

REVIEW ARTICLE

**Brief overview of fisheries management in the Black Sea:
Türkiye and EU member states**

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Abstract

The Black Sea is divided into six Exclusive Economic Zones for each of the bordering countries. This study offers a brief evaluation of fisheries management in the Black Sea, focusing on the divergent approaches of Türkiye and EU member states, Bulgaria and Romania. It highlights the common challenges of managing shared fishery resources in a region characterized by varied regulatory frameworks and policies. EU's Common Fisheries Policy claims a unified approach for member states where Türkiye follows an independent path, reflective of its unique geopolitical stance. The need for cross-border cooperation and knowledge exchange are underscored to effectively manage the semi-enclosed and transboundary nature of the Black Sea. In addition, the role of the EU funds in supporting sustainable fisheries practices and the constitution of regional cooperation are also briefly assessed. The high number of ongoing initiatives prioritizing sustainable utilization of the Black Sea is determined to be the demonstrations of the collective effort of the countries toward sustainable marine resource management. The study concludes that the effectiveness of any initiatives depends on the extent of collaboration among all Black Sea countries and a cooperative, science-based approach is essential for the long-term sustainability of the marine ecosystems and fisheries in the Black Sea.

Keywords: Fisheries policy, sustainability, regional cooperation, Romania, Bulgaria, Türkiye

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Introduction

The Black Sea, an enclosed body of water between Eastern Europe and Western Asia, covers about 436,400 square kilometers (Figure 1). Its maximum depth is approximately 2,212 m, featuring a unique water column structure with a well-mixed upper layer and an oxygen-deprived saline deeper layer, which give rise to a distinctive ecosystem. It connects to the Mediterranean through the Sea of Marmara and the Istanbul and Çanakkale Straits. Influenced by river inflows like the Danube and Dnieper, it exhibits varied physical and chemical characteristics across its eastern and western parts, impacting marine life and human activities. While the eastern basin is deeper, colder, and nutrient-rich, it is the shallower and warmer western basin that experiences more riverine inputs and human-induced environmental challenges like eutrophication (BSC 2019).

The Black Sea is bordered by six countries: Bulgaria, Georgia, Romania, Russian Federation, Türkiye, and Ukraine. They had been agreed on Exclusive Economic Zone (EEZ) in the Black Sea (Figure 1), established in accordance with the United Nations Convention on the Law of the Sea (UNCLOS) of 1982. Each country have national sovereignty in their EEZ and related arrangements for fisheries management.



Figure 1. Black Sea, surrounding countries and Exclusive Economic Zones (modified from MarineRegions.org., Flanders Marine Institute 2023)

The Black Sea fisheries are mostly small-scale and consist of both subsistence and commercial fishing (FAO 2022). The most commonly caught fish species include anchovy (*Engraulis encrasicolus*), sprat (*Sprattus sprattus*), horse mackerel (*Trachurus mediterraneus*), bluefish (*Pomatomus saltatrix*), Atlantic

bonito (*Sarda sarda*), whiting (*Merlangius merlangus*) and red mullet (*Mullus barbatus*). An estimated 60,000 to 70,000 people are directly involved in fishing activities, with approximately 20,000 to 25,000 fishing boats ranging from small traditional boats to larger industrial vessels (FAO 2022). The percentage of industrial fisheries is relatively low, accounting for only about 10% of the total catch. The total annual catch varies from year to year, but it has been estimated to be between 400,000 and 500,000 tonnes in recent years (FAO 2022). Anchovy catch is the most important fishery, accounting for the majority of the total catch. In recent years, the annual anchovy catch has been around 200,000 to 400,000 tonnes (Figure 2), although this varies depending on factors such as environmental conditions, fishing effort, and management measures.

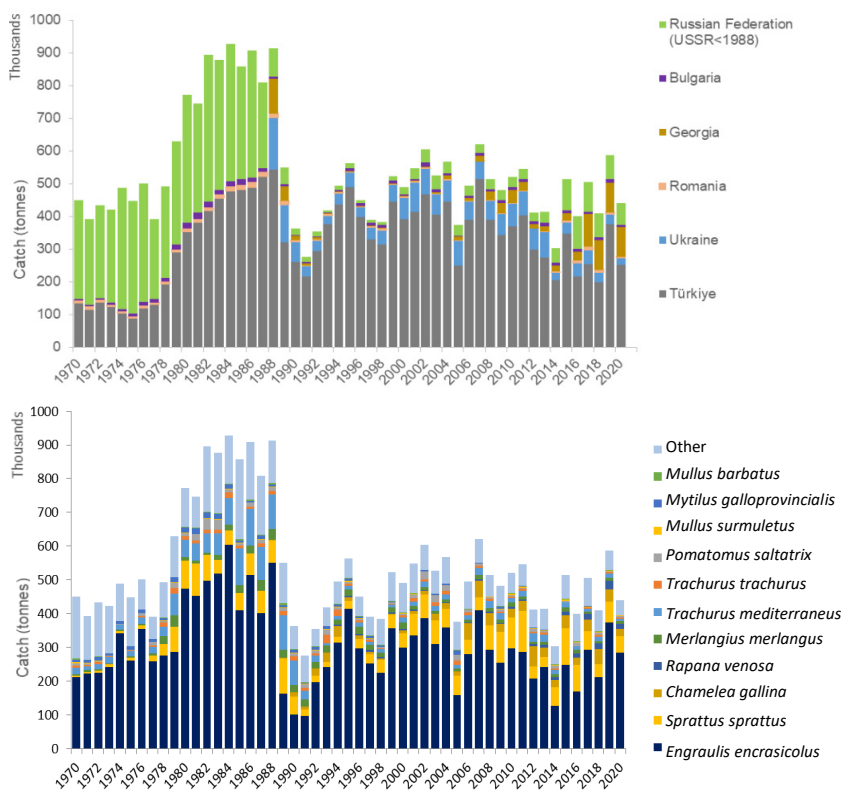


Figure 2. Black Sea annual catch according to countries (top) and main species (bottom). Catch data were taken from FAO-GFCM 2023.

The Black Sea ecosystem faces several challenges impacting its health and sustainability (BSC 2019). Overfishing and unsustainable fishing practices that led to the depletion of some fish stocks (e.g., spiny dogfish, turbot), causing cascading effects on the food web and ecosystem as a whole (Acara 1989).

Pollution from industrial, agricultural, and domestic sources, particularly in the western basin is another threat. Particularly, the Danube, as the largest tributary and a heavily polluted river, carries the industrial and domestic waste from nearly 13 Central and Eastern European cities, contributing to eutrophication (Bakan and Büyükgüngör 2000). Invasive species like the comb jellyfish (*Mnemiopsis leidyi*) had disrupted the food chain by consuming zooplankton that are critical to the survival of other species, altered the food web, led to declines in biodiversity and ecosystem function, as well as collapse of anchovy stocks resulting in huge economical damage in fisheries and related sectors during the early 1990s (Akoğlu 2023).

Following their detailed and comprehensive work on fisheries management in the Black Sea countries by Düzgüneş and Erdoğan (2008), Raykov and Düzgüneş (2017), this study aims to briefly overview the fisheries management strategies in the Black Sea, focusing on recent different approaches of Türkiye and EU member states, namely Bulgaria and Romania. It highlights the common challenges of managing shared fishery resources in a region characterized by varied regulatory frameworks and policies. Our study validates the conclusion by Düzgüneş and Erdoğan (2008), Raykov and Düzgüneş (2017) and underlines the importance of cross-border collaboration for sustainable fisheries management and the conservation of the Black Sea's marine ecosystems.

Fisheries management strategies

The Black Sea countries have different priorities, policies, and regulations, which pose difficulties to develop a coordinated approach to fisheries management. Today, there is an agreement among Black Sea countries for the 200-mile EEZ in the Black Sea (Özkan and Kırval 2023). Historically, Türkiye was used to almost monopolize fishing in the Black Sea (Özdamar 1995). Prior to 2007, EU lacked a specific regional policy for the Black Sea, but subsequently, it has become a key stakeholder in Black Sea fisheries. This means that the fisheries management strategies of EU member states and Türkiye offer distinct approaches in governance, policy formulation, and implementation.

Türkiye, aspiring for EU membership, has a distinct approach with the Ministry of Agriculture and Forestry at the helm. This ministry oversees policy, financial support, and quality control, though regional and local entities also independently manage marine and fisheries activities due to decentralized powers (Düzgüneş and Erdoğan 2008). Türkiye's fisheries governance, led by the Directorate General for Fisheries and Aquaculture under the Ministry of Agriculture and Forestry, operates under the Fisheries Law (No: 1380) and its amendments. Türkiye regularly updates its management, setting standards for commercial and recreational fishing including mesh sizes, catch limits, and conservation measures (Ünal and Göncüoğlu 2012).

The EU's fisheries management in the Black Sea, governed by the Common Fisheries Policy (CFP) since 1983, focuses on sustainable practices, competitive industry, and safe seafood (Cooper 1999). The revised CFP, applicable in EU waters including the Black Sea, it also mandates catch limits, fishing methods, and technical measures (EU 2017). It aims for sustainable fish stock management, supporting scientific research, and countering illegal fishing (EC 2023; Raykov and Düzgüneş 2017). In Bulgaria and Romania, fisheries management involves cooperation among central, regional, and local authorities, aligning with EU law and managing European Maritime Fisheries and Aquaculture Fund (EMFAF) projects. The "bottom up" approach of the European Committee of the Regions (CoR) also involves local governance (EMFAF 2021).

The key difference between EU states and Türkiye in fisheries management is EU policy adherence. EU states like Bulgaria and Romania implement CFP and benefit from frameworks like EMFAF. Türkiye, independent from the EU directives, maintains flexibility but lacks access to EU's integrated approach and collaboration. During 2002-2009, several twinning projects from different sectors including fisheries were initiated in Türkiye financed by the European Commission. The twinning program completed in 2011, but Türkiye could not fully comply with the EU Fisheries Legislation in terms of Fisheries Public Management and this chapter remained suspended since then (Pot *et al.* 2011). Because the EU's role is vital in providing incentives and promoting regional cooperation, its influence through CFP offers member states advantages in resource sharing and standardized practices, which Türkiye, as a non-EU member, misses out on.

Financial supports in fisheries

The EMFAF, operational from 2021 to 2027, plays a key role in supporting the EU's CFP, maritime policy, and global ocean governance agenda. The EMFAF is instrumental in fostering a sustainable approach to fisheries and aquaculture, promoting environmental conservation and aligning with broader EU strategies for climate and environmental policies, as outlined in the European Green Deal. As per EMFAF Regulation (EU) 2021/1139 Article 8, member states must create national implementation programs detailing strategic and investment priorities, including annual financial plans, subject to European Commission approval.

Following the adoption of the Partnership Agreement 2021-2027 with Bulgaria, the European Commission adopted the EMFAF program for Bulgaria, with a total financial allocation of €121 million for the period 2021-2027, of which €85 million is the EU contribution. This program aims to support Bulgaria in building resilient, innovative, sustainable, and low-carbon fishery, aquaculture, and processing sectors, contributing to the green and digital transition. It also focuses on the development of fishing and aquaculture communities, protection and restoration of aquatic biodiversity and ecosystems, and strengthening sustainable sea and ocean management. The program allocates 32% of the funding to

sustainable fisheries, 40.8% to sustainable aquaculture and processing, 20% to the sustainable blue economy in coastal and inland regions, and 1.2% to strengthening international ocean governance (EC 2021).

For Romania, under its 2021-2027 Partnership Agreement with the EU, the total financial allocation for the EMFAF program is €232 million, with €162.4 million contributed by the EU. This program supports sustainable investments in aquaculture and fisheries, accelerating Romania's green and digital transition in the sector. It aligns with the CFP and EU policy priorities in the Black Sea as outlined in the European Green Deal. The Romanian EMFAF program focuses on sustainable fisheries, sustainable aquaculture, processing and marketing, and sustainable blue economy in coastal, island, and inland regions, contributing to the EU's environmental and climate objectives (EC 2022).

Türkiye's participation in EU programs as well as its involvement in the EMFAF program for the period 2021-2027 and the amount of funding allocated is limited and differs from that of EU member states. To the best of knowledge, there are three ongoing projects including Türkiye's participation as listed below:

Black Sea Assistance Mechanism (BSAM): Participants are Bulgaria, Romania, Türkiye, Ukraine, Russia, Georgia, and the Republic of Moldova. Project aim is to implement and monitor the Common Maritime Agenda (CMA) to promote the Blue Economy in the Black Sea region.

4BIZ - Boosting the Blue Economy in the Black Sea Region: Participants are Bulgaria, Georgia, Greece, Romania, Türkiye, and Ukraine. This project aims to build up a collaboration system among the blue economy interested parties in EU and adequate non-EU Black Sea countries. In order to promote innovation, digitalization and investment in the Black Sea Blue Economy with a special emphasis on fisheries and aquaculture, coastal and maritime tourism and maritime transport, local capacity identification, building and conservation is needed. It is being conducted under the coordination of the Romanian National Secretariat of the Black Sea Universities Network.

Black Sea SIERRA Project: Partnerships are Bulgaria, Italy, Ukraine, and Türkiye. Project's aim is to develop a framework for business collaboration in the fields of fisheries, aquaculture, coastal and maritime tourism, and maritime transport. It is coordinated by the Romania's National Institute for Research and Development in Environmental Protection.

There are also other notable marine-based initiatives and programs, and regional cooperation projects, led by various organizations and countries bordering the Black Sea. These initiatives focus on areas like research, blue economy, and environmental protection. For example, among these initiatives are the European Commission's Black Sea Strategic Research and Innovation Agenda (SRIA)

Implementation Plan, aiming to protect habitats and bolster the local blue economy through education and research infrastructure, and the Common Maritime Agenda (CMA) for the Black Sea, involving seven countries to address maritime challenges and promote regional development. Additionally, the BRIDGE-BS Project under Black Sea Connect enhances marine research for sustainable ecosystem utilization, while the Interreg NEXT Black Sea Basin Programme, with a 32.52 million EUR budget, supports diverse projects in countries like Bulgaria, Greece, and Romania, focusing on climate adaptation, disaster prevention, and environmental conservation.

The General Fisheries Commission for the Mediterranean (GFCM) operates as a regional body dedicated to the sustainable management and conservation of fish stocks in the Mediterranean and Black Sea, under Food and Agricultural Organization (FAO) of the UN. The GFCM's initiatives in the Black Sea encompass data collection and scientific research to evaluate fish stock conditions, monitoring species abundance and distribution. Bulgaria, Romania, and Türkiye, among other nations, support these initiatives by contributing data and engaging in research endeavours. The GFCM formulates management directives, including catch limitations, gear regulations, and seasonal fishing moratoria, which member countries are expected to enforce. The collaborative framework provided by the GFCM allows Black Sea countries, including Georgia, the Russian Federation, and Ukraine, to develop and enforce cohesive management strategies. Monitoring and control mechanisms are also promoted to deter IUU fishing effectively. Each Black Sea country is responsible for implementing these regulatory measures within its territorial waters. According to the State of Mediterranean and Black Sea Fisheries report (FAO 2022), these concerted efforts have led to notable improvements, such as the resurgence of certain fish populations and a downturn in illicit fishing practices.

Conclusion

This study underscores the importance of collaborative, science-based approaches for effective fisheries management in the Black Sea. Despite differing management strategies and regulatory frameworks, the common challenges of overfishing, pollution, and environmental degradation necessitate coordinated efforts among all the Black Sea countries, including EU member states and Türkiye. The involvement of regional bodies like the GFCM and EU-funded programs has shown promising results, indicating improvements in fish populations and reduction in illegal fishing activities. However, the effectiveness of these efforts is based on consistent and transparent cooperation, adherence to scientific recommendations, and the inclusion of all stakeholders. Future strategies should prioritize the integration of Türkiye's unique approach within the broader regional context, aiming to harmonize policies and practices. Ultimately, the sustainability of the Black Sea's marine ecosystems and fisheries

relies on a united front, blending diverse policies into a cohesive framework that respects both ecological needs and economic realities.

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Türkiye ve AB üyesi ülkelerin Karadeniz'deki balıkçılık yönetimi uygulamalarına kısa bir bakış

Öz

Karadeniz'e sınırı olan altı ülkenin her birinin denizel kaynakların kullanımına izin veren Münhasır Ekonomik Bölgesi vardır. Bu çalışma, Türkiye ile AB üyesi ülkeler, Bulgaristan ve Romanya'nın farklı yaklaşımlarına odaklanarak Karadeniz'deki balıkçılık yönetiminin kısa bir karşılaştırmasını sunmaktadır. Ülkelere göre çeşitli çerçeve düzenleme ve politikaların yer aldığı bir bölgede paylaşılan balıkçılık kaynaklarını yönetmenin zorluklarına dikkat çekilmiştir. AB'nin Ortak Balıkçılık Politikası üye devletlere ortak bir yaklaşım sunarken, Türkiye kendine özgü jeopolitik duruşunun bir yansıması olarak bağımsız bir yol izlemektedir. Bu nedenle, Karadeniz'in yarı kapalı yapısının etkili bir şekilde yönetilmesi için sınır ötesi iş birliği ve bilgi alışverişine olan ihtiyacın altı çizilirken sürdürülebilir balıkçılık uygulamalarının desteklenmesinde ve bölgesel iş birliğinin oluşturulmasında AB fonlarının rolü de kısaca değerlendirilmiştir. Mevcut durumda devam etmekte olan ve Karadeniz'in sürdürülebilir kullanımına öncelik veren çeşitli girişimler, ülkelerin sürdürülebilir deniz kaynakları yönetimine yönelik ortak çabalarını göstermektedir. Sonuç olarak, tüm bu girişimlerin başarısının, Karadeniz'e kıyısı olan ülkeler arasındaki iş birliğinin boyutuna bağlı olduğu ve Karadeniz ekosistemi ve balıkçılığının uzun vadeli sürdürülebilirliği için işbirlikçi, bilime dayalı bir yaklaşım gerekliliği vurgulanmaktadır.

Anahtar kelimeler: Balıkçılık politikası, sürdürülebilirlik, bölgesel iş birliği, Romanya, Bulgaristan, Türkiye

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