



Current red data list of species in the southern black sea

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General Note



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ABSTRACT

The Black Sea is the most isolated sea in the world. It is linked to the Atlantic Ocean via the Mediterranean Sea through the Bosphorus and Dardanelle. Owing to a great catchment area compared to surface area the Black Sea is very susceptible to pollution stress from land based anthropogenic activity and its health is evenly dependent from the coastal and non-coastal countries of its basin. The aim of this review is to give current status of the Red Data List of the Turkish Black Sea coasts. There was no Red List publication available till 1999. However, the first regional the Black Sea data book including Turkish coast of the Black Sea was published in 1999, then Red Data Book Black Sea Turkey was published by Turkish Marine Research Foundation (TUDAV) in 2013. Finally, European Red List of Habitats including the Black Sea was published by European Union (EU) in 2016. Here, the highest proportion of threatened habitats in the Black Sea is reported as 13%. This review will give brief Red Data List of species in the Turkish Black Sea. This review will present checklist on the available literatures from the Turkish Black Sea coasts, as well as their current conservation status, enlisted in the International Union for Conservation of Nature (IUCN).

Key words: Red Data List, Black Sea, European Union (EU), International Union for Conservation of Nature (IUCN)

1. INTRODUCTION

The Black Sea is the most isolated sea in the world. It is linked to the Atlantic Ocean via the Mediterranean Sea through the Bosphorus and Dardanelle. Owing to a great catchment area compared to surface area the Black Sea is very susceptible to pollution stress from land based anthropogenic activity and its health is evenly dependent from the coastal and non-coastal countries of its basin^[1].

Eutrophication, land based sources of pollution, the introduction of alien species, inadequate resources management and overfishing resulted in a whole decline of biological resources, the variety of species and of the recreational worth of the Black Sea^[2,3]. For that reason the Black Sea is presently the great natural anoxic water basin in the world. This means that 87 % of its capacity is almost with no marine life^[4,5], apart from some forms of bacteria and meiobenthos^[6,7]. However, it is even so comparatively rich in living resources^[8]

The Black Sea biota considering the source of the species, it is separated into five groups. These are: Pontian relics, Boreal-Atlantic relics, Mediterranean species and Alien species^[8]. The Mediterranean immigrants are the very thickly populated elements in the Black Sea biota, consisting of the taxa up to 80% of the total number of species. This may be explained that the intrusion of saline waters and of Mediterranean immigrants into the Black Sea put pressure on the Pontian relics and many of them retreated to the brackish-water areas, some harbors and deltas^[9].

The Black Sea has a long coastline in Turkey and has essential for Turkish people in the way of biodiversity, fisheries and human settlement. In the meanwhile Turkey is a member of the Bucharest Convention and the Convention of the Biodiversity to protect marine living resources, species and habitats, there has not been satisfactory attempt made for rare, endemic and threatened species or stocks ^[10].

The International Union for Conservation of Nature (IUCN) Global Species Programme working with the IUCN Species Survival Commission (SSC) has been appraising the protection status of species, subspecies, varieties, and chosen subpopulations on a worldwide scale for more than 50 years to highlight taxa threatened with extinction, and thereby promote their conservation. The plants, fungi and animals evaluated for The IUCN Red List are the bearers of genetic diversity and the building blocks of ecosystems, and data on their protection rank and distribution meets the basis for making informed decisions about conserving biodiversity from regional to international levels. The IUCN Red List of Threatened Species supplies taxonomic, protection status and distribution data on plants, fungi and animals that have been worldwide appraised using the IUCN Red List Categories and Criteria. This system is outlined to detect the relative risk of extinction, and the principal aim of the IUCN Red List is to catalogue and highlight those plants, fungi and animals that are facing a high threat of worldwide dissolution^[11].

In this review is to give current status of the Red List of Threatened Species of the Turkish Black Sea coasts using IUCN Red List Categories (Table 1). The current status of the species in the IUCN^[11] Red List of Threatened Species has been identified in the southern Black Sea from the data obtained from previous studies.

Table 1 IUCN Red List Categories

NE	Not Evaluated
DD	Data Deficient
LC	Least Concern
NT	Near Threatened
VU	Vulnerable
EN	Endangered
CR	Critically Endangered
EW	Extinct in the Wild
EX	Extinct

2. THE LITERATURES OF THE RED DATA LIST OF SPECIES IN THE SOUTHERN BLACK SEA

The first regional Black Sea Red Data Book was published in 1999 which included Turkish part. This book was composed inside of 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^[12]. Bulgaria, Russia, Ukraine and Georgia had Red Data Books on the national level before this book was published. But there was no national Red Data Book in Romania and Turkey until this book had been published.

The Black Sea Red Data Book contains the Black Sea species which are besides raised in national and international Red Data Books and Lists, beyond other Black Sea threatened species which will be presented to the Black Sea Red Data Book by specialists employing collected data. The Black Sea Red Data Book covers: threatened and rare species of marine plants and animals; and, threatened and rare species of coastal organisms which are ecologically near to the sea ecosystem. In this book a total of 160 species were evaluated (including 43 Plantae, 1 Spongia, 2 Polychaeta, 4 Insecta, 1 Halocaridae, 29 Crustacea, 5 Mollusca, 1 Echinodermata, 1 Acrania, 41 Pisces, 25 Aves and 6 Mammalia)^[12].

“Red Data Book Black Sea, Turkey” was published in 2013 by Turkish Marine Research Foundation (TUDAV) which was more comprehensive and contains only Turkish part of the Black Sea. In this book a total of 131 species were evaluated (including 10 Algae, 2 Porifera, 16 Crustacea, 10 Mollusca, 13 Echinodermata, 66 Fish, 4 Marine Mammals and 10 Birds) and given information about IUCN status: Global status, Black Sea regional level and subregional levels for each organisms^[10].

In 2014 a revised checklist of the fish fauna of the Black Sea was reported. Yankova et al.^[13], researched to recent conservation status of marine fishes in the Black Sea. It was the initial attempt to submit a main Check List of the fishes in the Black Sea considering the data existing in the Black Sea countries, as well as their current protection status, provided in IUCN. The total number of Black Sea fish species was 189^[13].

Recently in 2016 “European Red List of Habitats” was published which is provides a comprehensive and systematic overview of the degree of endangerment of habitats assessed within the European territory of the EU and included a Black Sea part^[14]. The European Red List of Habitats^[14] provides an overview of the risk of collapse (degree of endangerment) of marine, terrestrial and freshwater habitats in the European Union (EU28) and adjacent regions (EU28+), based on a consistent set of categories and criteria, and detailed data and expert knowledge from involved Countries.

3. CURRENT STATUS OF THE RED DATA LIST OF SPECIES IN THE SOUTHERN BLACK SEA

A total of 131 species were evaluated by Öztürk et al.,^[10] (including 10 Algae, 2 Porifera, 16 Crustacea, 10 Mollusca, 13 Echinodermata, 66 Fish, 4 Marine Mammals and 10 Birds). These 131 species' threatened status in Red Data Book Black Sea, Turkey^[10] and current threatened status according to IUCN^[11] Red List of Threatened Species are compared in below and also in Table 2.

The evaluation made for the Black Sea Region in Red Data Book^[10] is reported that among the 131 species 22 species in DD status, 5 species in LC status, 1 species in NT status, 42 species in VU status, 26 species in EN status and 4 species in CR status. In same book assessments made in the sub-regional level showed that the two species became extinct in Turkey. It is also observed that the vast majority of species in sub-regional assessments are in the VU and EN status.

These 131 species are in the current investigation of the IUCN Red List Categories in 2017^[11] it is seen that 60 species in NE status, 10 species in DD status, 40 species in LC status, 3 species in NT status, 7 species in VU status, 2 species in EN status and 9 species in CR status. In the Red Data Book 2013 includes 72 species in NE status and in the current list of 2017, 18 are in the LC status, 4 are in the DD status and 1 in the NT status.

When the IUCN Red List Categories status of the species made in 2013 by Öztürk et al.^[10], are compared with the current status^[11], it is seen that the 12 species in the NE status have been taken into consideration and the numbers of the species in CR, EN and CR status have decreased. In Black Sea Red Data Book, Turkey^[10], 2 species assessed as EX status but current research they were found to CR status in the IUCN^[11] survey, which is due to the EX status of these two species only in the Black Sea Region. At the same time species were evaluated on a regional and subregional basis in the Black Sea Red Data Book, Turkey and species were reported to have more VU and EN status regional and subregional level than the global status.

Yankova et al.^[13], researched to recent conservation status of marine fishes in the Black Sea and they reported that 72 species in NE status, 20 species in DD status, 50 species in LC status, 5 species in NT status, 31 species in VU status, 2 species in EN status, 7 species in CR status and 2 species in EX status in total of 189 fish species.

Table 2 Threatened status of marine species in Black Sea Red Data Book, Turkey^[10] and current status according to IUCN^[11] Red List of Threatened Species

IUCN Red List Status	NE	DD	LC	NT	VU	EN	CR	EX
IUCN Red List (2017)	60	10	40	3	7	2	9	-
IUCN Red List (2013)	72	10	24	-	8	7	10	-
Black Sea Regional Level (2013)	31	22	5	1	42	26	4	-
Black Sea Subregional Level (2013)	4	17	4	5	56	35	8	2

In the current survey, it was determined that the number of species in the NE status decreased to 27, 17 in the DD status, 121 in the LC status, 4 in the NT status, 10 in the VU status, 1 in the EN status and 9 in the CR status. In 2014, 2 species assessed as EX status but current research they were found to CR status in the IUCN^[11] survey, which is due to the EX status of these two species only in the Black Sea Region (Table 3). It is seen that there was 72 species in NE status in 2014, the number of species of NE status decreased to 27 in current investigation and while the numbers of the species in VU status decrease, the number of the species in the CR status increase in 2017.

Table 3 Threatened status of fish in Black Sea in Yankova et al.^[13] and current status according to IUCN^[11] Red List of Threatened Species

Red List Category	IUCN Red List Status 2014	IUCN Red List Status 2017
NE	72	27
DD	20	17
LC	50	121
NT	5	4
VU	31	10
EN	2	1
CR	7	9
EX	2	-

The European Red List of Habitats^[14] provides an overview of the risk of collapse (degree of endangerment) of marine, terrestrial and freshwater habitats in the European Union (EU28) and adjacent regions (EU28+), based on a consistent set of categories and criteria, and detailed data and expert knowledge from involved Countries. A total of 63 habitat types were assessed in the Black Sea and Sea of Marmara, an area defined as EU28+, while a total of 53 habitats were assessed for the EU28 (i.e. Bulgaria and Romania). Excluding Data Deficient habitats, 78% of Black Sea habitat types found in the EU28 are threatened (VU-CR) (11% of them Critically Endangered), while 67% of habitats in the EU28+ are threatened (11% Critically Endangered) (Table 4).

Table 4 Number of Black Sea habitats in each Red List category^[14]

Red List Category	EU28	EU28+
CR	1	1
EN	5	2
VU	1	3
NT	1	1
LC	1	2
DD	44	54

4. CONCLUSION

Biodiversity damage is one of the world's main urgent crises with many species decreasing to seriously low levels and with major numbers going extinct. Unfortunately, any pollution negatively affects the Black Sea and especially the species. We must eliminate all pollutant elements of the Black Sea and protect its species. For this purpose, the decision-makers of all the Black Sea countries should come together and take precautions and projects should be produced by the scientists of these countries. In conclusion, it is hoped that the data provided through this review will be taken up by the key stakeholders in the Black Sea ecosystems and will be integrated in the decision making processes for environmental and development planning in marine ecosystems. In this way, it is expected that the future impacts of development actions affecting coastal ecosystems can be reduced and mitigated to the benefit of the Black Sea species and those people who rely on these species for their livelihoods and pleasure.

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Authors' contributions

LB analysed data and finalized the manuscript. All authors read and approved the final manuscript.

Conflict of Interests

The authors declare that there is no conflict of interests regarding the publication of this paper.

Further information

A part of this study was presented as a poster with English abstract only in ECOLOGY 2018, International Symposium Ecology 19-23 June 2018, Kastamonu Turkey.

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