breeding, migratory, summer vagrant and overwintering species. Arrives from the beginning of March to mid April. Small groups and single birds occur in May-June. Breeding ecology insufficiently studied. A well incubated clutch was found on 25 April. Adult birds with a brood were recorded on 27 May. Autumn migration from August to early November. The most intensive movements usually in October. Single birds and small groups spend winter in the area. Their diet is animal (terrestrial insects and their larvae, worms, polychaetes, molluscs and tadpoles).

**Population trends.** In recent years, the species has developed an ability to occupy new habitats, such as the agrocoenosis.

**Threats.** Human disturbance, hunting, grazing in breeding sites.



**Conservation measures taken.** Curlews are protected in the Chernomorski Biosphere Reservoir and in "Lebiazhi Ostrova" Reservoir.

**Conservation measures proposed.** Creation of a reservoir network in the stop-over sites.

## References

Andryushchenko Y., A. Grinchenko & S. Winter, 1990. About the Demoiselle Crane, Great Bustard, Little Bustard and Curlew breeding numbers in the Kerch peninsula. Proc. All-Union scientific and methodological conference of zoologists from the Teachers' Training Colleges. Makhachkala 2: 5-7 (in Russian).

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*Compiled by V. Kinda.*

*Numenius phaeopus* Linnaeus, 1758

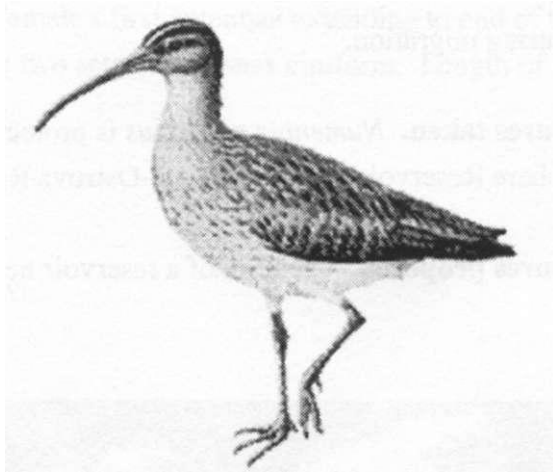
Synonyms: *Numenius phaeopus alboaxilaris* Lowe, 1921

**Common names:** Engl: *Whimbrel*; Rom: *Culic mic*; Russ: *Kronshnep sredniy*; Turk: *Yagmur kervan cullugu*; Ukr: *Kronshnep seredniy*

**Order** CHARADRIIFORMES

**Family** SCOLOPACIDAE

**Taxonomic description**



**IUCN Status**

World level: **EN**

Black Sea Regional level: **EN**

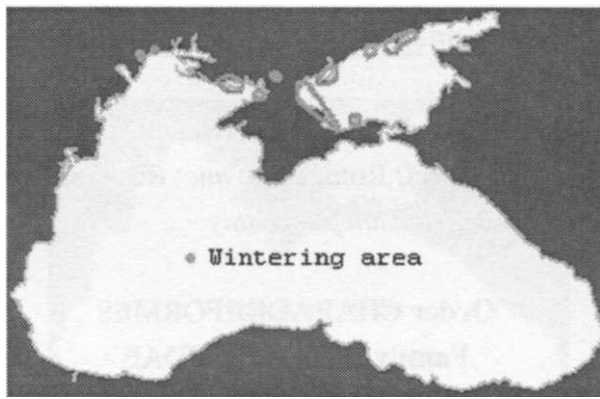
Subregion level: **EN**

**Distribution.** Numbers low throughout the area. About 200-300 birds migrate through the region.

**Habitat type, Critical habitats, Limiting factors.** Inhabits coastal shallow bays and inland waterbodies.

**Biology.** A migratory species, with breeding grounds far away from the region. Spring migration takes place in March-April; some birds stay till the last third of May. Autumn migration starts early: the first birds arrive in late July. The latest records are 29.X - 1.XI. *Numenius phaeopus* forages on aquatic and terrestrial invertebrates (beetles, copepods, insects and their larvae).





**Population trends.** Unknown.

**Threats.** Hunting during migration.

**Conservation measures taken.** *Numenius phaeopus* is protected in the Chernomorski Biosphere Reservoir and in Lebiazhi-Ostrova Reservoir.

**Conservation measures proposed.** Creation of a reservoir network along the stop-over sites.

## References

Ardamatzkaia, T. B., A. Rudenko & G. Birds, 1996. Invertebrates of the 'Chernomorski' State Biosphere reserve /annotated lists of the species. Vestnik Zool. Kiev 1: 19-32 (in Russian).

Chervona Knyga Ukrayiny (Red Data Book of Ukraine), 1994. Kijiv, Ukrajinska Encyclopediya Publ.: 352 pp. (in Ukrainian).

Kostin, Y.V., 1983. Birds of the Crimea, 241 pp (in Russian).

*Compiled by V. Kinda*

*Oithona minuta* (Kriczagin, 1873)

**Synonym:** *Oithona nana* Giesbr., 1892.

**Common names:** None.

Order CYCLOPOIDA

Family OITHONIDAE

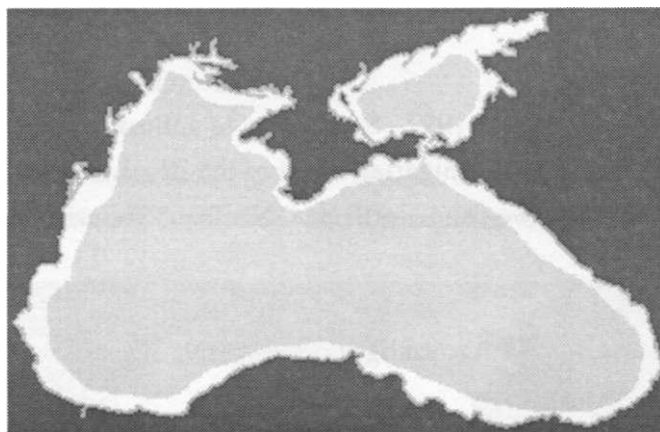
Taxonomic description. Céphalothorax with enlarged middle part. In the Zonguldak and Akçakoça areas, rostrum absent in both sexes. Anal segment shorter than preceding one. Female's first antennae extending to end of third thorax segment. Fifth pair of legs bears two setae. Egg sacs ciniform. Length of female 0.5-0.7 mm, of male 0.4-0.6 mm.

**IUCN Status**

World level:

Black Sea Regional level:

Subregion level: **EN**



**Distribution, Habitat type, Critical habitats, Limiting factors.** An euryhaline species which mainly inhabits the surface of the Black Sea. The high degree of eutrophication and feeding competition with larval *Mnemiopsis leidyi* in the last ten years was an important limiting factor. Another factor is that adult *M. leidyi* feed on *O. minuta*. The elimination of *O. minuta* is mostly due to the fact that its eggs are carried in egg-sacks. Together with the mother these fall prey to the ctenophore and are effectively eliminated.

**Biology.** Mainly in the upper water layers. Performs diurnal migrations with a wide vertical range. Observed during the whole year. Feeds on tiny phytoplankton,

bacteria and Infusoria. The female lays its eggs in two sacks located on the sides of the genital segment.

**Population trends.** Until 1984, *O. minuta* was common in the mesoplankton in front of the Bulgarian coast. After the appearance of the ctenophore *M. leidy* in 1986-1991 *O. minuta* rapidly fell, to become almost extinct in 1991- 1994. In 1995 it reappeared in the mesoplankton, but in modest numbers (134-152 ind.m<sup>-3</sup>) compared with 7,000 - 8,000 ind.m<sup>-3</sup> in 1970-1984.

**Threats.** Increased eutrophication and *M. leidy* predation and competition.

**Conservation measures taken.** None.

**Conservation measures proposed.** A reduction in eutrophication, which may lead to a drop in *M. leidy* numbers.

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Opredelitel fauni Chernogo I Azovskogo morej, 1969. Kiev, Naukova Dumka 2:49-50.

*Compiled by A. Consulov.*

*Ophelia bicornis* (Savigny, 1820)

**Synonyms:** None.

**Common names:** None.

**Order** DRILOMORPHA.

**Family** OPHELIIDAE.

**Taxonomic description.** Prostomium small, conical. Anterior part of body expanded. Abdomen with a ventral groove, beginning on tenth segment; composed of 32 segments. Tenth anterior and seventh posterior segment without branchiae. Last segments with long setae. Two big anal papillae and 10-15 of smaller size. :Length: 30-45 mm.



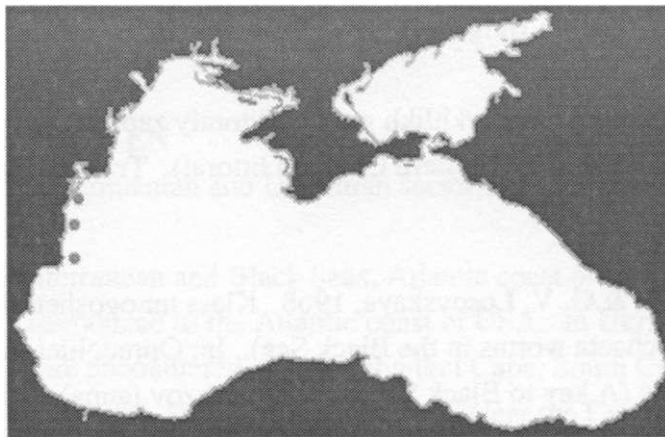
**IUCN Status**

World level:

Black Sea Regional level: **EN**

Subregion level: **EN** (Ukrainian sector)

**Distribution.** Sandy bottom shallow water areas. A boreal form, inhabiting the Black Sea, English Channel, North Sea, and Chesapeake Bay.



**Habitat type, Critical habitats, Limiting factors.** In the sandy bottom medio-littoral. Limiting factors are the pollution of the sand at the sea's edge, man-made changes in the granulometric composition of the sand, and trampling.

**Biology.** A typical contourobiont inhabiting almost exclusively the sandy bottom mediolittoral (pseudolittoral). Its preferred habitat is coarse sand, free of mud. It burrows headfirst into the sand and forms a channel for respiratory currents.

**Population trends.** A sharp decline in numbers since the 1980s. A reduction of 70-80% over the last 10 years.

**Threats.** Pollution of the mediolittoral stripe, changes in the granulometric composition of the sand, silting and trampling in recreational areas.

**Conservation measures taken.** None so far.

**Conservation measures proposed.** Include species in Black Sea Red Data Book.

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Vinogradov, K. A. & G. V. Losovskaya, 1968. Klass mnogoshetinkovye chervi - Polychaeta (Polychaeta worms in the Black Sea). In: *Opredelitel fauny Chemogo i Azovskogo morey (A key to Black Sea and Sea of Azov fauna)*. Kiev, Naukova Dumka 1: 251-359 (in Russian).

*Compiled by C. Dumitrache & Y. P. Zaitsev.*

*Ostrea edulis* (Linnaeus, 1758)

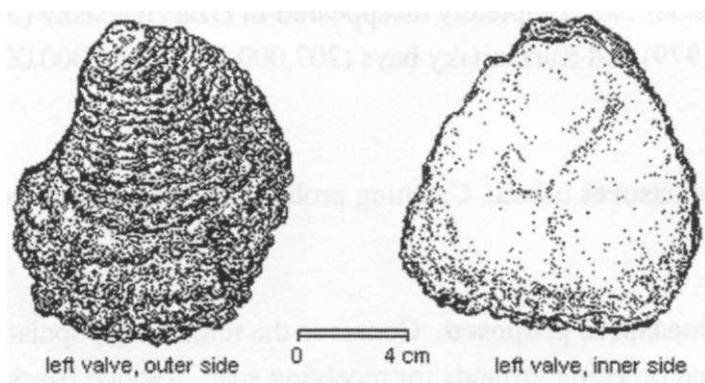
Synonyms: *Ostrea taurica* Krynicki, 1837; *Ostrea adriatica* Lam.-Middendorff, 1848.

**Common names:** Engl: *European flat oyster*, Bulg: *Stridia*; Rom: *Stridie*; Russ: *Ustritsa*; Turk: *Istiride*.

**Order** CYRTODONTIDA

**Family** OSTREIDAE

**Taxonomic description.** Shell moderately light, irregularly ovate, without a distinct hooked beak; patterned with delicate foliations and yellowish-brown in colour. Outline of both valves identical; left valve fixed to the substrate, slightly cupped, with corrugated borders; right valve flat and marked with inconspicuous, radiating folds. Shell consists of a series of chalky layers which may include laminar, hollow chambers. Size: maximum length 80 mm; width 26 mm.



**IUCN Status**

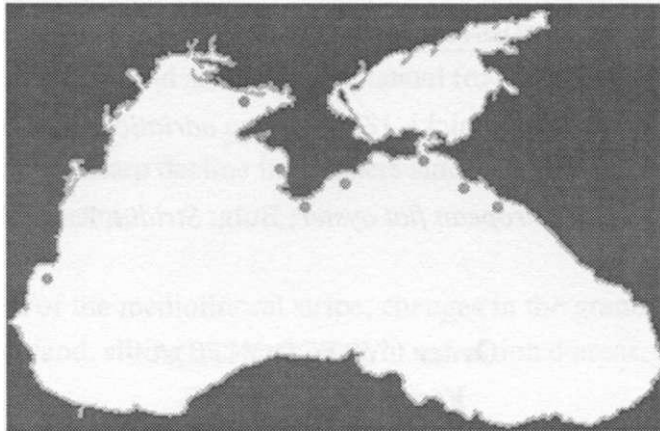
World level:

Black Sea Regional level: EN

Subregion level: EN (Romanian and Ukrainian sector), VU (Romanian sector)

**Distribution.** Mediterranean and Black Seas, Atlantic coast of Europe up to the Norwegian coast. Introduced to the Atlantic coast of USA. In Ukraine, the largest remaining colonies are encountered near Tarkhankut Cape, South Crimean coast (Laspi Bay, near Sevastopol, Sudak and Kara-Dag). Near the Caucasian shores, found at Utrish Cape.

**Habitat type, Critical habitats, Limiting factors.** Limited by oxygen deficiency, siltation of habitats, rising turbidity and pollution. Scavenged by *Rapana thomasiana*. Uncontrolled catches are frequent.



**Biology.** A sedentary sestonophage. The left shell attaches to the substrate. Feeds on detritus, phyto- and bacterioplankton. Fertilization in mantle cavity. Fertility 800,000 - 900,000 eggs. The planktonic larvae develop in 8-14 days.

**Population trends.** A commercial resource till the 1970s. Towards the end of the 1970s, the range started shrinking and the abundance of oysters drastically declined. By 1985 the species had completely disappeared in Dzarylgachsky (52,000,000 individuals in 1979) and Karkinitsky bays (207,000,000-1,766,000,000 individuals in 1979).

**Conservation measures taken.** Catching prohibited. Included in the Red Data Book of Ukraine.

**Conservation measures proposed.** Conserve the remaining populations. Organize marine farms and breeding grounds for receiving spat. Reduce Black Sea pollution.

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*Compiled by M.-T. Gomoiu, A. Petranu, E. Kolodkovskaya, V. Gubanov.*



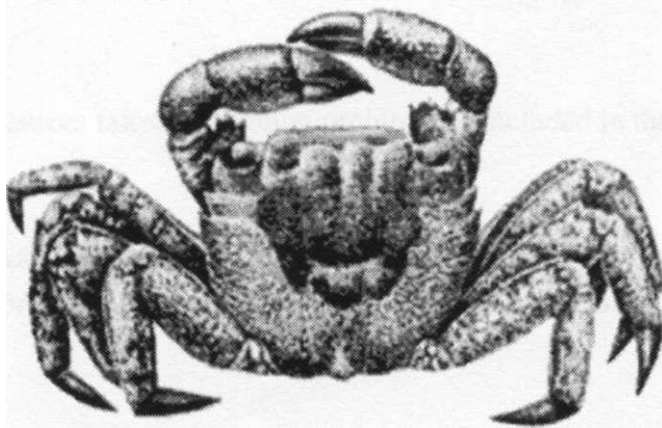
**Synonyms:** *Cancer marmoratus* Fabr. 1788; *Grapsus varius* Latreillei 1867; *Grapsus marmoratus* Grube 1861; *Pachygrapsus marmoratus* Czerniavsky 1884, Casper 1951

**Common names:** Bulg: *Mramorniat rak*; Rom: *Crabul de piatra*; Russ: *Mramorny krab*; Turk: *Marmara pavuryasi*; Ukr: *Marmurovy krab*

**Order** DECAPODA

**Family** GRAPSIDAE

**Taxonomic description.** A large-sized crab. Side of front makes a straight angle with inner-orbital side. Front straight. Two epigastric lobes. Carapace with transversal thin vein. Merus of third maxilliped with intero-superior tooth. Chelipeds short and thick. Pereiopods II-V longer than chelipeds; the fourth the longest; articles flattened. Dactylus short, flattened; superior and inferior side with spine and terminal claw. Female with large abdomen, almost circular; triangular in male. Male with pleopods I strong; pleopod II reduced. Size: length 38 mm; width 43 mm. Colour chesnut-reddish above; chela and dactylus dark-brown; inferior part of paws ivory.



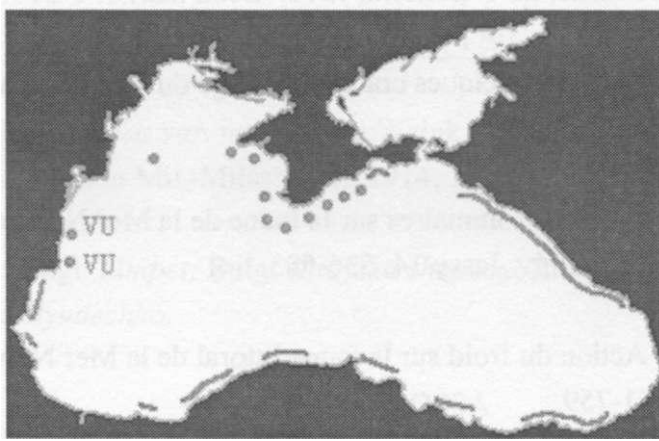
#### **IUCN Status**

World level:

Black Sea Regional level:

Subregion level: **VU**

**Distribution, Habitat type, Critical habitats, Limiting factors.** In the rocky midlittoral zone among boulders near the coast; at night in the supralittoral zone. Common in the Mediterranean Sea and Atlantic Ocean (coasts of France and Morocco). During high floods of the Danube, this species retreats to deep bottoms. Sensitive to pollution with toxic chemicals or inflow of fresh water, particularly near the coast.



**Biology.** Highly prolific; main period of reproduction in the middle of summer (July, August), when water temperature reaches 17 °C. Incubation lasts 25 days; life span three years (rarely four). Female spawns in the second year of life; adapted for aerial respiration; maladapted to a medium with chloride level under 10 or over 30 per mil.

**Population trends.** Abundant in 1960-1970s when hundreds of individuals were found on the rocky shores on the southern littoral (Eforie-Mangalia zones). After 1980 it became rare; in recent years young individuals have been found in small numbers on the southern rocky zones of the Romanian littoral.

**Threats.** Coastal pollution, coastal hydrotechnical constructions, hard frost in winter; excess inflow of fresh water.

**Conservation measures proposed.** Reduce microbial pollution.

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*Compiled by C. Dumitrache*

*Patella tarentina* (Salis., 1793)

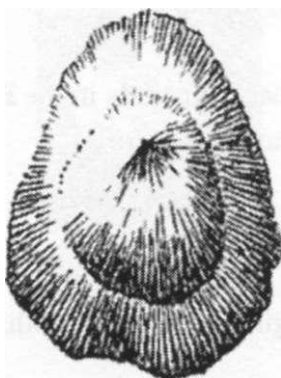
**Synonyms:** *Patella caerulea* var. *tenuistriata* Weink.-Ostroumoff, 1893; *P.caerulea* L.-Kobelt, 1898; *P.pontica* Mil.-Milashevich 1914, 1916; *P.caeruleapontica* Mil.-Ilina, 1966).

**Common names:** Engl: *Limpet*; Bulg: *Kitayska shapitsa*; Russ: *Blyudechko*; Turk: *Cin sapkasi*; Ukr: *Blyudechko*.

**Order** DOCOGLOSSA

**Family** PATELLIDAE

**Taxonomic description.** A sea snail with a shell resembling a Chinese cap, hence its Bulgarian name. Shape of the shell almost circular, with the upper part slightly shifted to the front end, which is noticeably narrower than the back end. Shell sculptured with dense radial ribs, unequally high and dense and with thin concentric growth circles. Edge of shell finely indented. Colour yellow-white with red-brown rays. Length of shell up to 45 mm, breadth up to 30 mm, height up to 14 mm.



**IUCN Status**

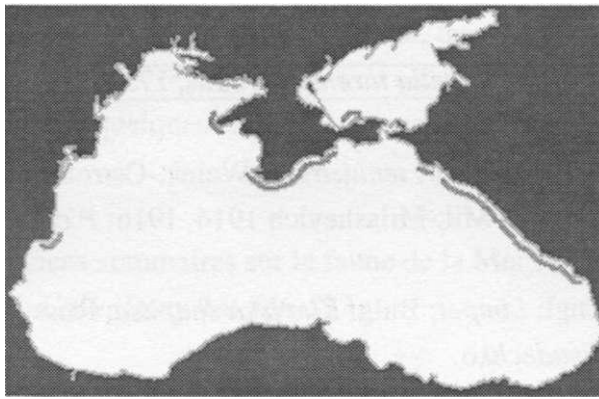
World level:

Black Sea Regional level: **EN**

Subregion level: **EN** (Ukrainian sector)

**Distribution.** Black Sea, Sea of Azov, Mediterranean Sea.

**Habitat type. Critical habitats. Limiting factors.** A typical contourobiont, inhabiting the rocky coast mediolittoral zone, except low salinity waters and areas covered with ice in winter, even if only for a few hours. The main limiting factor is the pollution of coastal waters, especially by toxic surfactants, including oil.



**Biology.** A vegetarian, browsing on algae on rocky surfaces. Their pelagic larvae are trochophores. In some places, these limpets are eaten, after a light boiling in sea water.

**Population trends.** Visibly declining in numbers since the early 1980s. A reduction of at least 70% over the last 10 years.

**Threats.** Pollution of coastal waters by toxic surfactants.

**Conservation measures taken.** None.

**Conservation measures proposed.** Include in the Black Sea Red Data Book. Reduce pollution of the Black Sea coastal zone.

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*Opredelitel fauni Chernogo I Azovskogo morei*. 1969. Kiev 3: 77-78.

*Compiled by T. Konsulova & Y. Zaitsev.*

**Synonyms:** None

**Common names:** Bulg: *Cadroglav pelican*; Engl: *Dalmatian pelican*; Rom: *Pelican chet*; Russ: *Kudryavy pelikan*; Turk: *Tepeli pelikani*; Ukr: *Kucheryavy pelikan*

**Order** PELECAND70RMES

**Family** PELECANIDAE

**Taxonomic description.** WB - occurs in the Danube Delta and on the surrounding lakes during migration and in summer. The first breeding attempt was recorded in 1985 in the Kugurlui lake (three pairs). NB - a rare vagrant to the "Chemomorski" reserve. CB - single birds and small groups are recorded throughout the year, but not annually. NA - vagrants were recorded near the town of Berdiansk. BS - Romania, Bulgaria.



#### **IUCN Status**

World level: VU

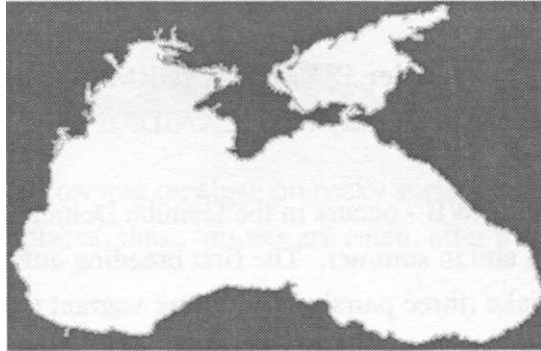
Black Sea Regional level: VU

Subregion level: VU (Ukraine sector)

**Distribution, Habitat type, Critical habitats, Limiting factors.** Prefers large waterbodies with old reed-beds and plenty of fish, but also occurs in bays and islets with little vegetation. Breeding habitats include hardly accessible lakes in estuarine areas. Sensitive to eutrophication, changes in salinity, drops in fish productivity, wetland transformation and similar disturbances.

**Biology.** Only few pairs breed in Ukraine on Kugurlui lake in the Odessa region. Winter grounds are located in the Danube delta area, but the flocks appearing there at the end of March are much smaller. Breeds in small colonies. Both birds take part in the building of a nest made of reeds and lined with grass and moss. The most

frequent are floating nests near open water. The clutch, varying from 1 to 6, usually consists of 2-4 eggs, and is incubated by the female for 33-40 days. Dalmatian pelicans are often accompanied by White pelicans. Both species can fish at various depths. By September their number decreases and almost all leave the area by the end of the month. Winter grounds are situated in Iraq, Iran, Pakistan and NW India.



**Population trends.** In the past, the breeding range of the Dalmatian pelican included the entire coast of southern Europe. By the end of the 19th century it had disappeared from the low reaches of all Black Sea rivers. A sharp decrease was recorded by the beginning of the 20th century. The current population size in the Danube delta is small, but stable. In other sub-regions of the Black Sea coast, it remains a vagrant.

**Threats.** Eutrophication, changes in salinity, decreasing fish numbers.

**Conservation measures taken.** Protected in the "Dunaiskie Plavni" reserve.

**Conservation measures proposed.** Strengthen protection in the reserve and create a pelican sanctuary on Kugurlui lake (the only breeding site of the Dalmatian Pelican in Ukraine).

## References

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Kostin, Y. V., 1983. Birds of the Crimea, 241 pp. (in Russian).

*Compiled by T. Ardamatzkaia*

*Pelecanus onocrotalus* (Linnaeus, 1758)

**Synonyms:** None.

**Common names:** Bulg: *Rosov pelican*; Engl: *White pelican*;  
Rom: *Pelican comun*; Russ: *Pelikan rozoviy*; Turk: *Akpelikan*;  
Ukr: *Pelikan rozhevy*.

**Order** PELECANIFORMES

**Family** PELECANIDAE

**Taxonomic description.** DU - common, numerous at some locations in Danube Delta. In summer and autumn their number may reach 7,000, in especially suitable places up to 1,500 or even 2,000. NB - since 1990 migrants pass over Tendra bay in flocks of more than 500, but despite this increase, a local depression is apparent.



**IUCN Status**

World level:

Black Sea Regional level:

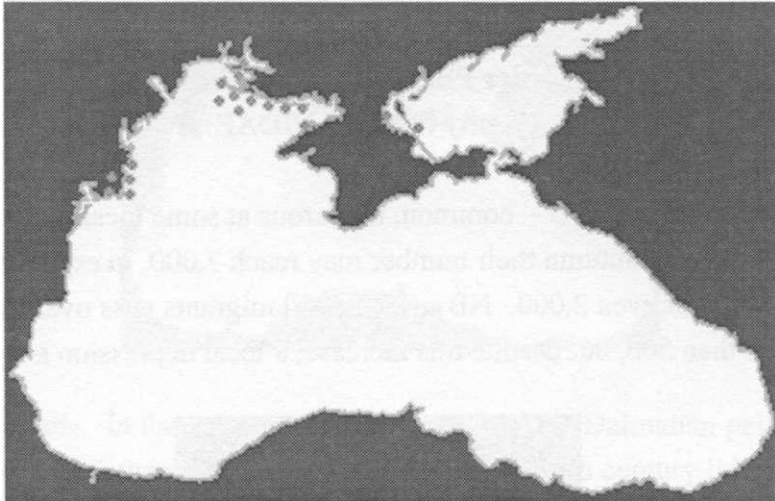
Subregion level: VU (Ukraine sector)

**Distribution, Habitat type, Critical habitats, Limiting factors.** Occurs primarily in downstream shallow riverine areas (Danube Delta) and shallow bays. Habitat loss due to breeding site transformation, disturbance, eutrophication.

**Biology.** A resident species in the Black Sea Region. Since 1995 the White pelican has bred in small numbers in Tendra bay. Winter quarters are in Bulgaria, Turkey, Iran, Iraq and Egypt. Fledglings occur from August onwards. Sometimes associated with the Dalmatian pelican and Cormorant. The nests are made of reeds and other water plants and located either afloat near open water or on the shore. The clutch, two, rarely one or three eggs, is incubated mostly by the female for 30-39 days. No second nesting. During migration and summer movements White pelicans occur in



the Azov-Black Sea area (lakes of the Kinburski peninsula, Tendrovski, Jagorlytski and Dzharalgachski bays) from April to the first third of October. Infrequent visitor to the NW Crimean coast. White pelicans will populate all areas with sufficient fish. An adult requires 1 kg of fish daily. A family consumes c. 700 kg during their eight months stay in the breeding area.



**Population trends.** The number of White pelicans began to grow in the 1980s. The first breeding attempts were in 1995, on Orlov Island. Their numbers are relatively stable in the Danube delta. An abundant Crimean migrant in the 19th century: currently the species has significantly declined here.

**Threats.** Habitat loss due to intensive breeding site transformation, disturbance, eutrophication of waterbodies.

**Conservation measures taken.** Protected in the "Dunaiskie Plavni" and "Chernomorski" reserves.

**Conservation measures proposed.** Prohibition of fishing in the waters of the "Dunaiskie Plavni" reserve, strengthen protection propaganda.

## References

Ardamatzkaia, T. B. & S. M. Semionov, 1977. Ecological and faunistic review of the birds in the "Chernomorski" reserve. Vestnik Zool. 2: 18-43 (in Russian).

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*Compiled by T. Ardamatzkaia.*

*Phalacrocorax aristotelis* Linnaeus, 1761

**Synonyms:** *Phalacrocorax albus* Tray

**Common names:** Bulg: *Sreden cormaran*; Engl: *Shag*; Rom: *Cormaran motat*; Russ: *Khokhlaty baklan*; Turk: *Tepeli karabatak*; Ukr: *Baklan dovgonosy*

**Order** PELECANIFORMES

**Family** PHALACROCORACIDAE

**Taxonomic description.** Around 650-750 pairs.



**IUCN Status**

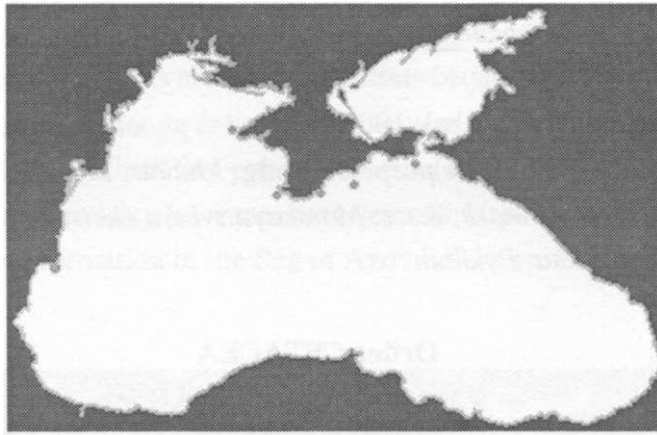
World level: **EN**

Black Sea Regional level: **EN**

Subregion level: **EN**

**Distribution, Habitat type, Critical habitats, Limiting factors.** Breeds in niches and small cavities on the high cliffs of the Crimean coast. Monospecific colonies are common, but sometimes they mix with Yellow-legged gulls and Rock doves. The two kilometers of water adjacent to the Black Sea coast are its principal feeding habitat. Small fish comprise its basic diet; copepods are also consumed. The major limiting factors are disturbance of the breeding sites, and pollution by oil products and by solid domestic waste.

**Biology.** A breeding and resident species. Arrival in the colony area depends on the weather and is from late February to early April. Breeding density and altitude (3-15 m) vary. Clutch size 2-3, infrequently four eggs. Egg-laying extends for up to two months. After leaving the nest, birds remain in the surroundings of the colony. Second year birds, in some areas 30-50 % of the total, keep close to the colonies too. The best assimilated feeding habitat is the 200 meter strip of sea along the shore-line. Gobies (Gobiidae) and scads (Carangidae) predominate in the diet.



**Population trends.** The population declines, as well as the number of colonies. Only three out of 15 known colonies reach 35-40 pairs. The entire estimate is 8,020 pairs. Their major stronghold is the Tarkhankut peninsula, with 1,200 pairs in 1962. In 1973 this number was halved. A recent survey shows a further decline to 400-450 pairs. The numbers of Shag are critical since the largest colonies are within the zone of considerable human influence, whereas smaller ones cannot guarantee the necessary reserve.

**Threats.** Growing human disturbance at the breeding sites, water pollution by oil products and solid waste disposal, decrease of the habitat feeding capacity, predation.

**Conservation measures taken.** One of the three main colonies is situated in a reserve.

**Conservation measures proposed.** Obligatory protection of all breeding colonies.

## References

Chervona Knyga Ukrayiny, 1994. (Red Data Book of Ukraine). Kijiv, Ukrajinska Encyclopediya Publ.: 306 pp. (in Ukrainian).

Kostin, Y. V., 1983. Birds of the Crimea: 241 pp. (in Russian).

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*Compiled by V. Siokhin*

*Phocoena phocoena* Linnaeus, 1758

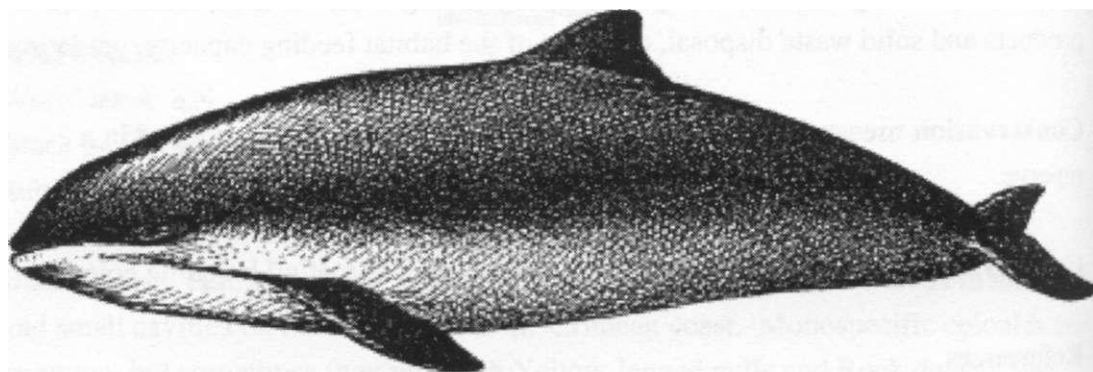
**Synonyms:** *Phocoena relicta* Abel, 1905; *Phocoena phocoena relicta* Abel, 1905

**Common names:** Engl: *Harbour porpoise*; Bulg: *Mutkur, Morska svinya*; Rom: *Marsuin, Focena, Pore de mare*; Russ: *Morskaya svinya chernomorskaya, Azovka*; Turk: *Mutur*; Ukr: *Azovka, Pykhtun*

**Order CETACEA**

**Family PHOCOENIDAE**

**Taxonomic description.** The single representative of this genus and family in the Black Sea fauna. In Bulgaria, Georgia, the Russian Federation and Ukraine the Harbour porpoise is known as a relict sub-species, *P. phocoena relicta*. However, to date there are no comparative genetic and/or morphometric data, which reliably support its distinctive status. Moreover, most zoologists of the former USSR do not accept the existence of the family Phocoenidae, and continue to list *P. phocoena* among the Delphinidae. External distinctions: blunt, short-beaked head; slightly falcate, wide-based, short dorsal fin; small, spatulate, blunt teeth.



**IUCN Status**

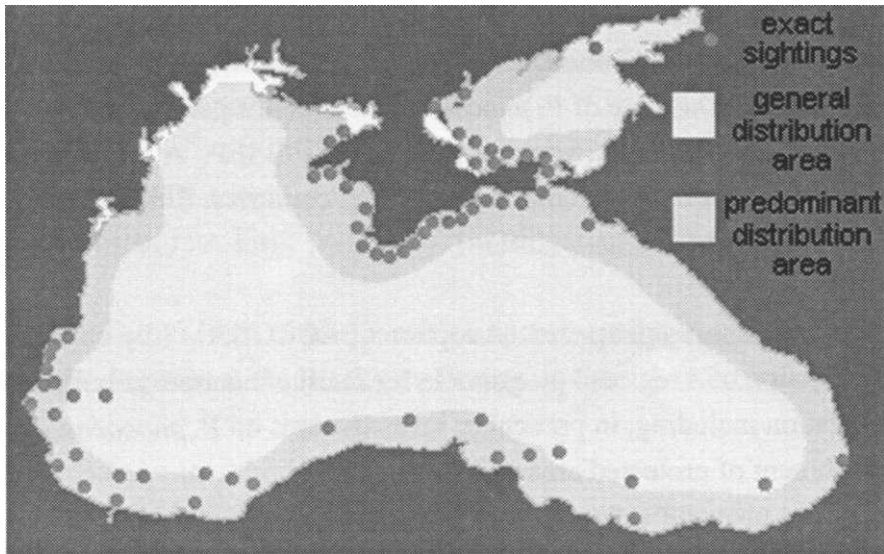
World level: **DD**

Black Sea Regional level: **DD**

Subregion level: **EN** in Ukraine and Romania, **VU** in Bulgaria

**Distribution, Habitat type, Critical habitats, Limiting factors.** Coastal, relatively shallow waters along the perimeter of the Black Sea constitute the typical range of the Harbour porpoise. Animals do not avoid waters with low salinity and transparency; sometimes they invade semi-fresh bays, lagoons, estuaries. In the Danube and Don they occur far from the sea. Every spring significant numbers move through the Kerch Strait to the Sea of Azov and return by winter. A migration through the Bosphorus to the Sea of Marmara and back is possible. Perhaps, both small seas are

important breeding, calving and feeding areas for the Black Sea population, isolated from the nearest one in the North-East Atlantic. On the other hand, the Azov and Marmara Seas and their straits are critical habitats because of heavy boat traffic, extensive fisheries and water pollution there. Severe, but infrequent natural phenomena limiting the Black Sea population are: (a) mass mortality due to lung worm infection (nematodes, *Halocercus taurica* and *H. ponticus*); and (b) kills as a result of sudden ice formation in the Sea of Azov before animals can migrate back to the Black Sea.



**Biology.** A relatively short-lived marine mammal with a high individual fecundity relative to other Black Sea cetaceans. Both males and females attain sexual maturity after 3-4 years. Mating mainly in summer; females become pregnant almost annually, with a gestation period of 9-11 months and usually the birth of one calf between May and early August. After lactation (4-6 months) the young adopt a basic diet of small benthic (various goby species) and mass pelagic (anchovy, atherine) fish. The daily ration of an adult animal is 3-5 kg. The life-span of Black Sea *P. phocoena* is not clear, and is perhaps similar to that of their relatives in the North Atlantic - c. 7-8, maximum 15 years. *P. phocoena* is the smallest cetacean of the Black Sea: its average body length is 1.3 to 1.5 m, maximum 1.8 m; average weight approximates 30 kg. Females are slightly larger than males.

**Population trends.** Between 1930 and 1980, the population was strongly affected by mass commercial killing. Subsequent estimates of abundances made by Soviet and Turkish scientists (1967-1989) were declared unreliable by the TWC Scientific Committee because of a faulty methodology for observation and extrapolation. At present both the animal numbers and population trends are unknown. According to recent sightings off the Bulgarian, Georgian, Romanian, and Ukrainian (Crimea)

coasts, single animals and small groups (2-10 individuals) are common, but herds of dozens or hundreds are rare.

**Threats.** Incidental deaths in fishing gear, predominantly in bottom-set gill nets for turbot, dog-fish and sturgeon; marine traffic, gas and oil exploitation, (e.g. mass mortality after a gas-platform explosion in the Azov Sea in 1982); illegal hunting, water pollution and a decline in food resources.

**Conservation measures taken.** The species is in the national Red Data Books of Bulgaria and Ukraine, and in the JUCN Red Data Book. It is protected by the Berne Convention (Appendix II), Bonn Convention (Appendix II), CITES (Appendix II), and ACCOBAMS. The state of *P. phocoena* is a topic for periodical review by IWC, ICES, and the marine mammal working party of GEF/BSEP. A moratorium on Black Sea cetacean fishing was declared in the ex-USSR countries, Bulgaria and Romania in 1966, and in Turkey in 1983.

**Conservation measures proposed.** Adoption of ACCOBAMS by all Black Sea countries; creation of a regional programme for marine mammal population research and conservation including, in particular, investigations on *P. phocoena* abundance and establishment of protected areas.

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*Compiled by A. Birkun, Jr., M. Moldoveanu, M. Stanciu, T. Stanev & B. Oztiirk*



*Pilumnus hirtellus* Linnaeus, 1758

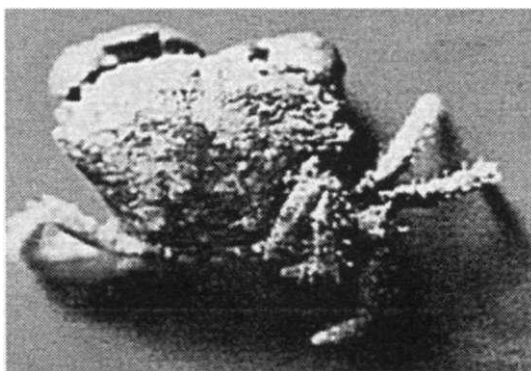
**Synonyms:** *Pilumnus hirtellus* Czerniavsky 1884; *Cancer hirtellus* (L. 1766)

**Common names:** Engl: *Mud crab*; Rom: *Crabulparos*; Russ: *Volosaty krab*; Turk: *Camur yengeci*; Ukr: *Volokhaty krab*

**Order** DECAPODA

**Family** XANTHIDAE

**Taxonomic description.** A small-sized, hairy crab. Antero-lateral side shorter than postero-lateral side. Front with large median split and two lateral, smaller ones, each with a preorbital spine; both lobes well delimited, toothed. Superior margin of the orbit without, the inferior and the two edges with a spine. Antero-lateral edge with four big spines. Chelae unequal; the right one the stronger. Merus short. Carpus hirsute with tubercles and a big interdistal spine. Hairs and spines all over the body and palm. Fingers nude, with tubercles. Pereiopods II-V without spine. The other pereiopods hairy, with long, conical dactylus and terminal craws. Size: length 20 mm; width 28 mm. Colour: carapace and superior side of pereiopods reddish - violet. Fingers of chela brown. Inferior part of pereiopods ivory. Young less than 5 mm in size completely white, especially in winter.



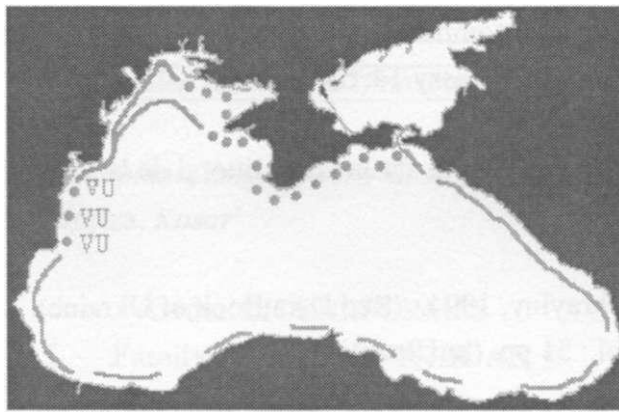
**IUCN Status**

World level:

Black Sea Regional level:

Subregion level: **VU**

**Distribution, Habitat type, Critical habitats, Limiting factors.** In the midlittoral and superior infralittoral, on different substrata; its favourite biotope are stony bottoms with algae and mussels down to a depth of 10m . Throughout the Mediterranean Sea and the eastern Atlantic Ocean from the North Sea to the Cape Verde Islands. Threats: frost, storms and pollution of the coastal zone.



**Biology.** A sedentary species; spawns up to 4,000 eggs; planktonic zoea and megalope; eats carrion and even shells.

**Population trends.** Abundant on the Romanian Black Sea littoral in the past, still frequent up to 1980; a small number of individuals were found on the southern littoral zone in 1980-1993 (in 1993 - 40 ind.m<sup>-2</sup> in the superior infralittoral of Eforie, North - Mangalia zone).

**Threats.** Coastal pollution and hydrotechnical works.

**Conservation measures taken.** Included in the Red Data Book of Ukraine, 1994.

**Conservation measures proposed.** Artificial reef building, to increase biofiltration and reduce turbidity.

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*Compiled by C. Dumitrache*

*Platalea leucorodia* Linnaeus, 1758

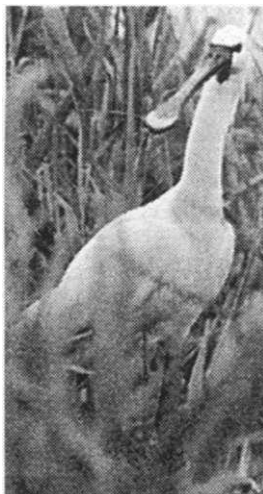
Synonyms: None

**Common names:** Bulg: *Lopatar*, Engl: *Spoonbill*; Rom: *Lopatar*, Russ: *Kolpitzza*;  
Turk: *Kasikci*; Ukr: *Kolpytza*, *Kosaf*

**Order** CICONIIFORMES

Family THESKIORNITHIDAE

**Taxonomic description.** See Kostin, 1983. Around 200-250 pairs in the region.



**RJCN Status**

World level: EN

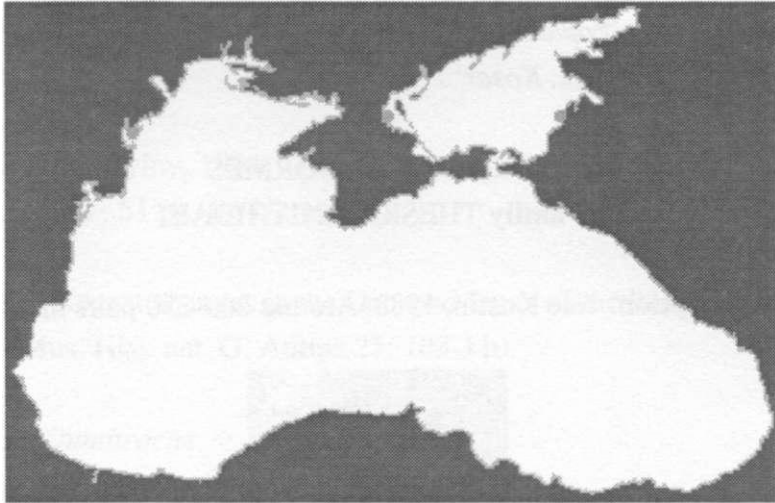
Black Sea Regional level: EN

Subregion level: EN

**Distribution, Habitat type, Critical habitats, Limiting factors.** Breeds in the dense reed-beds of brackish and freshwater bays and marshy downstream riverine areas. Colonies usually well hidden, far from the shore. Feeding grounds within a 100 kilometer zone, visited irregularly. The major ones include open and semi-open shallow waters, irrigation canals and rice-fields. Major limiting factors are water pollution, degrading of reed-beds and the food reserves of the shallow riverine bays and coastal areas.

**Biology.** A breeding and migratory species. Arrives in March, in some years in early April. The beginning of egg-laying depends on weather conditions and varies from 10 April to 15 May. Hatching at the end of May or early June. There are no monospecific colonies in the south of Ukraine, whereas those mixed with other herons are common. Nests are located on broken reeds near small straits or on open water, either in the centre or at the periphery of the colony. Clutch size is 3 (2-5) eggs.

Fledging at the age of 50-55 days. Diet chiefly terrestrial and aquatic insects and their larvae, molluscs, and small fish.



**Population trends.** Numbers fluctuate over the years. The oldest colonies in the Danube Delta are currently in decline, whereas new ones appear in the Sivash area. No colony capable of ensuring a stable population. Total numbers are critically low. Two main colonies account for 90% of the entire population.

**Threats.** Water pollution of the shallow bays with reed-beds and downstream riverine areas, decrease in food resources, direct human disturbance.

**Conservation measures taken.** One colony is located in a reserve.

**Conservation measures proposed.** Strict protection of all breeding colonies.

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*Compiled by V. Siokhin*

*Plegadis falcinellus* Linnaeus, 1766

**Synonyms:** *Tantalus falcinellus* Linnaeus, 1766

**Common names:** Bulg: *Blestyach ibis*; Engl: *Glossy ibis*; Rom: *Tiganus*; Russ: *Karavayk*; Turk: *Celtikci*; Ukr: *Korovayka*

**Order** CICONUFORMES  
**Family** THRESKIORNITHIDAE

**Taxonomic description.** About 1500-2000 pairs occur in the region.



**IUCN Status**

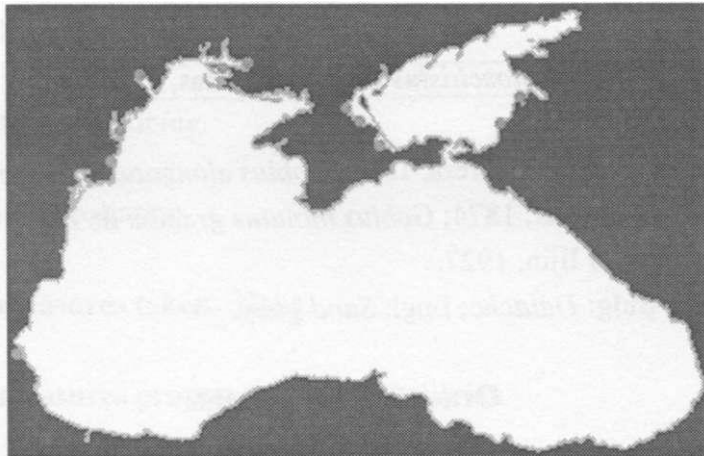
World level: **LR**

Black Sea Regional level: **LR**

Subregion level: **LR**

**Distribution, Habitat type, Critical habitats, Limiting factors.** Selects dense reed-beds in brackish and fresh water-bodies, arboreal or bushy vegetation of flood-plains. Breeding and feeding habitats are alike, but it most frequently forages on fresh or freshened shallow waters and rice fields. Major limiting factors include disturbance of the colonies, water pollution and a decrease in habitat feeding capacity.

**Biology.** Arrival at the end of March - beginning of April. Egg-laying varies annually and topographically within the colony, but most are laid between 20 April and 26 May. Separate sub-colonies of glossy ibis are mixed with colonies of other herons. Nesting density is high. Usually the nests occupy the lowest level (up to 0.4 m over the water). When nesting on bushes and trees, the height may be more variable, but these habitats do not play a key role in the region. Clutch size 2-7, normally 4-5 eggs. After fledging, juveniles move out in various directions. Sometimes birds stay in the breeding area till late September. Departure to winter grounds is in October.



Population trends. No data

Threats. Water pollution of shallow bays degrading the reed-beds, régularisation of downstream riverine areas, human disturbance.

Conservation measures taken. Colonies of *Plegadis falcinellus* are protected in the Danube Delta.

Conservation measures proposed. Obligatory protection of all breeding colonies.

#### References

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*Compiled by V. Siokhin*



*Pomatoschistus minutus* (Pallas, 1770)

**Synonyms:** *Gobius gracilis* Cabrera, 1817; *Gobius elongatus* Canestrini, 1861; *Gobius cobitiformes* Kessler, 1874; *Gobius minutus gracilis* de Buen, 1923; *Pomatoschistus minutus* Iljin, 1927.

**Common names:** Bulg: *Dalache*; Engl: *Sand goby*.

**Order PERCIFORMES**

**Family GOBIDAE**

**Taxonomic description.** D VI, I 8-12; AI 8-12; P 17-21. Scales in lateral series 58-69. Vertebrae 31-34 (Gheorgiev, 1966). Head depth 1.01-1.04 of head width. Eye diameter 0.25-0.29 of head length. Upper lip uniformly wide. Pelvic disc 0.20-0.26 SL. Anterior membrane without lateral lobes. Suborbital papillae with 9-11 transverse rows. Colour grey with numerous fine brownish spots. Males with 4-6 vertical dark bars. Size up to 7 cm.

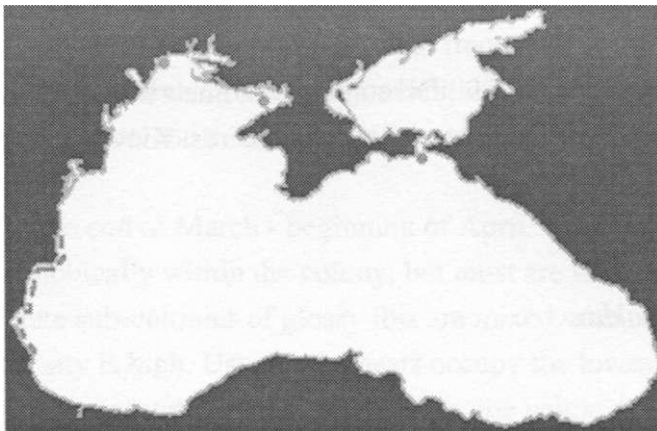
**IUCN Status**

World level:

Black Sea Regional level:

Subregion level: CE (Bulgarian coast)

**Distribution.** East Atlantic, Mediterranean and Black Seas (Miller, 1986). In Bulgaria found along the entire coast.



**Habitat type, Critical habitats, Limiting factors.** Inshore gravel and sand, down to about 20 m; sensitive to chemical substances.

**Biology.** Reproduction: March-July. Eggs under shrills or stones. Sexually mature after one year. Food: polychaetes, amphipods, mysids.

**Population trends.** Declining.

**Threats.** Industrial pollution.

**Conservation measures taken.** None.

**Conservation measures proposed.** Reduce pollution.

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*Compiled by K. Prodanov & Y. Sivkov.*

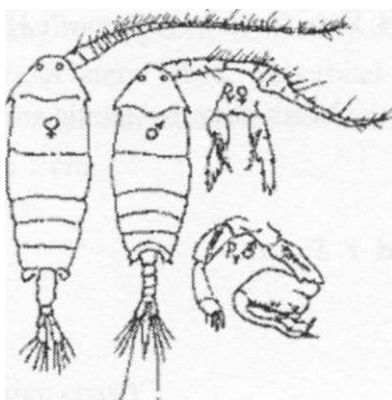
*Ponteila mediterránea* (Claus, 1863)

**Synonyms:** None.

**Common names:** None.

**Order** CALANOIDA  
**Family** PONTELLIDAE

**Taxonomic description.** One of three species of Pontellidae in the Black Sea. The head is triangular with lateral hooks and one pair of dorsal ocular lenses. A large copepod with a blue or blue-green colour. Length of females 2.9-3.0 mm; of males 2.75-2.85 mm.



**IUCN Status**

World level:

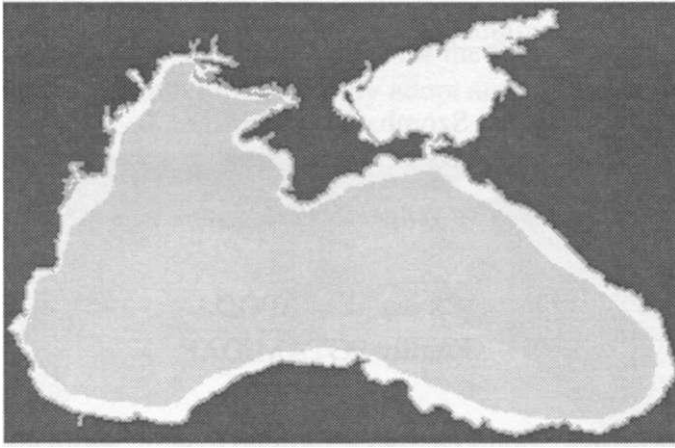
Black Sea Regional level: **EN**

Subregion level: **EN** (Ukrainian sector)

**Distribution.** The whole Black Sea, except low salinity areas and the Sea of Azov. Also in the Mediterranean Sea.

**Habitat type, Critical habitats, Limiting factors.** A neustonic species inhabiting the surface microlayer of the water. Winter (dormant) eggs are laid on the bottom. Limiting factors are the pollution of the water surface by toxic surfactants and a lack of oxygen on the bottom.

**Biology.** Well adapted to the surface layer of water, living in coastal and open sea areas, blue coloured, capable of aerial jumps, carnivorous. A thermophilic Mediterranean-origin species with a mass development in summer. It is especially abundant in convergence zones.



**Population trends.** A sharp decline in numbers since the 1970s, with a reduction of 50-60% over the last 10 years.

**Threats.** Pollution of the surface microlayer and eutrophication causing hypoxia at the bottom.

**Conservation measures taken.** None.

**Conservation measures proposed.** Include in Black Sea Red Data Book. Reduce Black Sea pollution.

## References

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*Compiled by Y. Zaitsev.*

*Potamon tauricum* Czerniavsky, 1884

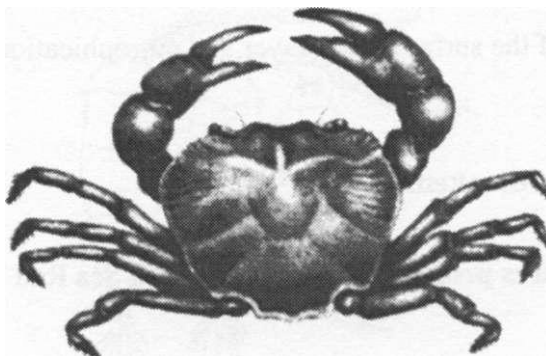
**Synonyms:** *Potamon antiquum* Szombathy, 1916

**Common names:** Engl: *Freshwater crab*; Rom: *Crab de apa dulce*; Russ: *Prsnovodny krab*; Turk: *Tatli su yengeci*; Ukr: *Prsnovodny krab*

**Order** DECAPODA

**Family** POTAMIDAE

**Taxonomic description.** Adult carapax length up to 4cm, width up to 5 cm. Total weight about 50 g. Ambulatory leg digits elongated. Shell olive-brown on its upper part, and from light-brown to red underneath; nippers tinged with purple.



**IUCN Status**

World level: **DD**

Black Sea Regional level: **DD**

Subregion level: **EN** in Ukraine

**Distribution, Habitat type, Critical habitats, Limiting factors.** This crab is an inhabitant of mountain rivers and streams, but it is absent from their headwaters and estuaries. Upstream distribution is limited by low water temperature; downstream, it is obstructed by salinity and pollution. Crabs survive temporary droughts hiding in deep burrows and cavities under stones, and use the underflow of river-beds. Crabs occur in artificial ponds but do not breed in stagnant water. They visit land at night and during rains, and can subsist without water for a long time in humid environments. Known from Crimean, Caucasian, Anatolian and Bulgarian coastal areas.

**Biology.** The animal is euryphagous, feeding on detritus, green filamentous algae, fallen leaves, oligochaetes, amphipods, insect larvae, molluscs, frogs (including tadpoles), fishes and carrion. Crabs will eat any plant or animal material in captivity. Cannibalism is common. Copulation and spawning predominantly from June till

October. Fertility low in comparison with marine crabs: each female contains not more than 200 eggs. Young appear after 1-2 days from the roe on the female's pleopods. They remain under the female pleon for the first 5-7 days, where they feed and grow. At a size of 3.6 mm they gradually adopt an independent mode of life.



**Population trends.** Since the mid 1970s there has been a tendency towards a decline in abundance and range in Ukraine (south coast of the Crimea); some biotopes have disappeared, others are endangered.

**Threats.** Habitat destruction by river-bed régularisation and reservoir building, surface flow withdrawal for water-supply systems, pollution by raw sewage. Sometimes crabs are caught for human consumption or by aquariumists.

**Conservation measures taken.** The species is listed in the Red Data Book of Ukraine.

**Conservation measures proposed.** Compile a complete inventory of all locations; monitor populations; create special reservations.

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Starobogatov, Y. I. & S. V. Vasilenko, 1979. K sistematike presnovodnykh krabov semeystva Potamidae Sredizemnomor'ya i Peredney Azii. (The systematics of the freshwater Potamidae of the Mediterranean and Asia Minor). Zool. Zh. Moscow 58: 1790-1801 (in Russian).

*Compiled by S. Krivokhizhin*

*Proterorhinus marmoratus* (Pallas, 1811)

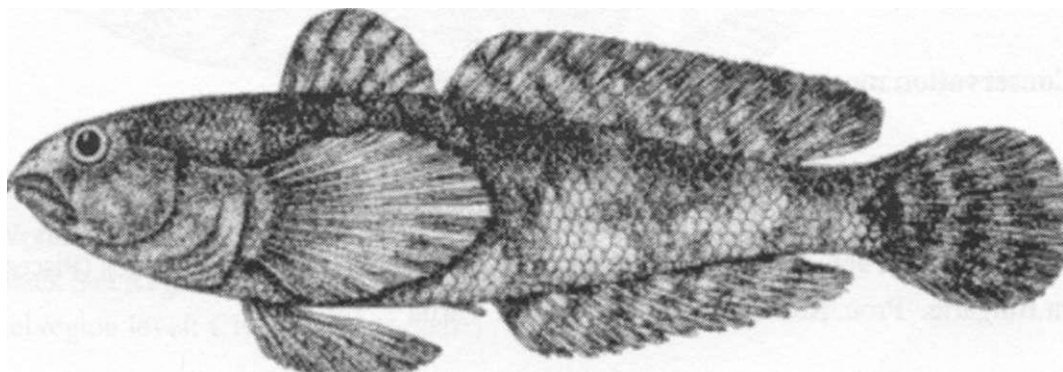
**Synonyms:** *Gobius marmoratus* Palass, 1811; *Gobius quadricapillus* Pallas, 1811; *Gobius semilunaris* Heckel, 1840; *Gobius macropterus* Nordmann, 1840; *Gobius rubromaculatus* Kriesh, 1873.

**Common names:** Engl: *Tubenose goby*; Bulg: *Mramorno popche*; Russ: *Bychok-tsutsik*; Turk: *Kaya baligi*.

**Order PERCIFORMES**

Family GOBHDAE

**Taxonomic description.** D VI, 114-18; A 112-15; P 14-16; squ. 44-16. Vertebrae: 30-33; (Gheorgiev, 1966). Head depth 1.03-1.07 of head width. Eye diameter 0.18-0.23 of head length. Pelvic disc 0.19-0.23 SL. Anterior membrane without conspicuous lateral lobes. Nape scaled, cheek naked. Colour grey-brown, with 5-6 broad, irregular dark bands across the body. Size up to 11cm.



**IUCN Status**

World level:

Black Sea Regional level:

Subregion level: **EN** (Bulgarian Coast)

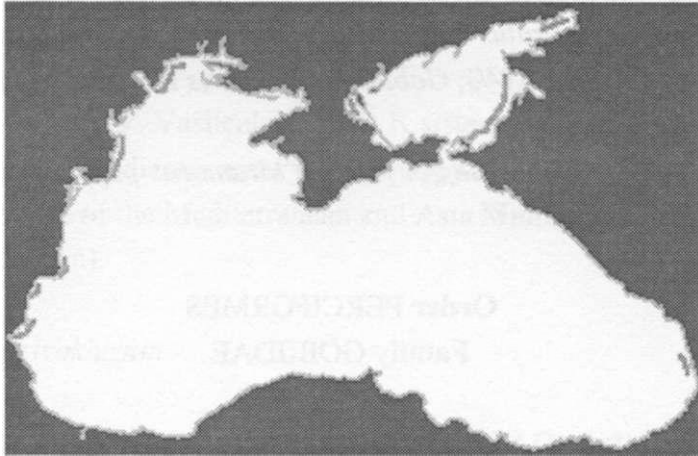
**Distribution.** Rivers and estuaries of Black Sea, Sea of Azov and Caspian Sea. (Miller, 1984). In Bulgaria in Lakes Shabla, Varna, Beloslav and Burgas.

**Habitat type, Critical habitats, Limiting factors**

Lakes, lagoons, brackish to slightly saline; on sand near sea-grasses; Lakes Beloslav, Varna and Burgas. Threats: toxic chemical substances.



**Biology.** Reproduction: April-May. Eggs under shells or stones. Sexually mature after one year. Food: green algae, crustaceans, polychaetes, insects.



**Population trends.** Declining.

**Threats.** Industrial pollution.

**Conservation measures taken.** Lake Shabla has been declared a reserve.

**Conservation measures proposed.** Decrease contamination.

## **References**

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*Compiled by Y. Sivkov & K. Prodanov.*

*Pungitius platygaster* (Kessler, 1859)

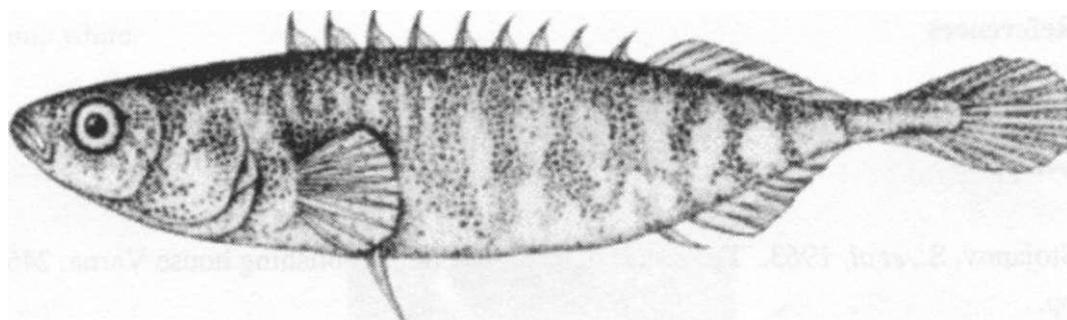
**Synonyms:** *Gasterosteus platygaster* Steindachner, 1899.

**Common names:** Bulg: *Devetigla bodlivca*; Engl: *Nine or ten-spined stickleback*;  
Rom: *Palamida de balta*; Russ: *Malaya yuzhnaya kolyushka*.

**Order** GASTEROSTEIFORMES

**Family** GASTEROSTEIDAE

**Taxonomic description.** D VIII-XI7-10; A16-9; P 10-11; V 11. Usually nine or 10 free spines in front of the dorsal fin (Stojanov *et al*, 1963; Svetovidov, 1964). Body covered with bony scats. Lateral keel on caudal peduncle absent. Pelvic fin spine serrated. Size up to 7 cm.



**IUCN Status**

World level:

Black Sea Regional level:

Subregion level: **CE** (Bulgarian coast)

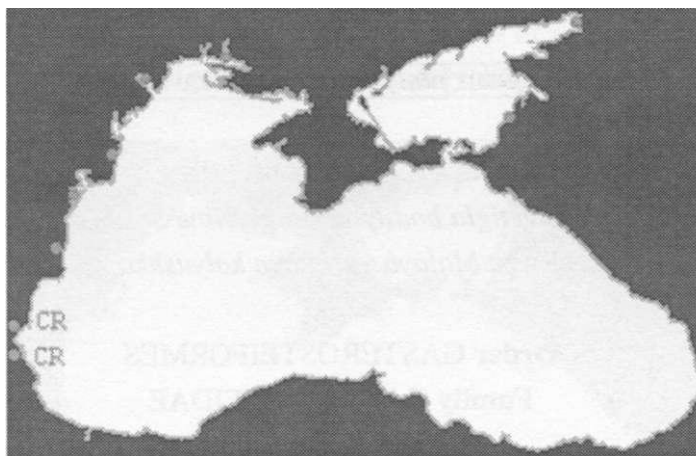
**Distribution.** Rivers surrounding the Black Sea, Sea of Azov, Caspian and Aral Seas (Banister, 1986). In Bulgaria in Lakes Mandra and Beloslav.

**Habitat type, Critical habitats, Limiting factors.** Fresh and brackish water; lakes; threatened by changes in hydro-chemical regime.

**Biology.** Reproduction in March-May. The male makes a nest in vegetation. Food: small invertebrates.

**Population trends.** Declining.

**Threats.** Industrial pollution.



**Conservation measures taken.** None.

**Conservation measures proposed.** Reduce chemical pollution.

### **References**

Banister, R., 1986. Fishes of the North - eastern Atlantic and the Mediterranean 2: 642 pp.

Stojanov, S., *et al*, 1963. The fishes in the Black Sea. Publishing house Varna: 246 pp.

Svetovidov, A., 1964. The fishes of the Black Sea. Publ. House Science: 550 pp.

*Compiled by K. Prodanov & Y. Sivkov.*

*Rufibrenta ruficollis* Pallas, 1769

**Synonyms:** *Rufibrenta ruficollis* Bonaparte, 1856; *Anser ruficollis* Pallas, 1769, *Anas torquata* Gmelin, 1774; *Anas pulchricollis* George, 1775

**Common names:** Engl: *Red-breasted goose*; Bulg: *Chervenogusha guska*; Rom: *Gisca cu git rosu*; Russ: *Krasnozobaya kazarka*; Turk: *Kirmizi gerdanli kaz*; Ukr: *Chornovola kazarka*

**Order** ANSERIFORMES

**Family** ANATIDAE

**Taxonomic description.** A small goose with varied plumage and red-brown breast, throat and cheeks. Legs, beak, belly, back, wings, nape and crown of head black. Base of beak, around cheek stripes, cross breast band, flanks, underside of tail and of rump white.



**IUCN Status**

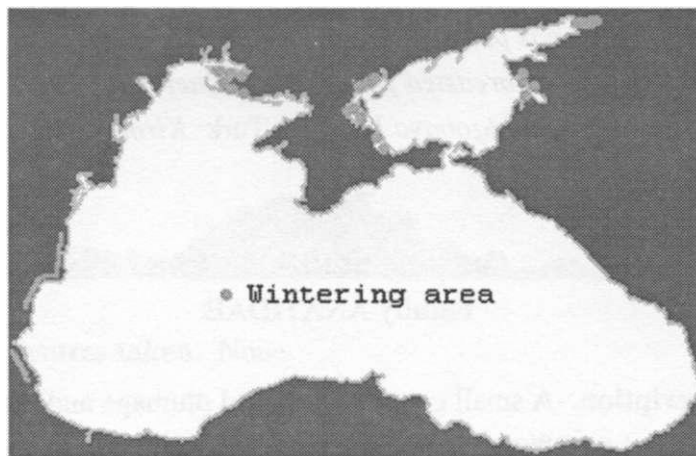
World level: VU

Black Sea Regional level: EN

Subregion level: NE

**Distribution.** The Red-breasted goose is a Russian endemic that nests in North-West and Central Siberia. Its breeding areas include the tundra and leso-tundra of the peninsulas Yamal, Gludan and Taymyr. To the east of Taymyr it nests only around the Popugay river (Krivenko, 1983). Till 1967 its main winter areas were along the south-west and south coast of the Caspian Sea. As a result of worsening conditions in this area, birds moved to spend winter in the Black Sea region, mostly in the Bulgarian and Romanian parts of Dobrudja (Isakov, 1979). Before reaching their Balkan winter quarters, *Rufibrenta ruficollis* flies over the North Prichernomie (Lusenko, 1991). Along the south Bulgarian coast, flocks reach 100-200 specimens. Rarely single specimens and small flocks are recorded along the seashore of Turkey (OST Bird Report, 1975). In autumn, the first *Rufibrenta ruficollis* arrive along the

Black Sea coast in late September-early October. Migration peaks in November and early December. Geese leave their winter quarters in March to return to their nesting places.



**Habitat type, Critical habitats, Limiting factors.** The nesting areas are part of the tundra and leso-tundra, rich in water basins and islands and situated on high river banks.

**Biology.** Nests in groups of 3-20 pairs, near nests of the Ruff-legged buzzard (*Buteo lagopus*), Peregrine falcon (*Falco peregrinus*), or gulls. In June the female lays 4-10 eggs, which it broods for 26 days. During autumn migration birds rapidly cover the distance between the nesting and winter areas, resting only few times. They feed on roots and seeds of different plant species. Their main food in winter along the Black Sea are green parts of barley and wheat, and seeds from previous crops of maize, rice and other grains.

**Population trends.** In the 19<sup>th</sup> century, the population of the *Rufibrenta ruficollis* was estimated as "dozens of thousands of specimens" (Krivenko, 1983). In 1956, c. 60,000 spent winter in Azerbaijan (Cramp & Simmons, 1977). Around 1960 the population began to decline, possibly in connection with bad winters in the Caspian Sea. Afterwards, the breeding population increased again and in 1979 it reached 27,000 specimens (Vinokurov, 1982). During migrations and winter, concentrations form on the lower course of the river Kuban (up to 3,350 specimens), on Veselovski dam - up to 4,600 specimens, on the Molochnii and Utlujskii firths (up to 1,500-2,000 specimens), in East Sivash (up to 4,000 specimens) and over Dunavski plavni reserve (up to 9,000 specimens) (Sabinevskii & Adamatskaia, 1984; Kazakov *et al*, 1988; Lusenko, 1991). In Romanian Dobrudja (region of Istria) a large number (c. 25,000 specimens) stopped for the first time in December 1968 (Puscariu, 1983). For comparison only 1,000-2,000 specimens then spent winter in Azerbaijan (Cramp & Simmons, 1977). Later, the number of the Red-breasted geese overwintering in

Dobrudja increased further, to reach 68,000 during January 1992 (26,000 specimens in Romanian Dobrudja and 42,000 specimens in Bulgarian Dobrudja) (Didier Vangeluwe, pers. com.) and 75,000 in January 1993 (Black & Madsen, 1993). This shows that virtually the whole population of *Rufibrenta ruficollis* spends winter along the Black Sea coast.

**Threats.** Destruction of habitat and killing of birds in the nesting areas during migration, and in their winter quarters. The decline of Lemmings (genus *Lemmus*) and Peregrine falcon in the tundra indirectly limit its breeding success. The biggest danger in its winter quarters along the Black Sea is the use of pesticides. Also, poaching, shooting tourism, and night hunts are destructive.

**Conservation measures taken.** A world threatened species, included in Annex **JJ** of the Washington Convention. It is protected by law in all countries in its range and listed in the Red Books of Russia, Kazakstan and Bulgaria. Its winter quarters in Bulgaria and Romania are protected territories. Some areas along its migratory route are also protected (Krivenko, 1983).

**Conservation measures proposed.** The establishment of a network of protected territories in its nesting and winter areas and along its migratory route. Enlargement of the existing protected territories. Prohibition of hunting in places of concentration. Hunting only allowed during the day and limited to species such as White-fronted goose (*Anser albifrons*). Propaganda as a means of mass information and education of hunters. Prohibition of hunting tourism in places with high concentrations of this goose.

## References

Black J. & J. Madsen, 1993. Excellent news for the Red-breasted Goose JWKB Threatened Waterfowl Res. Group Newsletter 4:16-17.

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Kazakov, B., N. Loinadze, V. Goncharov, V. Petrenko & N. Kavernichenko, 1988. Krasnozobaia kazarka na Veselovskom vodohranilishte. Resursi jivotnogo mira Severnogo Kavkaza, Stavropol: 73-75.

Krivenko, V., 1983. Krasnazobaia kazarka - *Rufibrenta ruficollis* (Pallas, 1769). "Krasnaia kniga RSFSR, jivotnie". Moscow, Rosselhozizdat: 177-180 pp.

Lusenko, V., 1991. Fauna Ukrainy 5 (3) Ptitsy. Guseobraznue. Kiev, Naukova Dumka: 201 pp.

Puscariu, V., 1983. La presence de *Branta ruficollis* pendant l'hiver en Roumanie. Aquila 90: 23-27.

Sabinevskii, B. & T. Ardamatskaia, 1984. Obzor izmenenia sostoiania zimovok vodoplavashtih ptits v Azovo-Chernomorskom regione po materialam yanvarskikh utshetov 1975-1984g, Sovremennoe sostoianie resursov vodoplavashtih ptic. Moscow, Nauka: 75-77 pp..

Vinokurov, A., 1982. Present status of the *Branta ruficollis* population and measures for its conservation. Aquila 89: 115-122.

*Compiled by P. Gorlov & N. Nankinov*

*Sarda sarda* Bloch, 1793

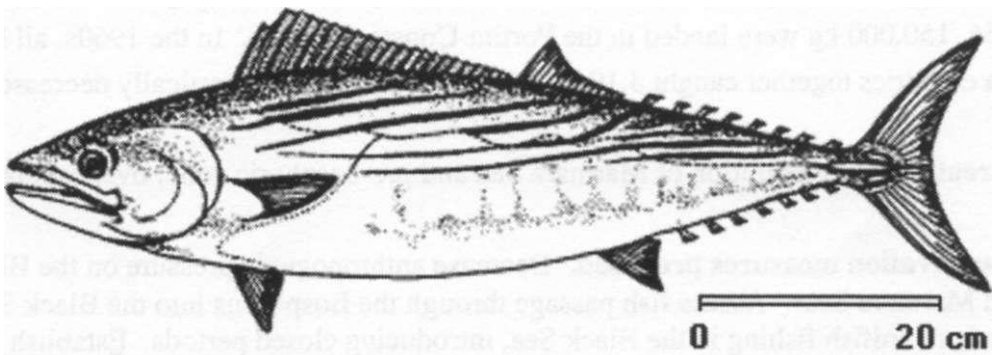
**Synonyms:** *Scomber sarda* Bloch, 1793; *Scomber pelamis* Brunich, 1763; *Scomber sarda* Schneider, 1801; *Thunnus sardus* Risso, 1826; *Pelamys sarda* Cuvier, 1832; *Sarda mediterranea* Jordan, 1883; *Sarda sarda* Banarascu, 1964

**Common names.** Engl: *Atlantic bonito*; Bulg: *Palamud*; Georg: *Atlantikuri pelamida*, *Pelamida*; Rom: *Palamida*; Russ: *Pelamida*; Turk: *Palamut-torik*; Ukr: *Pelamida*

**Order** PERCIFORMES

**Family** SCOMBRIDAE

**Taxonomic description.** A small, relatively narrow-bodied tuna; sharp snout; large oblique mouth; upper jaw reaching the hind edge of the eye or beyond; lower jaw almost equal to the upper one; strong teeth on jaws and palatins; dorsal fins close together. First (spiny) dorsal fin very long and straight or only slightly concave in outline; second fin smaller; anal fin short; pectoral fins short, triangular with large base; ventral fins short, in same plan; lateral line conspicuously wavy; two flaps (interpelvic process) between the pelvic fins. Body entirely covered with scales which are minute, except on the well developed corselet (area behind the head and around the pectoral fins, covered with larger and thicker scales). On each side of the slender caudal peduncle, a well developed lateral keel between two small keels located at the base of the caudal fin lobes; colour of the back and upper sides steel-blue, with five to 11 dark oblique stripes running forward and downward; lower sides and belly silvery; with seven to 10 dorsal, and six to eight anal Unlets. Size maximum 80 cm; average 30 to 50 cm.



**IUCN Status**

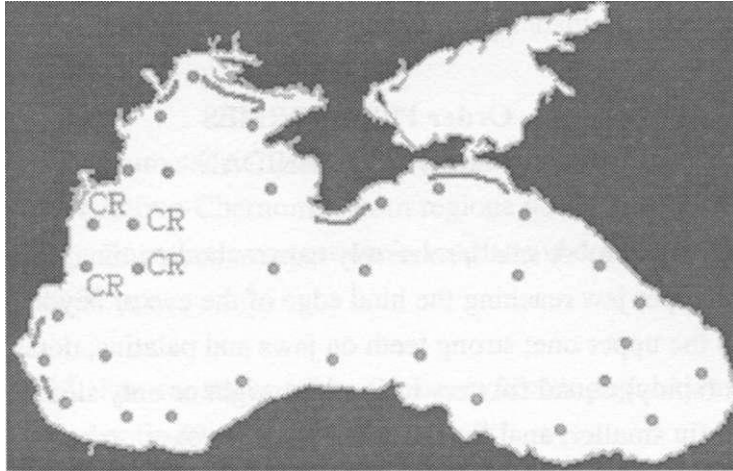
World level:

Black Sea Regional level:

Subregion level: CR



**Distribution, Habitat type, Critical habitats, Limiting factors.** A pelagic, migratory species often schooling near the surface in inshore waters, mainly over the continental shelf. Common throughout the Mediterranean, in the Black Sea and in the tropical and subtropical waters of the Atlantic; present also at higher Atlantic latitudes, up to the coasts of Scandinavia and Ireland. Threatened by pollution, and overfishing.



**Biology.** Thermophilic and stenohaline. The majority of individuals spend winter in the Marmara and Aegean Seas. In April, small schools of similar size and sex enter the Black Sea, staying here up to late October. Feeds mostly on fish, particularly small clupeids, gadoids and mackerels. Spawning extended, from May to mid July. Growth is fast and longevity is c. 12 years.

**Population trends.** During 1954-1960, *S. sarda* was the main target of offshore fishing in the Romanian sector (99.8% in 1954 and 1955; 96.0% in 1956). In 1954, 34,000 kg were caught in front of Sulina-St.Gheorghe; in June-August 1955 and 1956, 150,000 kg were landed in the Portita-Constanța zone. In the 1960s, all Black Sea countries together caught 3,1041; after 1960, this figure drastically decreased.

**Threats.** Strong pollution of Marmara Sea and pre-bosphoric zone; overfishing.

**Conservation measures proposed.** Decrease anthropogenic pressure on the Black and Marmara Seas. Assure fish passage through the Bosphorus into the Black Sea. Limit swordfish fishing in the Black Sea, introducing closed periods. Establish a special recovery programme for the entire Black Sea.

## References

Banarascu, P., 1969. Fauna RPR: Pisces - Osteichthyes. Bucuresti, Acad.R P Romania 8 (5): 809 pp. (in Romanian).

Ionescu, N., N. Gadidov & S. Stanescu, 1958. Contributions to the knowledge of the biology and fishery of *Sarda sarda* Bloch, in the Romanian Black Sea waters, during 1954-1956. Hidrobiologia 1: 165-186. (in Romanian).

FAO, 1973. Species identification sheets for fishery purpose. Mediterranean and Black Sea, fishing area. Rome 37.

Zaitsev, Y., 1992. Recent changes in the trophic structure of the Black Sea. Fish. Oceanogr. 1: 180-189.

*Compiled by G. Radu & F. Verioti*

*Scomber scombrus* Linnaeus, 1758

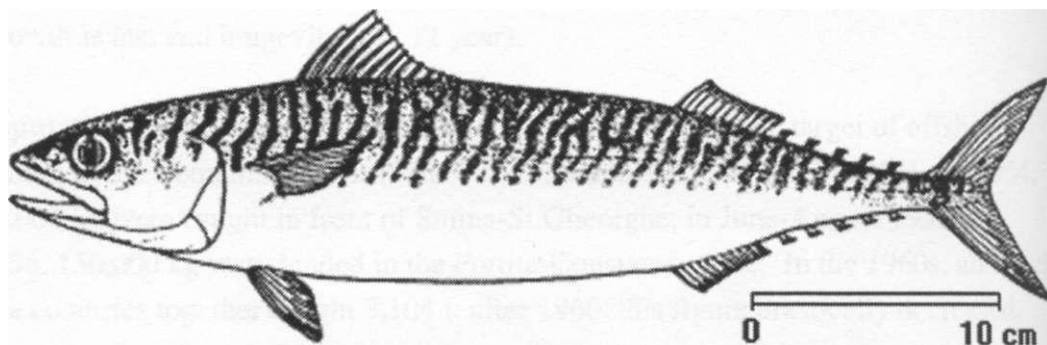
**Synonyms:** *Scomber scomber* Bonnatere, 1788; *Scomber punctatus* Canah, 1857; *Scomber scombrus* Smith, 1893; *Scomber scombrus* Banarascu, 1964

**Common names:** Engl: *Atlantic mackerel*; Bulg: *Skumrija*; Georg: *Scumbria*, *Makreli*; Rom: *Scrumbie albastra*; Russ: *Skumbriya*; Turk: *Uskumaru baligi*; Ukr: *Skumbriya*

**Order** PERCIFORMES

**Family** SCOMBRIDAE

**Taxonomic description.** *S. scombrus* is characterized by an elongate, rounded body, a pointed snout, a slim caudal peduncle, two dorsal fins. Behind the second dorsal and the anal fin, five finlets. The two dorsal fins widely separated (interspace at least equal to the length of the first dorsal fin base); an adipose lid covers the front and hind edges of the eye; head and the body entirely covered with small scales; 11 to 13 spines in the first dorsal fin; two small keels on each side of the caudal peduncle (at the base of the caudal fin lobes), but no central keel between them. Colour of the back brilliant green-blue, often turning to bluish-black on the head; sides metallic, belly white, series of characteristic dark, curving lines across the back. Size maximum 50 cm, average 30-35 cm.



**IUCN Status**

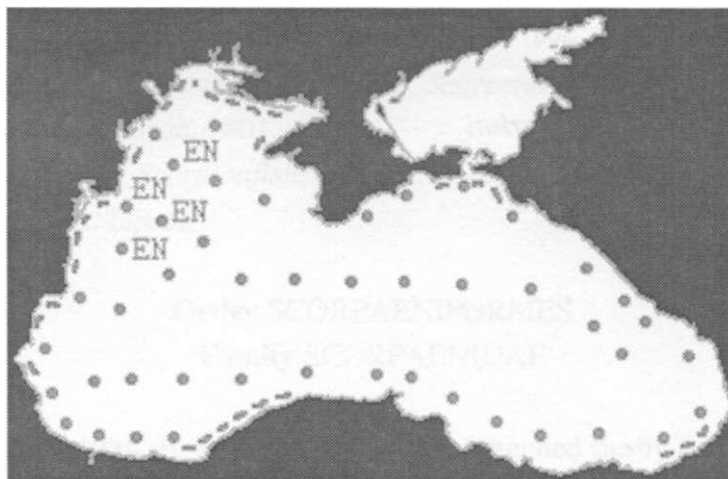
World level:

Black Sea Regional level:

Subregion level: **EN**

**Distribution, Habitat type, Critical habitats, Limiting factors.** A schooling pelagic fish inhabiting cold and temperate waters. Common in most of the western and central Mediterranean Sea; occasionally entering the Azov Sea; rare in the eastern Mediterranean. Also in the North Atlantic, from Murmansk to the Canary Islands and

from Cape Lookout to Labrador. Threats: pollution of the Bosphorus and presence of predators such as tuna, dolphins and shark.



**Biology.** The species spends winter in the Marmara Sea, in front of the Bosphorus; entering the Black Sea in spring, it moves northward, reaching the Romanian coasts in April-May when water temperature is 8 °C. In October-November it moves south and in December it leaves the Black Sea. Spawning takes place in late winter - early spring in the Marmara and Aegean Seas. Individuals staying in the Black Sea in winter do not reproduce, because juveniles need to move to great depths, which are predator-free. Feeds chiefly on pelagic invertebrates (*Acartia*, amphipods, mysids, pilchard, sprat and eel).

**Population trends.** The stocks considerably decreased due to adverse conditions for feeding and breeding. In Romania separate statistics were kept for this species until after the 1960s, when it disappeared as a commercial species. On the Turkish coast, the catches recorded by FAO were 39 t (1989), 561 (1990), and 780 t (1991).

**Threats.** Overfishing, pollution, predation (bonito, shark and dolphins).

**Conservation measures taken.** In the last 25 years, no gill nets have been allowed for catching mackerel.

**Conservation measures proposed.** Ensure migration into the Black Sea by mitigation of eutrophication/pollution.

## References

FAO, 1973. Species identification sheets for fishery purposes. Mediterranean and Black Sea, fishing area 37. Rome.

Radu, G., E. Leonte, G., Butoi, F. Verioti, A. Gorban & E. Radu, 1996. Principalele specii de pesti si mamifere din Marea Neagra (Determinator) (Main fish and mammals from the Black Sea) (Identification sheets) (in Romanian).

*Compiled by G. Radu & F. Verioti*

*Scorpaena porcus* (Linnaeus, 1758)

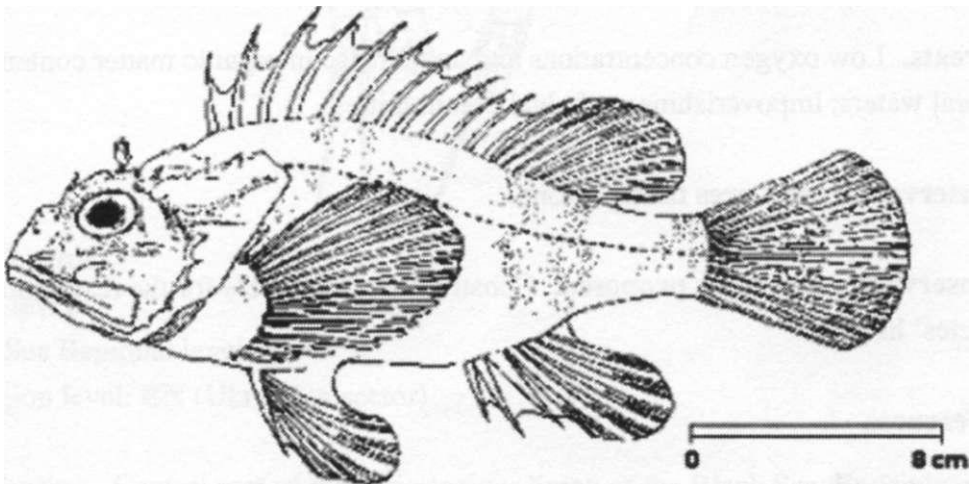
**Synonyms:** *Cottus massiliensis* Gmelin, 1778; *Scorpenaporcus* Blach, 1788; *Scorpena rascassa* Lacepede, 1801.

**Common names:** Engl: *Scorpionfish*; Bulg: *Skorpid*; Rom: *Scorpi de mare*; Russ: *Morskoy yorsh*; Turk: *Lipsoz*.

**Order SCORPAENTFORMES**

**Family SCORPAENTDAE**

**Taxonomic description.** Head with conspicuous branched fleshy flaps, particularly above the eyes and at the anterior nasal openings, but none on the lower jaw, on the free edges of the scales, along the lateral line and the back. Upper jaw without a conspicuous longitudinal ridge; two pores under the chin behind the junction of the lower jaws; back and sides brown, marbled with irregular dark bands and patches. Large head, armed with numerous spines and crests. Venomous spines on the anterior portion of the dorsal fin. Mouth wide, with small teeth and large, rounded pectoral fins with upper rays branched and lower ones simple. Profile of head, behind the eyes, with a pronounced depression. Size maximum 25 cm, average about 15 cm.



**IUCN Status**

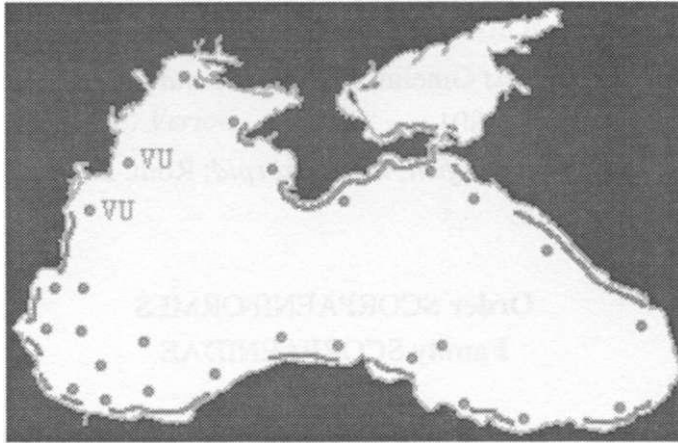
World level:

Black Sea Regional level:

Subregion level: **VU**

**Distribution, Habitat type, Critical habitats, Limiting factors.** A sedentary, solitary species inhabiting littoral waters among rocks and seaweeds. Common in the Mediterranean and east Atlantic, from the British Isles to the Canary Islands. The

littoral areas of the north-western Black Sea are critical habitats due to pollution and hypoxia.



**Biology.** Feeds mainly on small fish such as gobies and blennies, but also on crustaceans and other invertebrates. Spawns in summer; eggs covered with a mucilaginous membrane; sexual maturity reached at three years of age, rarely after two years.

**Population trends.** After 1975, with intensified eutrophication, periodic hypoxia and other anthropogenic pressures, a decline occurred. The species is currently rare in catches but remained present in isolated individuals, even in 1990-1995.

**Threats.** Low oxygen concentrations and an increase in organic matter content in littoral waters; impoverishment of algal communities.

**Conservation measures taken.** None.

**Conservation measures proposed.** Construct artificial reefs for the restoration of the species' habitat.

## References

FAO, 1973. Species identification sheets for fishery purposes. Mediterranean and Black Sea, fishing area 37, Rome.

Radu, G., E. Leonte, G. Butoi, F. Verioti, A. Gorban & E. Radu, 1996. Principalele specii de pesti si mamifere din Marea Neagra (Determinator) (Main fish and mammals from the Black Sea) (in Romanian).

*Compiled by A. Petranu.*

*Smirnoviella reducta* (Monchenko, 1977)

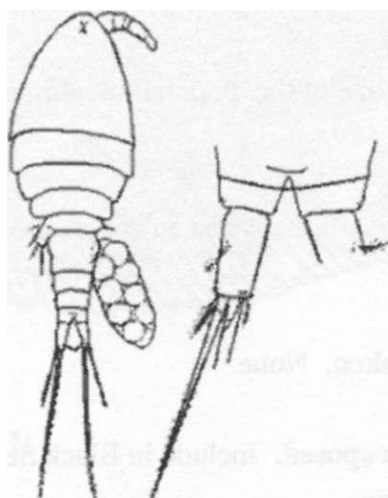
**Synonyms:** None.

**Common names:** None.

**Order** CYCLOPOIDA.

**Family** CYCLOPIDAE: HALICYCLOPINAE.

**Taxonomic description.** This species exhibits a modified morphology, not known in other Cyclopidae, of the structure of the maxillae and maxillipeds etc. The maxilla is prehensile with only one apical and subapical setae or spine on the distal segment and without armature on the distal endite of the sympod; the maxilliped is reduced to one small joint with two weakly developed setae (on other parts too there is a minimum of setae). Total female length 617-688 m.



**IUCN Status**

**World level:**

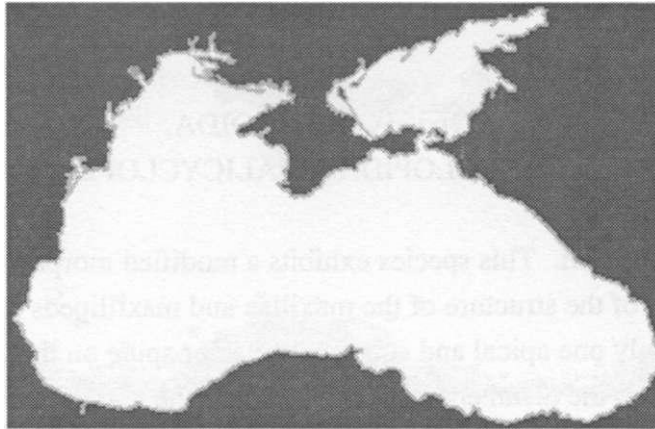
**Black Sea Regional level:** EN

**Subregion level:** EN (Ukrainian sector)

**Distribution.** Central part of the Dniestr river liman of the Black Sea. Endemic of this river liman. All three congeners are known only from the Caspian Sea (Monchenko, 1982). This genus, by its range and peculiarities of halopathy, belongs to the Ponto-Caspian Zoogeographic complex and arose in one of the basins that preceded the Black Sea.



**Habitat type, Critical habitats, Limiting factors.** A bottom-dwelling species inhabiting the mud sands at different depths of the river limans. Found at a salinity 0.56-1.51 ppt.



**Biology.** Polycyclic during the warm season of the year. Limiting factors include strong seasonal salinity oscillations and a very narrow area of distribution.

**Population trends.** A Decline of the population numbers by up to 50-60% during the last 10-12 years.

**Threats.** Pollution of the river limans and eutrophication causing hypoxia of bottom water.

**Conservation measures taken.** None.

**Conservation measures proposed.** Include in Black Sea Red Data Book. Reduce pollution in the Dniestr basin.

## References

Monchenko, V. I., 1977. *Smirnoviella reducta* gen. et sp. n. (Crustasera, Copepoda) from Dniester river liman (Black Sea basin). Zool. Zh. 56: 1402-1406 (in Russian with English Abstract).

Monchenko, V. I., 1982. The genus *Smirnoviella* (Crustasera, Cyclopidae) in the Caspian Sea with the description of a new species. Vestnik Zool. 16: 12-15 (in Russian with English Abstract).

*Compiled by V. Monchenko.*

*Solea nasuta* Nordmann, 1840

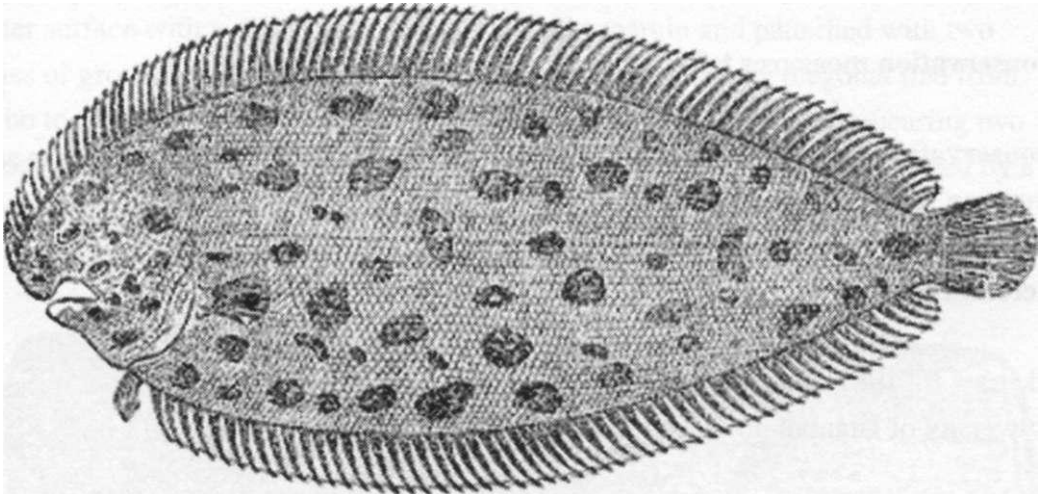
**Synonyms:** none.

**Common names:** Engl: *Snouted sole*; Bulg: *Morsky ezik*; Georg: *Zghvis ena*; Rom: *Limba de mare*; Russ: *Morskoy yazyk*; Turk: *Ege dil baligi*; Ukr: *Mors'ky yazyk*

**Order** PLEURONECTIFORMES

**Family** SOLEIDAE

**Taxonomic description.** An oval flatfish with the eyes on the right side of the head. Small, slightly curved mouth. Varies in colour due to its mimetic ability, but usually grey-brown or reddish. Size up to 50 centimeters.



**IUCN Status**

World level:

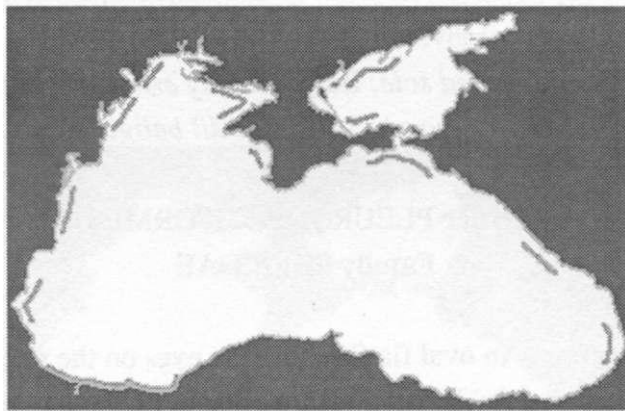
Black Sea Regional level: **VU**

Subregion level: **VU**

**Distribution, Habitat type, Critical habitats, Limiting factors.** A benthic species, typical of sandy bottoms. Also found in estuaries and on continental shelves. Deep trawling, degradation of coastal ecosystems and sand dredging are the main reasons for its decline. Overfishing has also depleted the stocks.

**Biology.** A carnivore, living at depths of up to 150 meters. Reproduction is in spring, sexual maturity starts at four years of age. Feeds on molluscs, crustaceans and polychaetes. Eggs pelagic. Colour of ventral part white, dorsal part grey. Penetrates some Black Sea river estuaries.

**Population trends.** No available information, but overfishing and illegal fishing are probably contributing to a declining trend.



**Threats.** Overfishing, illegal fishing, sand dredging, coastal nets, pollution.

**Conservation measures taken.** No particular measures.

**Conservation measures proposed.** Reduce coastal fisheries, pollution and ban sand dredging.

#### **References**

Aksiray, F., 1987. Turkish Marine Fishes Identification Book. Publication of the University of Istanbul no. 3490. Second Edition. Istanbul, Turkey : 811 pp.

*Compiled by B. Ozturk & A. Komakhidze*

*Solen vagina* (Linnaeus, 1758)

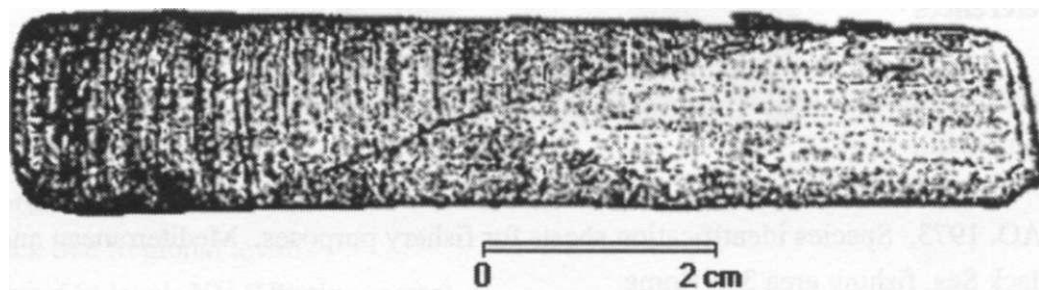
**Synonyms:** *Solen marginatus* Pennat, 1777.

**Common names:** Engl: *Grooved razor clam*; Bulg: *Diavolski nokt*; Rom: *Unghiuta*; Russ: *Cherenok*; Turk: *Tarak*; Ukr: *Kologochka*.

**Order** VENERIDA

**Family** SOLENIDAE

**Taxonomic description.** Shell fragile, equivalved, straight, almost cylindrical, strongly elongated, open at both ends, with sharp ventral margin and grayish-brown colour. Dorsal and ventral margins parallel, umbones almost terminal and indistinct. Outer surface with a deep groove near the anterior margin and patterned with two series of growth striae at right angles to each other, following a diagonal line from umbo to opposite corner. Valves smooth internally, whitish in colour, bearing two muscular scars and the impression of the siphon. Hinge of both valves formed by a single cardinal tooth which is prominent and laterally flattened; colour white or yellow. Maximum length 13 cm; average length 10 to 11 cm.



**IUCN Status**

World level:

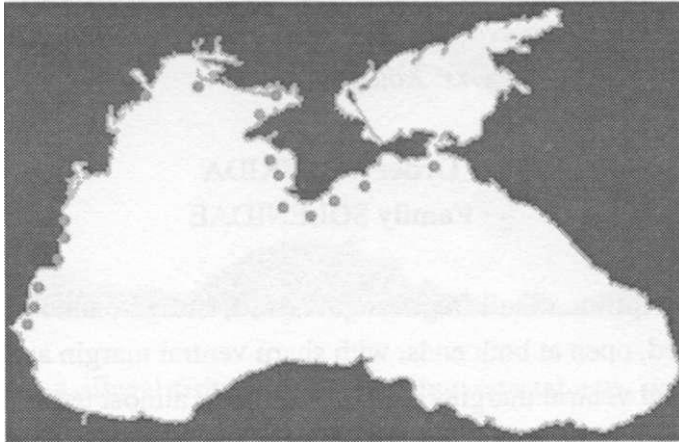
Black Sea Regional level:

Subregion level: **EN**

**Distribution, Habitat type, Critical habitats, Limiting factors.** Low-lying beaches, muddy sands bottoms in shallow waters (infralittoral zone). Very common in the Mediterranean, North Sea, English Channel and north Atlantic. Threats: progressive degradation of its biotopes by deposition of a stratum of mud.

**Biology.** The sexes are distinct, the species is oviparous and feeds on phytoplankton and suspended organic particles. Burrows sometimes deeply (up to 50 cm). It is extracted by digging into the sand, or by introducing grains of salt into its burrow.

**Population trends.** After 1970, very small number of individuals only in Romanian Black Sea waters. Mostly empty shells in bottom samples during the last two decades.



**Threats.** Terrigenous pollution, hypoxia; turbidity due to use of various type of bottom gear.

**Conservation measures proposed.** Reduce negative environmental impacts.

#### **References**

Bacescu, M., G. I. Miiller & M.-T. Gomoiu, 1971. Ecol. mar. 4: 357 pp. (in Romanian).

FAO, 1973. Species identification sheets for fishery purposes. Mediterranean and Black Sea, fishing area 37. Rome.

*Compiled by M.-T. Gomoiu & A. Petranu.*

**Synonyms.** None.

**Common names:** Bulg: *Obiknoveva gaga*; Engl: *Eider*; Rom: *Eider*; Russ: *Gaga obyknovennaya*; Turk: *Pufla*; Ukr: *Gaga zvychayna*.

**Order ANSERIFORMES**

**Family ANATIDAE**

**Taxonomic description.** A common species, with a world-wide breeding range. BS - in small numbers occur on the Bulgarian and Romanian Black Sea coasts. NB - there is one isolated population in Ukraine on the islands of the "Chernomorski" reserve, known since 1975. In 1990, there were 678 pairs in the region.



**IUCN Status**

World level:

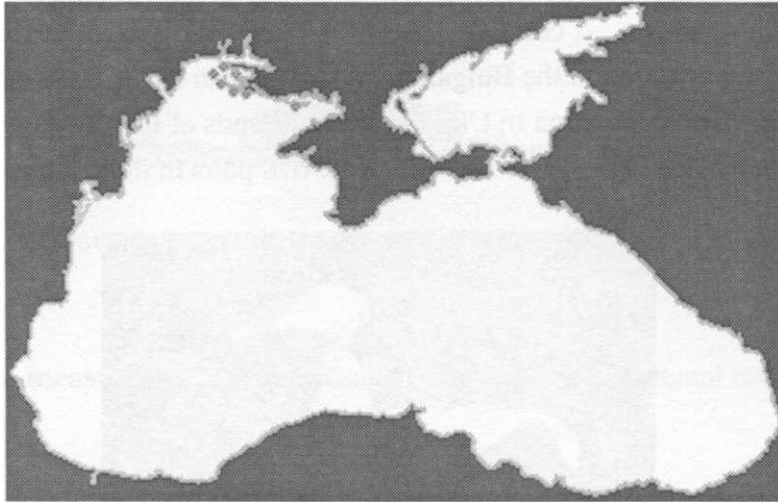
Black Sea Regional level:

Subregion level: **VU** (Ukraine sector)

**Distribution, Habitat type, Critical habitats, Limiting factors.** In Ukraine the habitats are small islets with reed beds, although in its main breeding range, Eider prefers rocky or stony island coasts, often with arboreal vegetation. In cold winters such habitats are often destroyed by cracking ice, which may wipe off low parts of islands and reeds. On the densely populated Kruglyi and Dolgi islands in Yagorlytzki bay, the area of these habitats is sharply reduced under such conditions. The majority of the nests is in the shore reeds (in some years up to 63%), less frequently in reed-beds around inland lakes, or in growths of sagebrush (*Artemisia*). Some nests may be located openly on cast-ashore aquatic vegetation. Major limiting factors are nest and chick predation by Yellow-legged gull (*Lams cachinnans*), a reduction in mussel bed area, hunting (these ducks are easy targets), and kills in fish-nets.

**Biology.** The birds begin to arrive in the first days of March. Egg laying is observed in April and the first half of May. Second-year females start breeding in early June.

Breeding density can be up to 5 nests.m<sup>2</sup>. Clutch size 4-8 eggs, normally 5-6. Those of 9-16 eggs are laid by two females. No second breeding. Incubation lasts for 26-28 days. Hatching well synchronized. The first broods appear at the end of April. In July-August, juveniles and females aggregate in flocks of up to 3,000 birds and stay along the coast of the Tendra and Dzharalgach bays. Part of the Black Sea population overwinters in bays within the area of the "Chernomorski" reserve or moves offshore. Most of this southernmost population overwinters along the Bulgarian coast. Diet basically composed of molluscs (mussels predominate), small crabs and copepods.



**Population trends.** Decreasing, birds redistributing over the islands of Tendra bay.

**Threats.** Nest and chick predation by yellow-legged gull, reduction of mussel bed area, hunting, fish-nets.

**Conservation measures taken.** The species is protected in the "Chernomorski" reserve.

**Conservation measures proposed.** Protection from gulls, reduction in fox numbers, strengthening of protection regime in general, decrease pollution.

## References

Ardamatzkaia, T. B., 1992. Changes of the species composition, numbers and distribution of the "Chernomorski" reserve island ornithocomplex within the last 60 years. Natural complexes of the "Chernomorski" State Biosphere reserve: p.110-121. (in Russian).

Ardamatzkaia T. B., A. Rudenko & G. Birds, 1996. Invertebrates of the 'Chernomorski' State Biosphere reserve /annotated lists of the species. Vestnik Zool. 1: 19-32. (in Russian).

Chervona Knyga Ukrayiny, 1994. (Red Data Book of Ukraine). Kijiv, Ukrajinska Encyclopediya Publ.: 317 pp. (in Ukrainian).

Nankinov, D. N., 1979. A record of Eider in the Balkans. Ecology and morphology of eiders in the USSR: 38-45 pp. (in Russian).

*Compiled by T. Ardamatzkaia.*



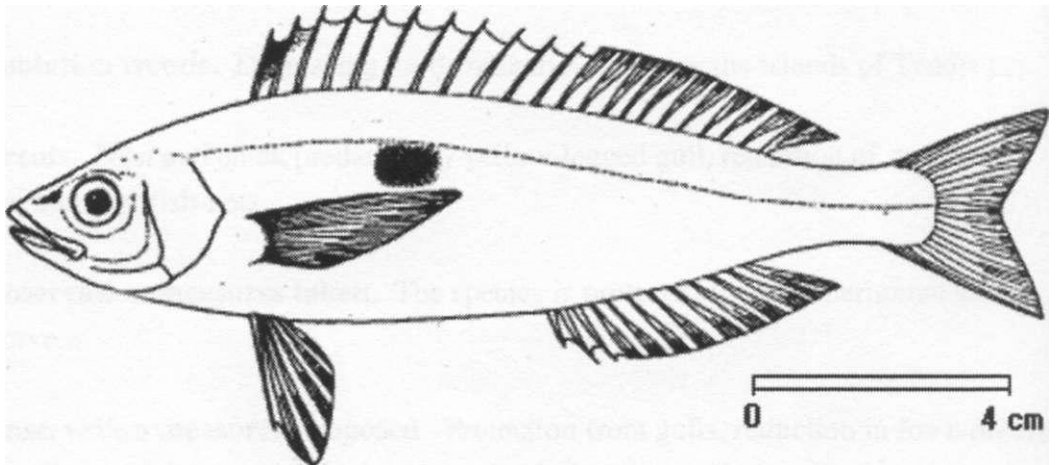
*Spicara smaris* (Linnaeus, 1758)

**Synonyms:** *Maena smaris* (Linnaeus, 1758); *Sparus alcedo* Risso, 1810; *Spams smaris* Risso, 1826; *Sparus vulgaris* Valenciennes, 1830; *Smaris gracilis* Bonaparte, 1836; *Spicara smaris* Lazano Cabo, 1953.

**Common names:** Engl: *Picarel*; Bulg: *Vretenest smarid*; Rom: *Smarid auriu*; Russ: *Smarida*; Turk: *Izmarit*; Ukr: *Smarida*.

**Order** PERCIFORMES  
**Family** CENTRACANTHIDAE

**Taxonomic description.** Body rather elongate, its length five to six times its height; snout pointed, mouth protractile; eye diameter smaller than preorbital length; scales small; jaws bearing villiform teeth, some of the anterior ones stronger; palate smooth or nearly so (none or very few teeth). Dorsal fin without a notch; pectoral fins moderately developed; dorsal fin high; back grayish-brown or grayish-yellow, with rather indistinct brown cross bands. A black rectangular blotch between lateral line and pectoral fin. Size maximum 20 cm (males) and 15 cm (females); average 8-20 cm.



**IUCN Status**

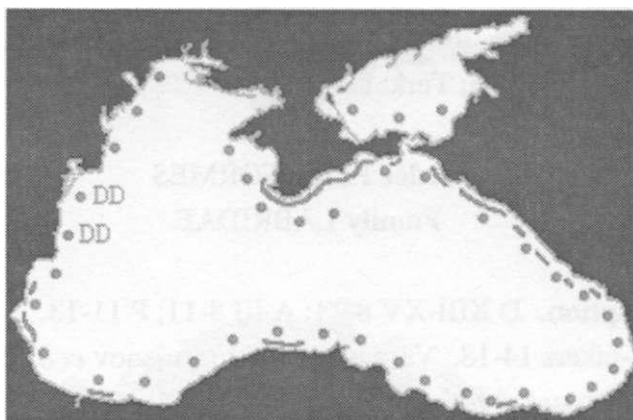
World level:

Black Sea Regional level:

Subregion level: **DD**

**Distribution, Habitat type, Critical habitats, Limiting factors.** A benthic species preferring offshore water, especially in winter; over muddy or vegetated bottoms, from the littoral to depths of 15-170 m. Common throughout the Mediterranean Sea, also found on the Atlantic coasts from Portugal to Morocco. Rare in the Black Sea due to poor oxygenation of its deeper waters (100-150 m), this species preferring

these depths, especially in winter. Threat: pollution of coastal waters where reproduction takes place.



**Biology.** Lives in small schools which perform irregular migrations; spawning in May-June near the coasts; spherical eggs deposited on algae or on the bottom. A marked sexual dimorphism, males having brighter colours (blue-striped) and longer fins. Feeds on both algae and animals (crustaceans, molluscs, worms and small fish); feeds intensely, also in winter, a little less during reproduction.

**Population trends.** Caught with trammel nets, bottom trawls and pots. On the Romanian littoral the species is accidental in the catches. On the Turkish littoral, the catches recorded in 1989 were 6541, in 1990 - 1,638 t and in 1991-3391.

**Threats.** Pollution and unfavourable hydrological conditions.

**Conservation measures taken.** None.

**Conservation measures proposed.** Reduce eutrophication and pollution.

## References

- Banarascu, P., 1964. Fauna of RPR. Pisces, Osteichthyes. Edit. Acad.R. P. Romania.
- FAO, 1973. Species identification sheets for fishery purposes. Mediterranean and Black Sea, fishing area 37. Rome.

*Compiled by G. Radu & F. Verioti.*

*Symphodus ocellatus* (Forsskal, 1775)

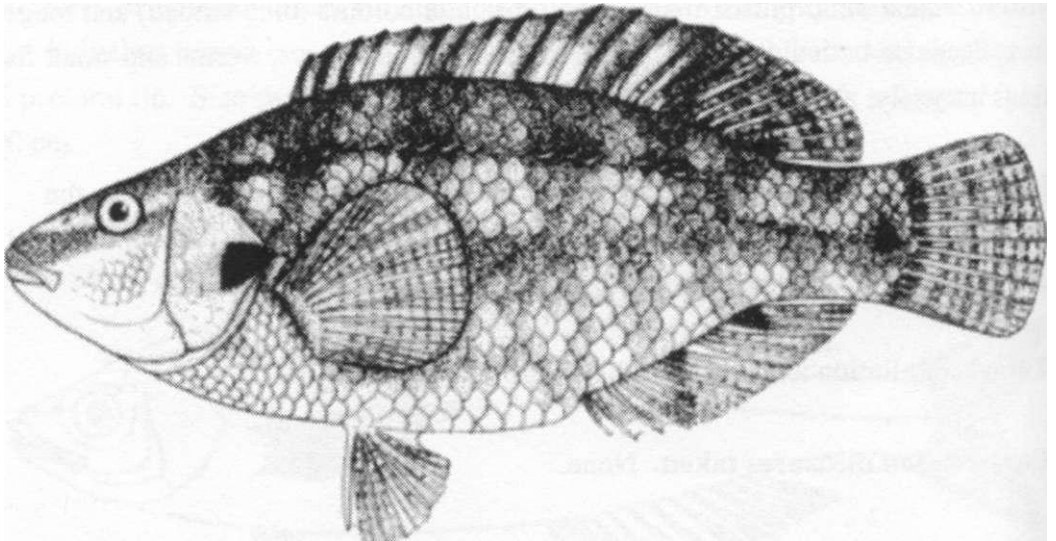
**Synonyms:** *Labrus reticulatus* Lacepede, 1802; *Lutjanus ocellatus* Risso, 1810; *Crenilabrus olovaceus* Risso, 1826; *Crenilabrus ocellatus* Kessler, 1859.

**Common names:** Russ: *Rulen*; Turk: *Circir*.

**Order PERCIFORMES**

**Family LABRIDAE**

**Taxonomic description.** D XIII-XV 8-11; A HI 8-11; P 11-13. Scales in lateral series 30-34. Gill-rakers 14-18. Vertebrae 30-32 (Stojanov *et al*, 1963; Svetovidov, 1964). Head length equal to or shorter than body depth. Snout shorter than post-orbital. Colour variable. A large spot, of varying colour on operculum, usually outlined in red. Size up to 12cm.



**IUCN Status**

World level:

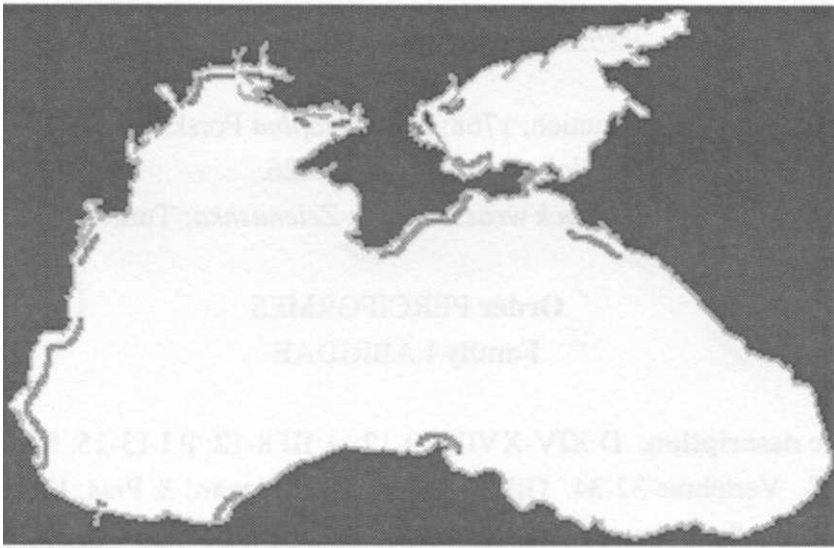
Black Sea Regional level:

Subregion level: **VU** (Bulgarian Coast)

**Distribution.** Mediterranean, Adriatic, Black Sea, Sea of Azov. In Bulgaria rare, on the whole coast.

**Habitat type, Critical habitats, Limiting factors.** Inshore, near rocks; sensitive to toxic chemicals.

**Biology.** Reproduction in May-July. Eggs on stones or gravel. Sexually mature at 1-2 years. Food: worms, amphipods, molluscs (Quingard & Pras, 1986).



**Population trends.** Declining.

**Threats.** Industrial pollution.

**Conservation measures taken.** None.

**Conservation measures proposed.** Reduce chemical pollution.

#### **References**

Quingard, J. & A. Pras, 1986. Fishes of the North-eastern Atlantic and the Mediterranean 2: 937-938.

Stojanov, S. *etal*, 1963. The fishes in the Black Sea. Varna, Publishing House: 246 pp.

Svetovidov, A. 1964. The fishes of the Black Sea. Publ. House Science: 550 pp.

Compiled by *Y. Sivkov & K. Prodanov.*

*Symphodus tinca* (Linnaeus, 1758)

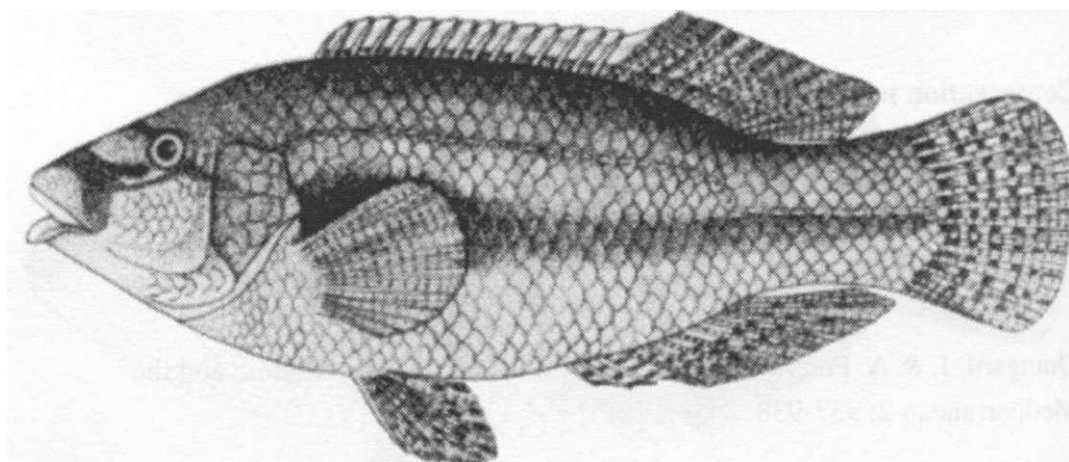
**Synonyms:** *Labruspavo* Brunich, 1768; *Labrus lapina* Forskal, 1775; *Lutjanus geofroyius* Riso, 1810; *Crenilabrus tinea* Risso, 1826.

**Common names:** Engl: *Peacock wrasse*; Russ: *Zelenushka*; Turk: *Lapin*.

**Order PERCIFORMES**

**Family LABRIDAE**

**Taxonomic description.** D XrV-XVII, 19-12; A III 8-12; P113-15. Scales in lateral series 33-38. Vertebrae 32-34. Gill-rakers 13-16 (Quignard & Pras, 1986; Stojanov *etal.*, 1963). Body elongated, laterally compressed. Body depth 0.32-0.35 SL. Head slightly longer than body depth. Colour greatly variable; a small dark spot at base of caudal fin. Size up to 25 cm.



**IUCN Status**

World level:

Black Sea Regional level:

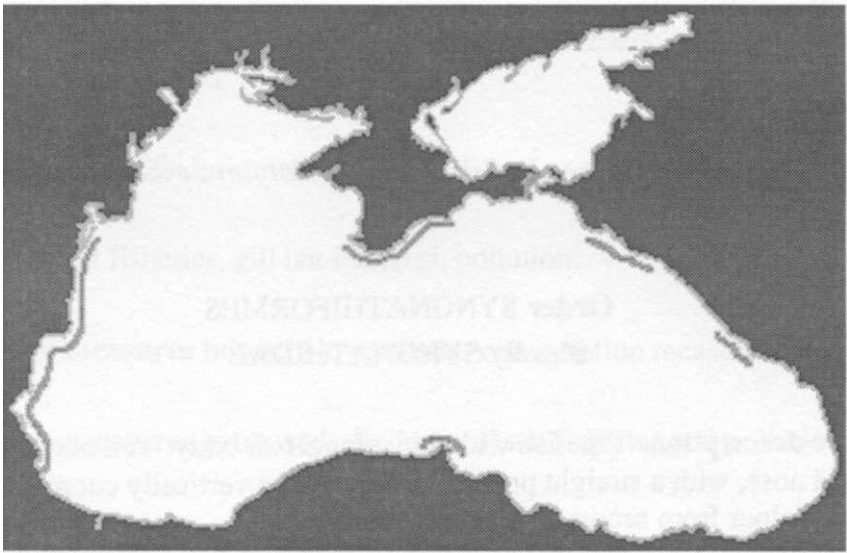
Subregion level: **VU** (Bulgarian Coast)

**Distribution.** From northern Spain to Morocco. Mediterranean and Black Sea. In Bulgaria rare, in the inshore zone.

**Habitat type, Critical habitats, Limiting factors.** Inshore, near rock and sea-grass, 1 to 20 m; inshore, rear rocks; Sensitive to organic contamination.

**Biology.** Reproduction in May-July. Eggs on stones or gravel. Sexually mature after 2-3 years. Food: molluscs, crabs.

**Population trends.** Declining.



**Threats.** Organic pollution.

**Conservation measures taken.** None.

**Conservation measures proposed.** Stop contamination.

#### **References**

Quingard, J. & A. Pras, 1986. Fishes of the North-eastern Atlantic and the Mediterranean 2: 940.

Stojanov, S. *et al*, 1963. The fishes in the Black Sea. Varna, Publishing House: 246 pp.

*Compiled by Y. Sivkov & K. Prodanov.*

*Syngnatus tenuirostris* (Linnaeus, 1758)

**Synonyms:** None.

**Common names:** Engl: *Horse pipefish*; Russ: *Tonkorylaya ryba-igla*; Turk: *Deniz ignesi*.

**Order SYNGNATHIFORMES**

**Family SYNGNATHIDAE**

**Taxonomic description.** Pipefish with thin, elongated, body. A distinctive high, compressed nose, with a straight profile, and an almost vertically cut mouth at its extremity. Colour from brown to greenish-brown.



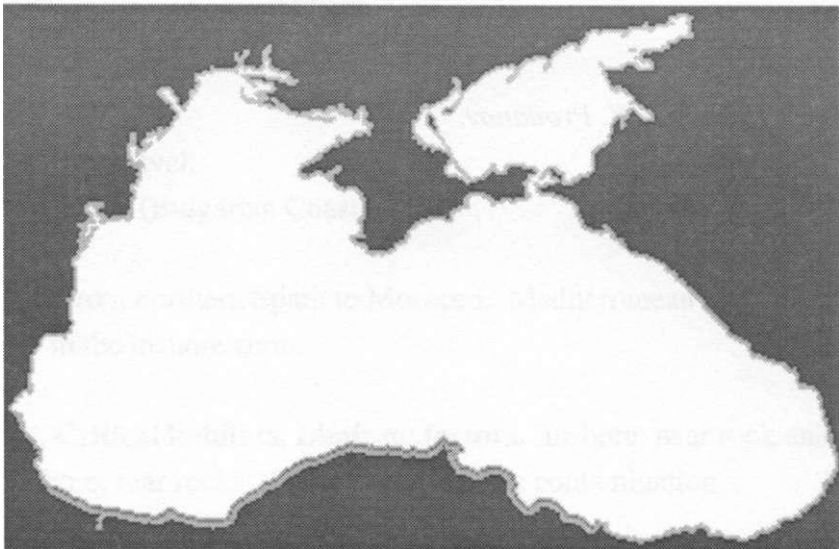
**IUCN Status**

World level:

Black Sea Regional level:

Subregion level: **LR**

**Distribution, Habitat type, Critical habitats, Limiting factors.** Infralittoral zone of the sea, mostly among macroalgae. Near macroalgal communities, close to *Zostera*. Threats: pollution, oil spills, coastal fisheries, gill nets, eutrophication.



**Biology.** A herbivore; reproduction starts in spring and ends in summer, eggs develop within 6-10 days.

**Population trends.** No information.

**Threats.** Coastal fisheries, gill net fisheries, pollution.

**Conservation measures taken.** No particular conservation measures.

**Conservation measures proposed.** Reduce gill net fisheries and pollution, protect the *Zostera* belts.

## **Reference**

Slastenenko, E., 1955-1956. The Fishes of the Black Sea Basin. General Directorate of the Meat and Fish Office. Istanbul, Turkey: 705 pp.

*Compiled by B. Oztiirk.*



*Syngnathus typhle* (Linnaeus, 1758)

**Synonyms:** *Syngnathus viridis* Risso, 1810; *Syngnathus argentatus* Pallas, 1811; *Syngnathus pyrois* Risso, 1826; *Syngnathus typhle* Di Caporiaceo, 1948; *Syngnathus typhle argentatus* Slastenenko, 1956; *Syngnathus rotundatus* Totonnese, 1970.

**Common names:** Engl: *Deep-smoted pipefish*; Rom. *Ac de mare*; Russ: *Morskaya igla*; Turk: *Deniz ignesi*.

**Order SYNGNATHIFORMES**

**Family SYNGNATHIDAE**

**Taxonomic description.** Body very elongate and straight, with conspicuous longitudinal edges; long, high and strong snout, flattened from side to side; mouth, small and oblique, situated on superior tip of snout; caudal region very long, non-prehensile. Seven longitudinal ridges along the body: two parallel to the back line, two lateral, two parallel to the ventral line and one mid-ventral. In the caudal region, the mid-ventral edge disappears, and the two laterals approach the sub-dorsal ones; dorsal fin begins above or near anus; pectoral fins short and rounded; no ventral fins; caudal and anal fins reduced. Males with two lateral folds in caudal region which approach each other on median line of head, producing an incubation chamber. Here, the eggs are spawned and develop. Ventral wall of head near incubation region intensely vascularized. Body greenish or brown-reddish, generally with dark spots and stripes.



**IUCN Status**

World level:

Black Sea Regional level:

Subregion level: **VU**

**Distribution, Habitat type.** A marine pelagic fish, able to survive in fresh water. Living only between plants, especially *Zostera*. Common throughout the Black Sea littoral and Azov Sea; also recorded in lakes Razelm-Sinoe.

**Critical habitats.** Littoral zones of north-eastern Black Sea.



**Limiting factors.** Loss of vegetation, essential for its development and spawning; eutrophication of littoral waters; hydrotechnical works which reduce the *Zostera* fields.

**Biology.** Feeds on crustaceans and juvenile fish; spawning period from March till August; females lays eggs in the incubation pocket of males; incubation lasts four weeks.

**Population trends.** Very common in the *Zostera* fields in the Agigea and Mangaba marine zones until 1950-1970, more rare in the *Cystoseira* fields of the southern littoral zone during the same period. During the last two decades, the population diminished due to the reduction of the *Zostera* fields. Presently caught in stake nets.

**Threats.** Predatory fish; anthropogenic pressure.

**Conservation measures taken.** None.

**Conservation measures proposed.** Purification of the drainage waters of coastal cities.

## References

Banarascu, P., 1964. Fauna of R. P. Romane, Pisces, Osteichthyes. Bucurest, Ed.Acad.R. P. Romania.

Muller, G. I., V. H. Skolka & N. Bodeanu, 1969. Preliminary data regarding the algal and animal populations associated with the *Cystoseira barbata* fields from the Black Sea Romanian littoral. Hidrobiologia 10: 270-289. (In Rom.).

Compiled by G. Radu & F. Verioti.

*Tadorna ferruginea* (Pallas, 1764)

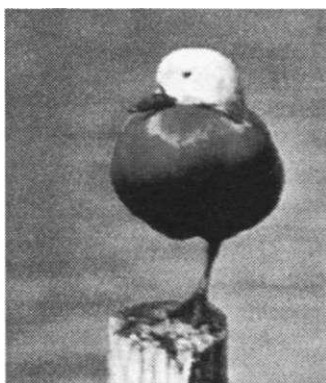
**Synonyms:** *Casarca ferruginea*, *Anas ferruginea* Ruddy.

**Common names:** Bulg: *Cherven angach*; Engl: *Shelduck*; Rom: *Califar rosu*; Russ: *Ogaf*; Turk: *Angit*; Ukr: *Ogar*'.

**Order ANSERIFORMES**

**Family ANATIDAE**

**Taxonomic description.** About 90-100 pairs out of a total population of 280-350 birds breed in Ukraine.



**IUCN Status**

World level:

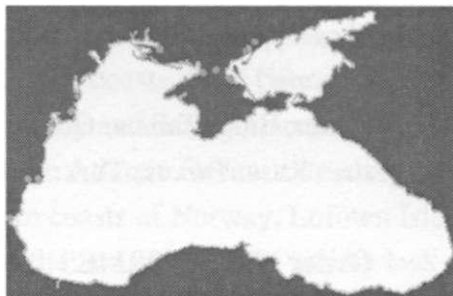
Black Sea Regional level:

Subregion level: **VU**

**Distribution, Habitat type, Critical habitats, Limiting factors.** Breeding habitats include rocky precipices along the banks of waterbodies, but also in abandoned buildings. Major limiting factors are the reduction of the breeding range due to recreational and economic activities, disturbance and killing by people, increased predation (crows, raccoons, foxes, domestic dogs).

**Biology.** A resident of the whole Black Sea basin. In the northern sub-regions it is a breeding, summer and irregular winter species. Breeding starts in late March - beginning of April. Nests are located in rocky niches and holes (those dug by foxes are occupied as well) often fairly high, or in abandoned buildings. The clutch consists of 8-12 eggs and is incubated by the female, while the male protects the nesting territory. Brooding duties are shared. Non-breeders associate in flocks of irregular size and stay in the breeding areas. In April-June these flocks are joined by unsuccessful breeding birds, in August and later the families with juveniles complete these associations. In late October the northern populations move southwards. In

warm years some birds spend winter in the coastal areas of the northern sub-regions. Both vegetative (plants, seeds) and animal (insects, molluscs) food is consumed.



**Population trends.** Numbers are low, but stable. Insufficient extension of the breeding range owing to a decrease of nesting opportunities in recreational and industrial zones.

**Threats.** Reduction of the breeding range due to recreational and economic activities, disturbance and killing by people, predation by crows, raccoons, foxes, and domestic dogs.

**Conservation measures taken.** No conservation exists. Most birds breed outside the protected areas.

**Conservation measures proposed.** Expansion of the protected areas where it breeds, toughening of measures prohibiting hunting and extraction of eggs, chicks and adults. Reduction of predation pressure.

## References

Andryushchenko Y., V. Kinda & I. Stadnichenko, 1996. The necessity of the creation of national parks in the northern part of the Kerch peninsula to protect a unique ornithocomplex. Proc. of Important Bird Areas in Ukraine Conference, IBA Programme. Ukrainian Society for Bird Conservation. Kiev: 163-173 pp. (in Russian).

Chervona Knyga Ukrayiny, 1994. (Red Data Book of Ukraine). Kijiv, Ukrajinaska Encyclopediya Publ.: 314 pp. (in Ukrainian).

Lysenko, V.I., 1991. Fauna of Ukraine, Anseriformes. Kiev, Naukova Dumka: 5 (3). (in Russian).

*Compiled by Y. Andryushchenko.*

*Thunnus thynnus* Linnaeus, 1758

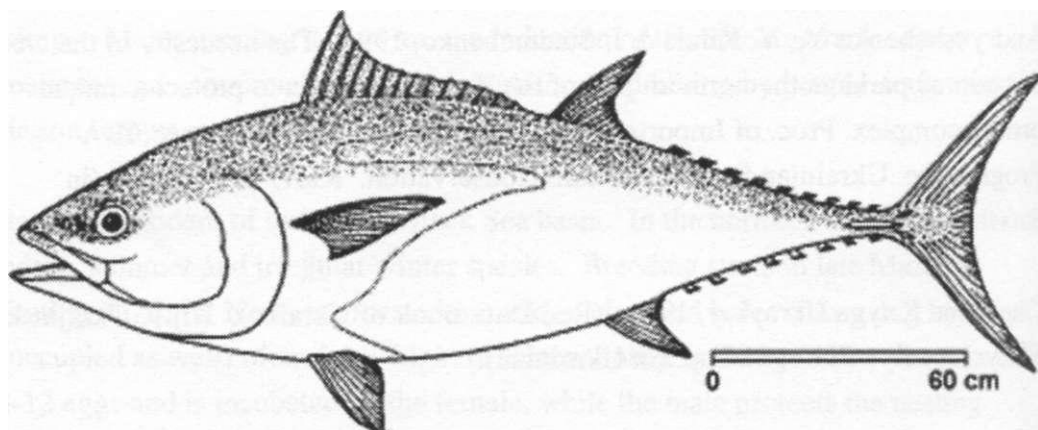
**Synonyms:** *Scomber thynnus* Linnaeus, 1758; *Scomber thynnus* Risso, 1810; *Thynnus vulgaris* Cuvier, 1832; *Thynnus brachypterus* Moreau, 1881; *Thynnus thynnus* Frade, 1931; (*Thynnus*) *thynnus* Fraser-Bruner, 1935

**Common names:** Engl: *Bluefin tuna*; Bulg: *Tunets*; Georg: *Chveulebrivi tinusi*, *Cisperi tinusi*; Rom: *Ton*, *ton rosu*; Russ: *Tunets*; Turk: *Orkinos*; Ukr: *Tunets*

**Order** PERCIFORMES

**Family** SCOMBRIDAE

**Taxonomic description.** A large fish with fusiform, rounded body (nearly circular in cross-section), very robust in front; immature specimens are more slender. Relatively large head with small eyes; a row of small, conic and pointed teeth on both jaws; teeth on vomer and palatins; nine to ten dorsal and eight to nine anal Unlets; two dorsal fins separated only by a narrow interspace, the second higher than the first. Pectoral fins very short, never reaching the interspace between the dorsal fins; two separate flaps (interpelvic process) between the pelvic fins. A well developed, although not particularly conspicuous corselet (= the area behind the head and around the pectoral fins covered with larger and thicker scales). Very small scales on rest of body; on each side of the caudal peduncle, a strong lateral keel between two small keels located at the base of the caudal fin lobes. Back dark-blue or back, lower sides and belly silvery-white with colourless transverse lines alternated with rows of colourless dots (the latter dominate in older fish), visible only in fresh specimens. First dorsal fin yellow or bluish, the second reddish-brown; anal fin and finlets dusky yellow, edged with black; lateral keel black in adults.



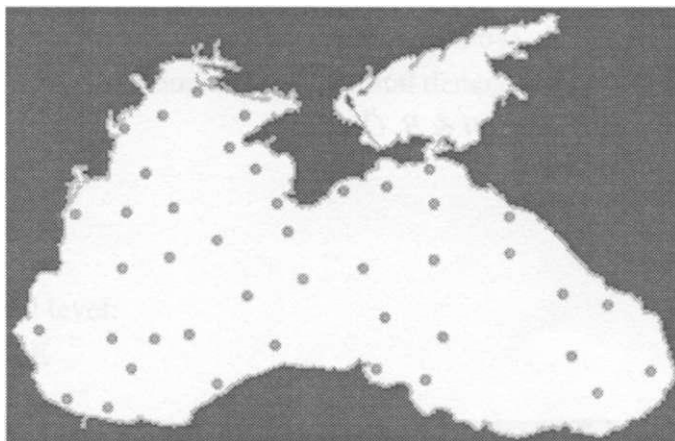
**IUCN Status**

World level:

Black Sea Regional level: **EN**

Subregion level: **EN**

**Distribution, Habitat type, Critical habitats, Limiting factors.** A pelagic species; immature specimens found in warm waters only, adults also enter cold waters in search of food. Present throughout the Mediterranean and Black Sea; common mainly along the North African coasts, from Gibraltar to Libya, off the coasts of Spain and France, around Sicily and Sardinia, in the Bosphorus and the Black Sea. Also widely distributed in the Atlantic Ocean, extending as far north as Newfoundland, the northern coasts of Norway, Lofoten Islands and Iceland. Threatened by pollution of the Sea of Marmara and by lack of food.



**Biology.** A fast swimming species, known to perform transoceanic migrations. The young form schools, sometimes together with other scombroids of similar size. Enters the Black Sea in spring, staying here till October-November; at the end of summer it spawns pelagic eggs; a voracious predator, eating all sorts of fish, crustaceans and cephalopods.

**Population trends.** A large reduction in stocks, up to a disappearance. On the Romanian littoral, the species has not been found for the last three decades. No catches on the Turkish coasts for in the last five years.

**Threats.** Pollution.

**Conservation measures taken.** None.

**Conservation measures proposed.** Fight pollution.

## References

Akyuz, E. & I. Artuz, 1957. Some observations on the biology of tuna (*Thunnus thynnus*) caught in Turkish waters. GFCM Proc. Tech. Pap. 4 (14): 93-97.

FAO, 1973. Species identification sheets for fishery purposes. Mediterranean and Black Sea, fishing area 37. Rome.

Ozturk, B. & A. A. Ozturk, 1996. On the biology of the Turkish straits system. Bull. Inst, oceanograph. Monaco, CDZSM Science Series 17 (2).

Radu, G., E. Leonte, G. Butoi, F. Verioti, A. Gorban & E. Radu, 1996. Principalele specii de pesti si mamifere din Marea Neagra (Determinator). (Main fish and mammal species from the Black Sea) (Identification sheets). RMRI Constanta, (in Romanian).

*Compiled by G. Radu, F. Verioti & B. Ozturk*

*Trachinus draco* (Linnaeus, 1758)

**Synonyms:** None.

**Common names:** Engl: *Greater weever*; Bulg: *Morski drakon*; Russ: *Morskoy drakon*; Turk: *Trakonya*.

**Order** PERCIFORMES

**Family** TRACHINIDAE

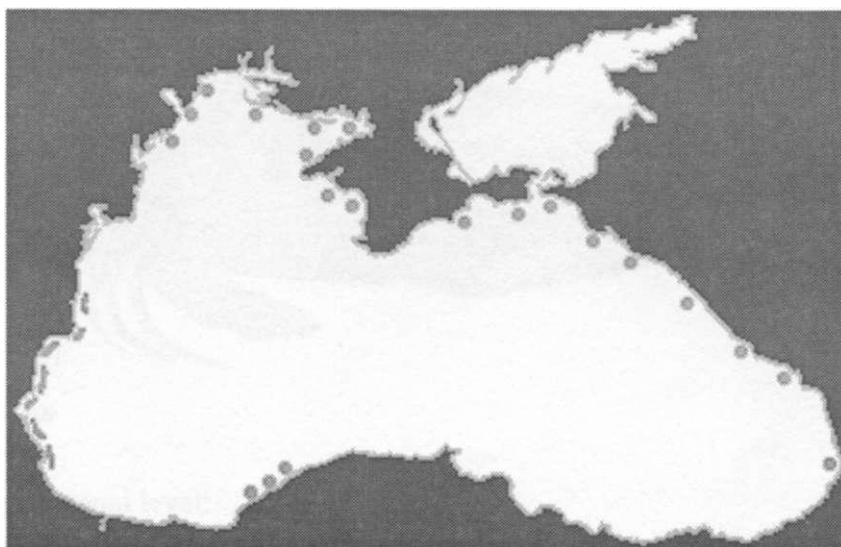
**Taxonomic description.** D V-VII 28-32; AII 27-31; P 14-17; V 15. Scales in lateral series 77-85. Vertebrae 40-41 (Svetovidov, 1964). Body elongated, laterally compressed. Eyes disposed dorsally, interorbital distance very small. Size up to 40 cm.

**IUCN Status**

World level:

Black Sea Regional level:

Subregion level: **CE**



**Distribution.** Mediterranean, Adriatic, Black Sea, eastern Atlantic from Norway to Morocco and Madeira (Tortonese, 1986). In Bulgaria rare along the entire coast.

**Habitat type, Critical habitats, Limiting factors.** Littoral and benthic; on sandy, muddy or gravel bottoms. Sensitive to hydro-chemical regime.

**Biology.** Reproduction: June-September; eggs and larval stages pelagic. Food: small invertebrates and fishes.



**Population trends.** Declining.

**Threats.** Changes in the hydro-chemical regime.

**Conservation measures taken.** None.

**Conservation measures proposed.** Improve the quality of the water.

## **References**

Svetovidov, A., 1964. The fishes of the Black Sea. Varne, Publ. House Science :550 pp.

Tortonese, E., 1986. Fishes of the North-eastern Atlantic and the Mediterranean 2: 953.

*Compiled by K. Prodanov & Y. Sivkov.*

*Trigla lucerna* Linnaeus, 1758

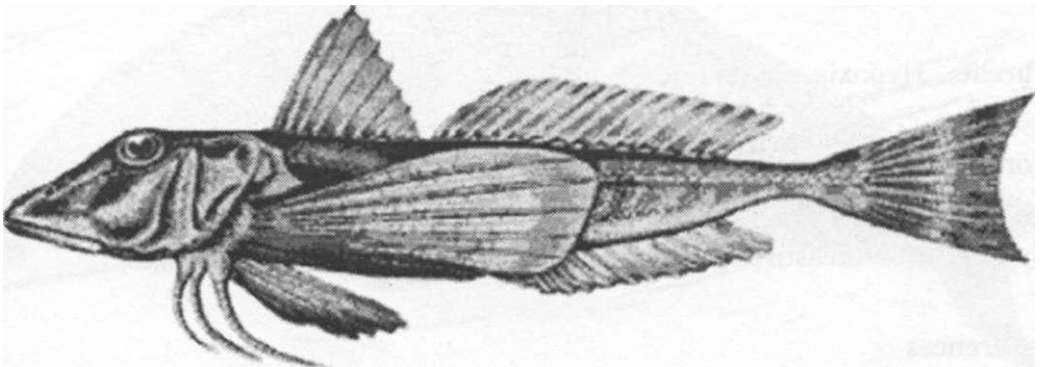
**Synonyms:** *Trigla hirundo* Bloch, 1758; *Trigla corvus* Risso, 1826; *Trigla poeciloptera* Cuvier, 1829; *Trigla corax* Moreau, 1881; *Trigla lucerna* LeDanois, 1913; *Chelidonichthys lucernus* Richards, 1988

**Common names:** Bulg: *Morska lystovitsa*; Georg: *Zgvis citeli mamali*; Rom: *Randunica de mare*; Türk: *Kirlangic*; Russ: *Morskoy petukh*

**Order** SCORPAENIFORMES

**Family** TRIGLIDAE

**Taxonomic description.** Body conical, head completely covered with more or less spiny bony plates. The three lower rays of the pectoral fins completely free from the interradiated membrane. Lateral line smooth, without enlarged bony scales. Snout terminates in two small lobes armed on their margin with spines and separated by a shallow notch. Behind the head and immediately above the pectoral fin, a broad coracoid spine, as long as eye diameter. Back and sides dull red or reddish-brown, belly white, pectoral fins purple-red externally, inner side blue with a circular blackish patch. Size maximum 65 cm; average about 30 cm.



**IUCN Status**

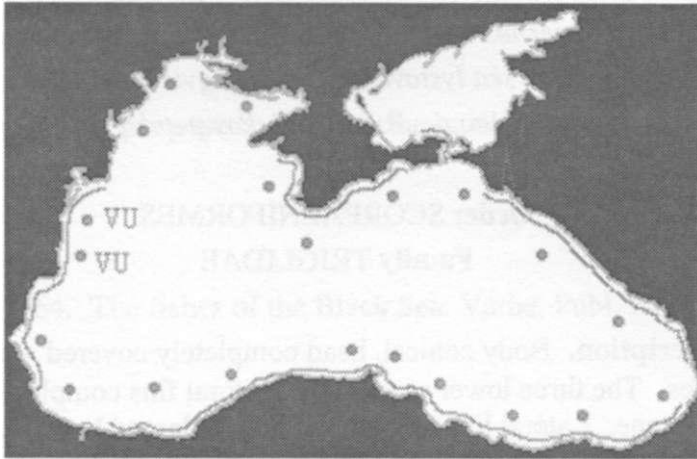
World level:

Black Sea Regional level:

Subregion level: **VU**

**Distribution, Habitat type, Critical habitats, Limiting factors.** A bottom species occurring over sand, muddy-sand or gravel at depths from 5 to 200 m, most commonly between 50 and 100 m. Common in the Mediterranean and the Sea of Marmara, present in the eastern Atlantic from the British Isles to the coast of Senegal. Threats: pollution, hypoxia.

**Biology.** Feeds mainly on crustaceans, mostly decapods, but also on fish and molluscs; spawning from December till July, with maximum intensity in June-July; pelagic eggs, spherical in shape, with a large fat drop.



**Population trends.** A rare species, caught with bottom trawls but also with long-lines and band lines. The species constitutes a separate statistical category in Turkey. In the other countries it is included in larger statistical categories, being rare in catches. On the Turkish coasts catches were 80 t (1989), 60 t (1990) and 1121 (1991).

**Threats.** Hypoxia, pollution.

**Conservation measures taken.** None.

**Conservation measures proposed.** Reduce eutrophication/pollution.

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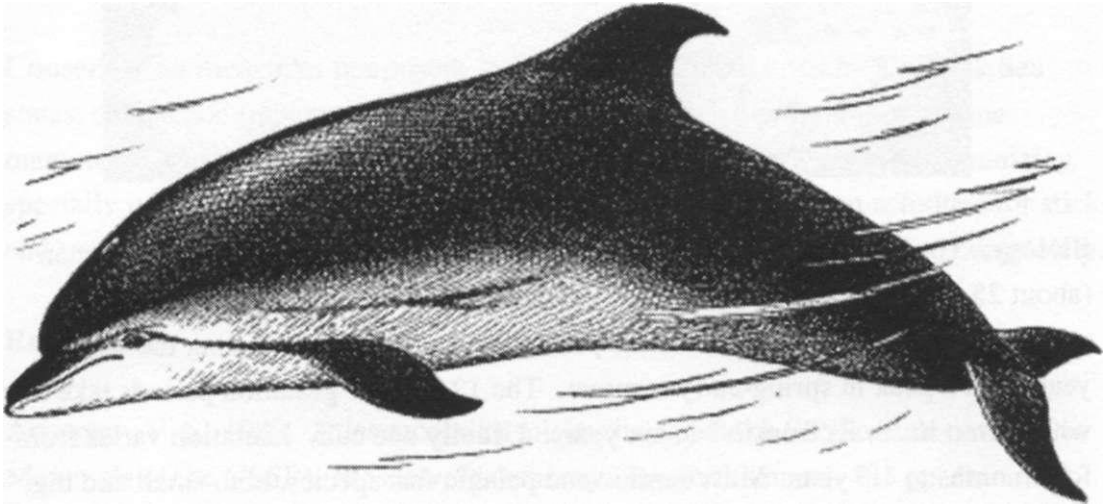
*Compiled by A. Petranu*

**Synonyms:** *Tursiops truncatus ponticus* Barabasch-Nikiforov, 1940

**Common names:** Engl: *Bottlenose dolphin*; Bulg: *Afala*; Georg: *Aphalina*; Rom: *Afalin*, *Delfinul cu bot de sticla*, *Delfinul cu bot gros*; Russ: *Afalina chernomorskaya*; Turk: *Afalina*; Ukr: *Afalina chornomors'ka*

**Order** CETÁCEA  
**Family** DELPHINIDAE

**Taxonomic description.** The single representative of the genus, and one of two dolphins in the Black Sea. Non-Soviet authors consider it an endemic sub-species, *T. truncatus ponticus*, but no indisputable proof supports this opinion. External distinctions: moderate-length snout separated from the melon by distinct crease; tall, falcate dorsal fin; robust conical teeth, partially worn in old animals.



**IUCN Status**

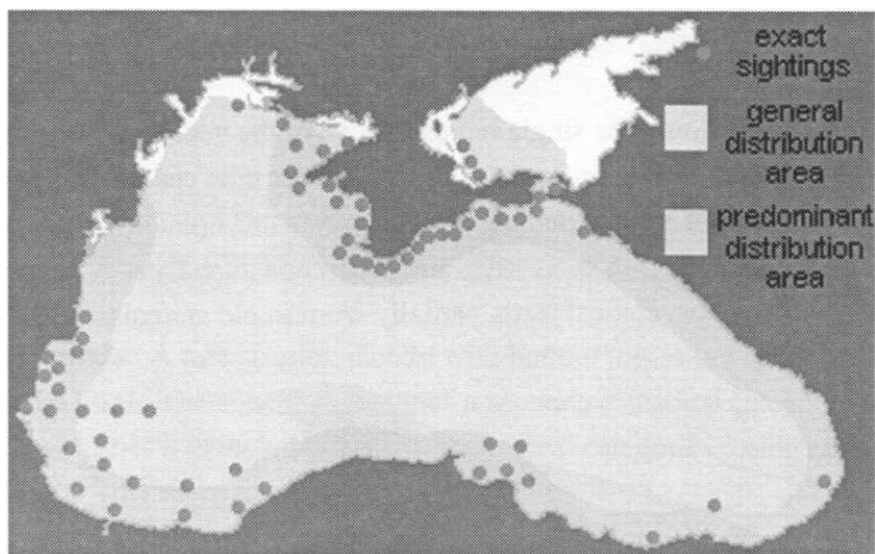
World level: **DD**

Black Sea Regional level: **DD**

Subregion level: **EN** in Romania, **VTJ** in Bulgaria and Ukraine

**Distribution, Habitat type, Critical habitats, Limiting factors.** Bottlenose dolphins used to be found all over the Black Sea continental shelf. Occasionally, they occur offshore, and, very rarely, in the Sea of Azov. There are no exact data on resident dolphin schools, although groups of foraging animals may stay in some places off the Crimean, Caucasian and Anatolian coasts for a few days to several months. Dolphins annually form more or less compact groups in the Kerch Strait and adjacent forestrait zone, from early spring to late autumn. Herd migrations (sometimes of several hundred animals) are known along the south coast of the

Crimea in autumn, but migratory routes should be studied more thoroughly, including, in particular, the Turkish strait system - the single possible route for genetic exchange between Black Sea and Mediterranean Sea populations. The Kerch Strait, Bosphorus, and contiguous waters are the most critical places for cetacean movements because of strong antropogenic pressure, caused by a variety of activities. The peculiarities of bottlenose dolphin reproduction mentioned below seem to be the main natural factor limiting population growth.



**Biology.** The biggest (up to 3.3 m long) Black Sea cetacean, with a long life span (about 25-30 years) and low fertility. Females become mature earlier (after 5-6, maximum 12 years) than males (8-12 years). Sexual behaviour during the whole year, with a peak in spring-early summer. The 12-months gestation periods take turns with barren intervals from 2-3 to six years. Usually one calf. Lactation varies from four months to 1.5 year. Most benthic and pelagic fish species, both small and big, are suitable prey, including Black Sea scad, herring, anchovy, whiting, turbot, grey and striped mullet, red mullet, bonito, *etc.* In recent years the acclimatized Far East mullet (*Mugil so-iuy*) has become its preferred prey during migrations off the Crimea. Each dolphin consumes 6-32 kg of fish per day.

**Population trends.** The bottlenose population was always estimated as smaller than that of the other Black Sea cetacean. In the 20th century, up to the early 1980s, it was reduced by mass kills by the dolphin-processing industry which was highly developed in the USSR and Turkey. Currently, there are no strict scientific data on population abundance.

**Threats.** Incidental catching in fishing nets; disturbance caused by extensive cabotage traffic; habitat limitation as a result of chronic pollution and artificial freshening of former feeding areas, *e.g.* Karkinit Bay in Ukraine. Since the 1960s

hundreds of bottlenose dolphins were captured alive in the Soviet Union and Romania for scientific, military and commercial needs. The Russian Federation and Ukraine are continuing that practice periodically in Taman Bay and near the south coast of the Crimea.

**Conservation measures taken.** Industrial dolphin killing has been prohibited in Bulgaria, Georgia, Romania, the Russian Federation, and Ukraine since 1966, and since 1983 in Turkey. In the 1980s the Black Sea *T. truncatus* was entered to the national Red Data Books of Georgia, Russia, Bulgaria and Ukraine. At an international level this species is protected by the Berne, Bonn and Washington (CITES) conventions (Appendix II), the IUCN Red Data Book, and, since November 1996 by the multilateral Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area (ACCOBAMS). The Black Sea population is mentioned as endangered in the UNEP Global Action Plan on Marine Mammals. A number of intergovernmental and international non-governmental organizations give attention to bottlenose dolphin conservation.

**Conservation measures proposed.** Adoption of ACCOBAMS by all Black Sea states; design and implementation of a regional Black Sea program for marine mammal conservation, including a bottlenose dolphin stock assessment, organizing specially protected areas, enhancement of rescue and rehabilitation activities for sick and traumatic animals. Any catching of wild cetaceans should be stopped completely.

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*Compiled by A. Birkun, Jr., M. Moldoveanu, M. Stanciu, T. Stanev, B. Oztiirk & A. Komakhidze*

*Upogebia pusilla* Petanga, 1792

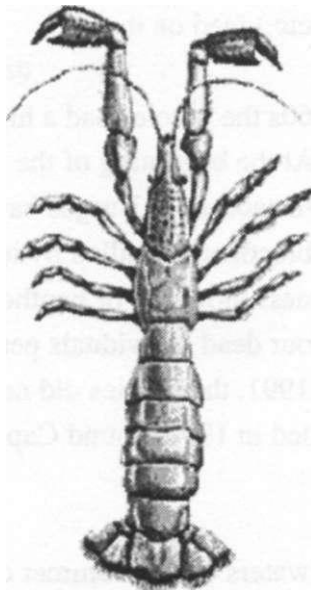
**Synonyms:** *Thalassina littoralis* Risso, 1816; *Gebia littoralis* Czerniavsky, 1884; Zernov, 1913; *Upogebia littoralis* Makarov, 1938; Dolgopolskaia, 1948; *Upogebia pusilla* Holthuis, 1961

**Common names:** Engl: *Flat-browed mud shrimp*; Bulg: *Upogebiya*; Rom: *Gebia*; Russ: *Morskoy krot*; Turk: *Mamun*; Ukr: *Mors'ky krit*

**Order DECAPODA**

**Family CALLIANASSIDAE**

**Taxonomic description.** The body of this decapod has a soft cover. It inhabits self-dug holes in the bottom. The body is flat, consisting of a cephalothorax and abdomen, with a longitudinal line on the back side, the *linea thalassinica*. A broad triangular rostrum covered with filaments that screen the eyes furnishes the front end of the cephalothorax. The first pair of extremities has the form of tongs, equal in size and shape. The rest of the extremities have a simple structure and are covered with filaments. The colour is brown or gray-green on the back part of the body and pale or light-yellow on its ventral part. The colour variation is due to a pigment layer in the outer part of the carapace, rich in chromatic cells with different pigments. The animal changes colour according to its environment. Length up to 45 mm.



**IUCN Status**

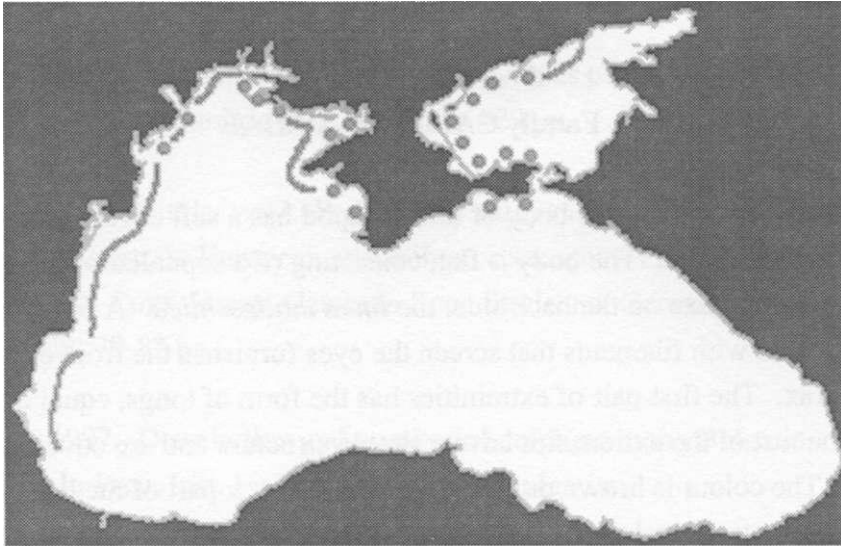
World level:

Black Sea Regional level:

Subregion level: **EN**



**Distribution, Habitat type, Critical habitats, Limiting factors.** *Upogebia pusilla* inhabits burrows in sandy-clay and muddy bottoms. Sometimes, after a heavy storm, specimens are cast ashore. A specific feature of its behaviour is that it leaves its hole during the night to search for food. This causes mass mortality in conditions of oxygen shortage, which is strongest in the night and is a result of the intense summer phytoplankton blooms of the last ten years.



**Biology.** This species lives in holes in the ground that it leaves only to seek food. It feeds on dead organic matter. It is monosexual, with summer reproduction. Many benthic fish (flounder, gobies etc.) feed on it.

**Population trends.** In the 1960s the species had a high coefficient of occurrence on the Bulgarian shelf (18.3%). At the beginning of the 1980s *U. littoralis* had the highest mean biomass of all crustaceans in Burgas bay. At the same period it was common in Varna bay, in the biocoenoses called by its name. In the 1990s a strong decline was recorded, due to mass mortality of benthos in the post-bloom hypoxia periods that began in 1986. Four dead individuals per square meter were recorded in Varna bay on 29.06.1989. In 1991, the species did not occur in benthic samples at all. Single individuals were recorded in 1996 around Cape Kaliakra and in front of Burgas bay.

**Threats.** Hypoxia of bottom waters during summer due to blooms of phytoplankton.

**Conservation measures taken.** No measures up to now.

**Conservation measures proposed.** Reduction of pollution and eutrophication to restrict algal blooms.

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*Compiled by T. Consulova*

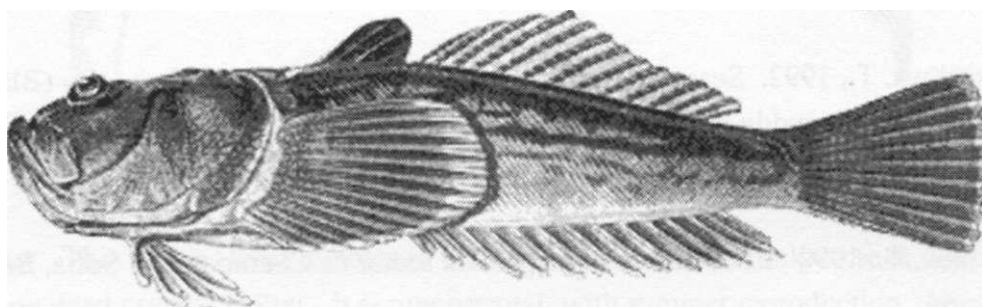
*Uranoscopus scaber* (Linnaeus, 1758)

**Synonyms:** *Cottus anostomus* Pallas, 1811.

**Common names:** Engl: Stargazer; Bulg: *Zvezdobroets*; Russ: *Zvezdochet*; Turk: *Kurbaga baligi*; Ukr: *Zirkoglyad*.

**Order PERCIFORMES**  
**Family URANOSCOPIDAE**

**Taxonomic description.** D III-IV 13-15. A 112-14; P 14-16. Scales in lateral series 76-90. Vertebrae 25-26 (Svetovidov, 1964; Stojanov *et al*, 1963). Body massive in front, somewhat compressed posteriorly. Head large and flat dorsally. Eyes on top of head. Interorbit space narrow. Colour: back and sides greyish-brown, belly yellowish-white. Size up to 35cm.



**IUCN Status**

World level:

Black Sea Regional level:

Subregion level: **CE** (Bulgarian Coast)

**Distribution.** Atlantic coast of Europe and Africa, Mediterranean and Black Sea (Hureau, 1986). In Bulgaria very rare along the entire coast.

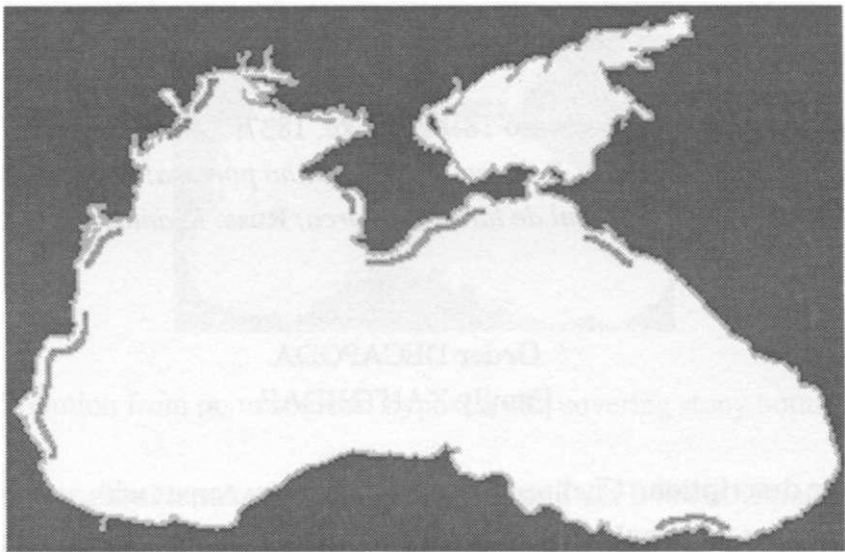
**Habitat type, Critical habitats, Limiting factors.** A benthic species, on sandy or muddy bottoms; on sandy bottoms. Threats: chemical pollution.

**Biology.** Reproduction in July-August. Post-larval and juvenile stages pelagic. Food: mainly fishes.

**Population trends.** Declining.

**Threats.** Chemical pollution.

**Conservation measures takerr.** None.



**Conservation measures proposed.** Improve water quality.

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*Compiled by K. Prodanov & Y. Sivkov.*

*Xantho poressa* (Qlivii, 1792)

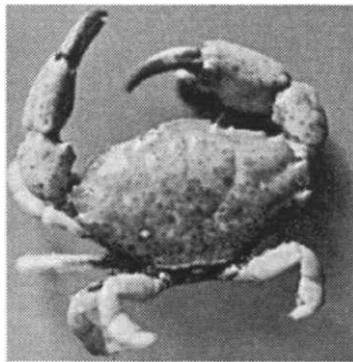
**Synonyms:** *Xantho rivulosus* Risso 1816, Rathke, 1837; *Xantho hydrophilus* Pesta, 1918; *Xantho rivulosus* Drach & Forest, 1953; *Xantho poressa*: Holthuis, 1954.

**Common names:** Rom: *Crabul de tarm, camiorca*; Russ: *Ksanto*; Turk: *Yalama*; Ukr: *Ksanto*.

**Order** DECAPODA

**Family** XANTHIDAE

**Taxonomic description.** Chelipeds with black fingers; carpus with antero-inner teeth without tubercles or granulations. Dactylus with longitudinal margin; not completely closed. Claws short, thick, short, hairy in adults. Size : length 28 mm, width 20 mm. Colour variable - chestnut with red points. Fingers of chelae black. Eggs lilac.



**IUCN Status**

World level:

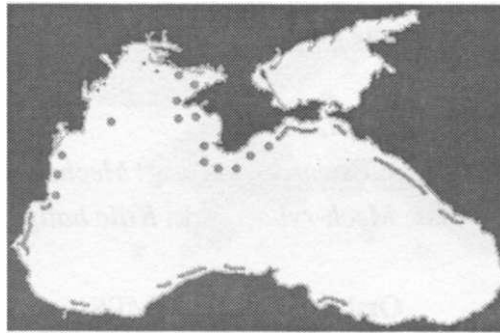
Black Sea Regional level: **VU**

Subregion level: **VU**

**Distribution, Habitat type, Critical habitats, Limiting factors.** Stony bottoms with mussels. Found at depths of 0.5-3 m but can reach 20 m. Suffers from hard frost or storms. Its biotope is also affected by developments along the shores such as the building of seaside resorts and ports.

**Biology.** A species with a rather low fecundity. Reproduction during July-August. Females spawn 800-1400 eggs. Larvae plankton with three metamorphic stages.

**Population trends.** During 1950-1970 very abundant in southern Romanian waters; also frequent until 1980, but rare at present. A narrowed distribution area compared with the 1980s. In 1993 only 20 ind.m<sup>-2</sup> at 6 m depth on the southern Romanian littoral (Eforie South).



**Threats.** Pollution from point sources, hypoxia; silt, covering stony bottoms.

**Conservation measures taken.** Included in the Red Data Book of Ukraine in 1994.

**Conservation measures proposed.** Reduce microbial pollution, increase the protection of coastal waters against chemical and microbiological contamination.

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*Compiled by C. Dumitrache.*

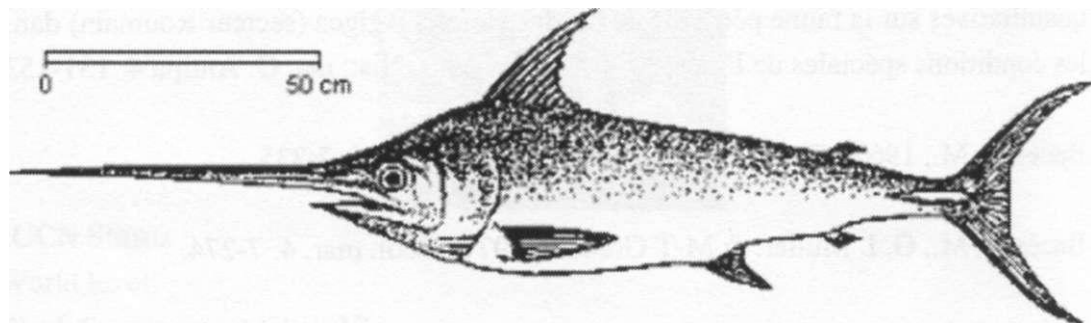
**Synonyms:** *Xiphias gladius* Gunther, 1860

**Common names:** Engl: *Broadbill swordfish*; Bulg: *Mechenosets*; Georg: *Khmalatevzi*; Rom: *Peste spada*; Russ: *Mech-ryba*; Turk: *Kilic baligi*; Ukr: *Mech-ryba*

**Order PERCIFORMES**

**Family XIPHIIDAE**

**Taxonomic description.** A large and distinctive fish with a rounded body, very robust in front; snout ends in a long flattened sword; young specimens are covered with scales and have a single dorsal and anal fin which, with growth, become divided. Large specimens without scales and with a high, short first portion, but smaller second elements to both fins. Pelvic fins absent; a single strong lateral keel on each side of the caudal peduncle; colour of back and upper side brownish-black; lower sides and belly light brown; teeth are present in the young only. Size: maximum 450 cm; average 100 to 220 cm.



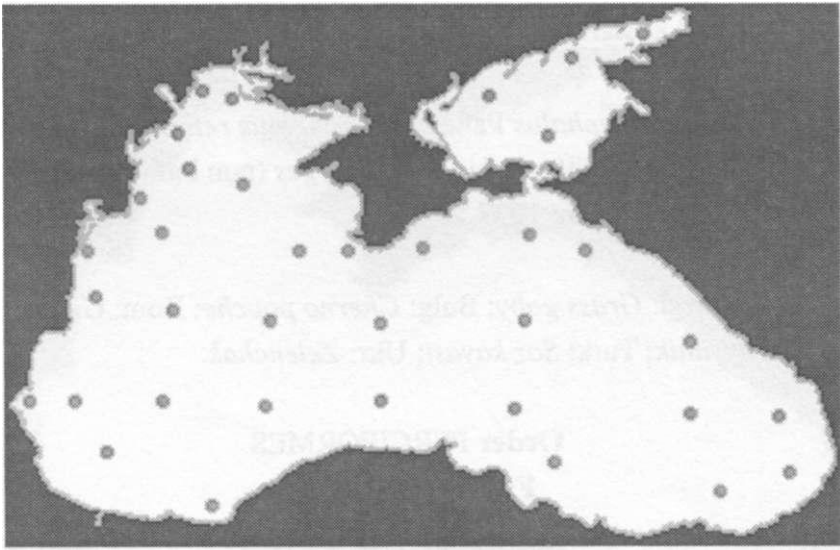
**IUCN Status**

World level:

Black Sea Regional level: **EN**

**Habitat type, Critical habitats, Limiting factors.** Pelagic, in coastal waters as well as in offshore surface waters. Common throughout the Mediterranean, Azov Sea and in all tropical and temperate oceans. In the East Atlantic from the North Sea to a latitude of 45 °S.

**Biology.** A highly migratory and very aggressive fish, generally not forming schools. Feeds on a wide range of fish, especially schooling species, on pelagic crustaceans and on squids. It uses its sword to kill larger prey. In coastal waters it is caught with fixed nets but mainly with floating long lines (small specimens).



**Population trends.** In the last three decades, only isolated specimens have been caught in stake nets in the Romanian waters (Sulina, Constantza and Agigea). No catch for the last five years on the Turkish coast.

**Threats.** Eutrophication, turbidity in shallow water.

**Conservation measures taken.** None.

**Conservation measures proposed.** Reduce eutrophication and pollution by improving the quality of riverine input. Mitigate pollution in the Bosphorus Strait and Black Sea. Ban swordfish fisheries in certain periods in the Black Sea. Establish a special recovery programme in the entire Black Sea.

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*Compiled by G. Radu & F. Verioti*



*Zosterisessor ophiocephalus* Pallas, 1811

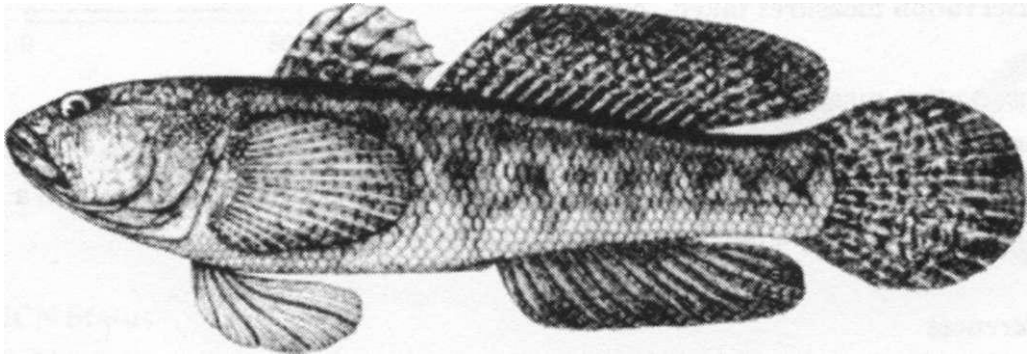
**Synonyms:** *Gobius ophiocephalus* Pallas, 1811; *Gobius reticulatus* Eichwald, 1831; *Gobius lota* Valenciennes, 1838; *Gobius cephalarges* (non Pall.) Antipa, 1909; *Zostericola ophiocephalus* Iljin, 1927.

**Common names:** Engl: *Grass goby*; Bulg: *Cherno popche*; Rom: *Guvidde iarba*; Russ: *Bychok-travyanik*; Turk: *Saz kayasi*; Ukr: *Zelenchak*.

**Order PERCIFORMES**

**Family GOBJJDAE**

**Taxonomic description.** D VI, I 13-16; A 112-16; P 17-20. Scales in lateral series 56-58. Vertebrae 27-29 (Gheorgiev, 1966). Head depth 0.97-1.05 of head width. Eye diameter 0.15-0.25 of head length. Upper lip uniformly wide. Pelvic disc 0.19-0.23 SL. Anterior membrane without lateral lobes. Suborbital papillae with seven transverse rows. Colour greenish-grey to brown-olive with numerous irregular brownish vertical bands down the sides. Size up to 24cm.



**IUCN Status**

World level:

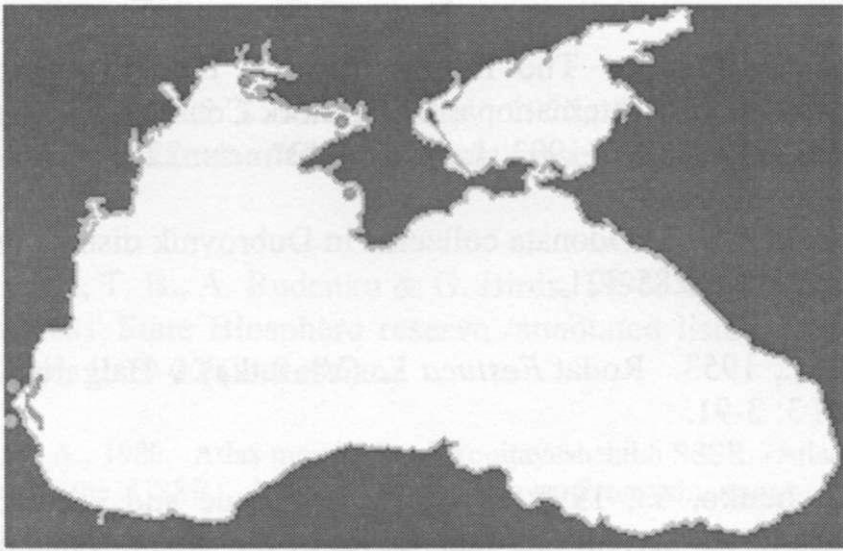
Black Sea Regional level:

Subregion level: **CR**

**Distribution.** Mediterranean, Black Sea and Sea of Azov. In Bulgaria in Lakes Burgas and Varna.

**Habitat type, Critical habitats, Limiting factors.** Inshore, brackish water of estuaries and lagoons, between sea-grasses. Threats: toxic chemical toxins.

**Biology.** Reproduction in April-July. Eggs on grasses. Sexually mature after two or three years. Food: larger crustaceans and small fishes (Miller, 1986).



**Population trends.** Declining.

**Threats.** Industrial pollution.

**Conservation measures taken.** None.

**Conservation measures proposed.** Reduce contamination.

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