

## DEMERSAL ICHTHYOFAUNA OF THE ROMANIAN BLACK SEA AREA

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**Abstract.** The Black Sea ichthyofauna underwent major changes in the last 50 years, as both qualitative and quantitative structure and the behavior of different species. These changes are consequences of anthropogenic activities, direct and indirect fishing pressure by deteriorating environmental conditions, particularly in the western sea. Demersal fish species inhabiting the continental shelf located in the Romanian Black Sea sector is the most important segment of regional fishery potential in terms of commercial interests, the domestic and international demand. Demersal species of deep interest, regards *Psetta maeotica* (turbot), *Platichthys luscus flesus* (European flounder), *Huso huso* (beluga), *Acipenser gueldenstaedti* (Danube Sturgeon), *A. stellatus* (Starry Sturgeon), Gobiidae (goby spp) and Mullidae (red mullet). This paper presents the current state of demersal ichthyofauna fisheries at the Romanian Black Sea coast and the time evolution of main fish species. The results of the Romanian research also reflect the work undertaken in Romania, between 2000 and 2008. Demersal ichthyofauna as well as knowledge of the biology of major species that populate the Romanian seaside, under specific hydroclimatic conditions was our main aim.

**Keywords:** ichthyofauna, Black Sea, demersal species, catch.

**Rezumat. Ihtiofauna demersală din sectorul românesc al Mării Negre.** Ihtiofauna Mării Negre a suferit modificări majore în ultimi 50 ani, atât în structura calitativă și cantitativă, cât și în comportamentul diferitelor specii. Aceste schimbări sunt consecințe ale activităților antropogenice, direct prin presiunea de pescuit și indirect prin deteriorarea condițiilor de mediu, în special în partea de vest a mării. Speciile de pești demersali care populează platoul continental aflat în zona de competență a României, la Marea Neagră, reprezintă segmentul cel mai important al potențialului pescăresc regional sub aspectul interesului comercial, a cererii pe piața internă și internațională. Dintre speciile demersale, un deosebit interes îl prezintă *Psetta maeotica* (calcan), *Platichthys flesus luscus* (cambula), *Huso huso* (morun), *Acipenser gueldenstaedti* (nisetru), *A. stellatus* (păstruga), Gobiidae (guvizi) și Mullidae (barbun). Lucrarea prezintă starea actuală a pescuitului ihtiofaunei demersale din zona litoralului românesc al Mării Negre, precum și evoluția în timp a principalelor specii de pești. Totodată lucrarea reflectă rezultatele cercetărilor românești, întreprinse în sectorul românesc, în perioada 2000 – 2008. S-a urmărit în principal atât cunoașterea ihtiofaunei demersale cât și a celor biologice ale principalelor specii ce populează litoralul românesc, în condițiile hidroclimatice specifice perioadei analizate.

**Cuvinte cheie:** ihtiofauna, Marea Neagră, specii demersale, captură.

### INTRODUCTION

The Black Sea ichthyofauna underwent major changes in the last 50 years, as both qualitative and quantitative structure and the behavior of different species. These changes are consequences of anthropogenic activities, direct and indirect fishing pressure by deteriorating environmental conditions, particularly in its western part. A specific feature of the Pontic basin is the fact that most fish species occupy large areas, located in the exclusive zone of the riparian countries. In this respect, the Romanian littoral has a very important position, given its role in the feeding and breeding of the main species, despite the fact that the catches obtained in this area do not exceed 2% of the total catch in the Black Sea (BĂNĂRĂSCU, 1964; CĂRĂUȘU, 1952).

The demersal fish species, which populate the Black Sea continental shelf in the Romanian jurisdiction, represent the most important segment of the regional fishing potential from the commercial point of view, the internal and external market demand. Out of the demersal species, only the turbot generates special interest, which, through an appropriate management of its exploitation and a good catch capitalization can ensure the economic comeback of the national marine fisheries, determined by the market offer of valuable fishery products, the demand of which is currently poorly met.

Paradoxically, even though in Romania marine demersal species fishing enjoys a long tradition, its practice being recorded as a basic occupation of the fishing settlements registered in the 18<sup>th</sup> and 19<sup>th</sup> centuries Dobrogea, by the beginning of the year 2000, the demersal reserves of the Romanian exclusive economic zone were targeted by and have become more and more interesting for the illegal fishing often boldly practiced by Turkish, Bulgarian, and even Ukrainian fishermen. We must underline the fact that the largest agglomerations were recorded mostly on the Romanian coastline, especially during the turbot breeding period. During the last years of the 90's and at the beginning of the new millennium, as a follow up of the gradual decrease of the eutrophication process and pollution of the Black Sea waters, the exploitable fishing resources are slowly recovering, in a durative, but obvious process. These are signals that the poorly exploited demersal fish resources are in a relatively good state, which helps create the foundation of the reorientation towards this type of fishing (demersal) (ZAIȚEV 1999).

### MATERIAL AND METHODS

The methodology and techniques used for collecting, verifying, processing, and data analyzing, as well as for the assessment of fish stocks are generally those accepted in the entire Black Sea basin and in accordance with the international standard. The qualitative and quantitative composition of the fish catches were obtained from the fishing statistics after centralization, the temporal data were obtained from the fishing companies and after interviews with fishermen.

## RESULTS AND DISCUSSIONS

**Qualitative composition of the demersal ichthyofauna of the Black Sea****Structure of the Black Sea demersal ichthyofauna**

If in the '60s of the twentieth century, the list of species caught in the Black Sea fisheries statistics comprised more than 50 species, in 2005, their numbers greatly reduced, appearing only 25 major species. A main cause of the decline in the number of species is the change in the hydrologic conditions, particularly the decrease of salinity and water temperature, which has resulted in the disappearance of basic species such as blue mackerel and bonito.

Studies made by Russian scientists showed that in northeastern Black Sea about 166 species are found, out of which 111 species are of Atlantic origin, 29 species Ponto-Caspian, 6 species auto-acclimated, 9 species endemic, and 23 local species (NIKOLSKI, 1962; SVETOVIDOV, 1964). Of these, in the Black Sea, there is reported a number of 23 families belonging to the group of demersal fish, the most important being: Squalidae, Acipenseridae, Serranidae, Mullidae, Sparidae, Labridae, Gobiidae, Scophthamidae, Pleuronectidae, and Soleidae (Table 1) (MAXIMOV & ZAHARIA, 2002).

Of the 64 demersal species reported in the Black Sea, out of which 20 are subject to industrial fishing, the following species stand out: *Acipenser stellatus* (starry sturgeon), *A. güeldenstaedti colchicus* (Danube sturgeon), *Huso huso* (beluga), *Mesogobius batrachocephalus* (knout goby), *Mullus barbatus ponticus* (red mullet), *Neogobius melanostomus* (round goby) *Psetta maotica* (turbot), and *Platichthys flesus luscus* (European flounder).

The rest of the demersal species, although of no commercial interest, with rare and sporadic occurrences, have a high scientific value, many of them being listed in the category of endangered species, in the Red Book of the Black Sea (Table 1). The following ones can be listed: Sciaenidae (*Sciaena shadow* and *S. cirrosa*), Sparidae (*Boops boops*, *Diplodus sargus*, *Oblada melanura*), Labridae (*Labrus viridis*), Callionymidae (*Callionymus* spp.) Blenniidae (*Blennius sphynx*, *B. zvonimir ponticus*, *Parablennius* spp.) Scorpaenidae (*Scorpaena porcus*), and Triglidae (*Trigla* spp.) (MAXIMOV et al., 2003; 2004; 2006).

**The structure of demersal ichthyofauna in the Romanian Black Sea**

Research conducted at the Romanian Black Sea coast indicates the presence of over 50 of pelagic and demersal species, of which only 20 appear in the annual fishing statistics, and only 6 are demersal. If during the '60s, along the Romanian Black Sea coast were reported many demersal species and their major contribution to marine fisheries, currently their number decreased greatly, the statistics currently mentioning only 4-5 families, of which higher catches are registered by Gadidae family, Gobiidae, and Scophthalmidae (MAXIMOV & ZAHARIA, 2002).

Table 1. List of demersal ichthyofauna reported in the Black Sea.  
Tabel 1. Lista ihtiofaunei demersale semnalate în Marea Neagră.

FAMILY	SPECIES	Name popular	Endangered category **
Rajidae	<i>Raja clavata</i> LINNAEUS 1758	thornback ray	N <sub>i</sub>
Dasyatidae	<i>Dasyatis pastinaca</i> (LINNAEUS 1758)	common stingray	V
Acipenseridae	<i>Acipenser stellatus</i> PALLAS 1771	starry sturgeon	V
	<i>Acipenser gueldenstaedti colchicus</i> MARTI 1940	Danube sturgeon	V
	<i>Huso huso</i> (LINNAEUS 1758)	beluga	V
Gadidae	<i>Gaidropsarus mediterraneus</i> (LINNAEUS 1758)	shore rockling	R
	<i>Merlangius merlangus euxinus</i> (NORDMANN 1840)	whiting	N <sub>i</sub>
Serranidae	<i>Dicentrarchus labrax</i> (LINNAEUS 1758)	European seabass	?
	<i>Serranus cabrilla</i> (LINNAEUS 1758)	cabrilla seabass	E <sub>x</sub> ?
	<i>Serranus scriba</i> (LINNAEUS 1758)	painted comber	E <sub>x</sub> ?
Sciaenidae	<i>Sciaena umbra</i> LINNAEUS 1758	brown meagre	R
	<i>Sciaena cirrosa</i> (LINNAEUS 1758)	shi drum	R
Mullidae	<i>Mullus barbatus ponticus</i> ESSIPOV 1927	red mullet	V
	<i>Mullus surmuletus</i> LINNAEUS 1758	striped red mullet	V
Sparidae	<i>Boops boops</i> (LINNAEUS 1758)	bogue	R
	<i>Dentex dentex</i> (LINNAEUS 1758)	common dentex	R
	<i>Diplodus sargus sargus</i> (LINNAEUS 1758)	white seabream	R
	<i>Oblada melanura</i> (LINNAEUS 1758)	saddled seabream	R
	<i>Sparus aurata</i> LINNAEUS 1758	gilthead seabream	R
	<i>Spondylosoma cantharus</i> (LINNAEUS 1758)	black seabream	R
Centracanthidae	<i>Spicara flexuosa</i> RAFINESQUE 1810	picarel	
	<i>Spicara maena</i> (LINNAEUS 1758)	blotched picarel	
Labridae	<i>Coris julis</i> (LINNAEUS 1758)	rainbow wrasse	
	<i>Labrus viridis</i> LINNAEUS 1758	green wrasse	R
	<i>Symphodus cinereus staitti</i> (NORDMANN 1840)	grey wrasse	
	<i>Symphodus ocellatus</i> (FORSSKAL 1775)	wrasse	
	<i>Symphodus roissali</i> (RISSO 1810)	five spotted wrasse	
	<i>Symphodus rostratus</i> (BLOCH 1797)	wrasse	
Trachinidae	<i>Trachinus draco</i> LINNAEUS 1758	greater weever	R

Uranoscopidae	<i>Uranoscopus scaber</i> LINNAEUS 1758	stargazer	R
Callionymidae	<i>Callionymus lyra</i> LINNAEUS 1758	dragonet	
	<i>Callionymus pusillus</i> DELAROCHE 1809	dragonet	
	<i>Callionymus risso</i> Le SUEUR 1814	dragonet	
Ophidiidae	<i>Ophidion rochei</i> MÜLLER 1845	cuskeel	R
Scorpaenidae	<i>Scorpaena notata</i> RAFINESQUE 1810	small red scorpionfish	R
	<i>Scorpaena porcus</i> (LINNAEUS 1758)	black scorpionfish	R
Triglidae	<i>Aspitrigla cuculus</i> (LINNAEUS 1758)	red gurnard	R
	<i>Trigla lucerna</i> LINNAEUS 1758	tub gurnard	R
Blenniidae	<i>Blennius sphynx</i> VALENCIENNES 1836	blennies	R
	<i>Blennius zvonimiri ponticus</i> SLASTENKO 1929	Black sea blenny	R
	<i>Coryphoblennius galerita</i> (LINNAEUS 1758)	blennies	R
	<i>Lipophrys pavo</i> RISSO 1810	peacock blenny	R
	<i>Parablennius sanguinolentus</i> (PALLAS 1811)	rusty blenny	R
	<i>Parablennius tentacularis</i> (BRÜNNICH 1768)	blennies	R
Gobiidae	<i>Bentophilus stellatus</i> (SAUVAGE 1874)	stellate tadpole goby	V
	<i>Caspiosoma caspium</i> (KESSLER 1877)	giant goby	V
	<i>Gobius cobitis</i> PALLAS 1811	giant goby	V
	<i>Gobius niger jozo</i> LINNAEUS 1758	black goby	R
	<i>Mesogobius batrachocephalus</i> PALLAS 1811	knout goby	V
	<i>Neogobius cephalarges</i> (PALLAS 1811)	ginger goby	V
	<i>Neogobius melanostomus</i> PALLAS 1811)	round goby	V
	<i>Neogobius platyrostris</i> PALLAS 1811)	ginger goby	V
	<i>Neogobius ratan</i> (NORDMANN 1840)	rattan goby	V
	<i>Pomatoschistus caucasicus</i> (KAWRAJSKY 1899)	small goby	R
	<i>Pomatoschistus microps leopardinus</i> (NORDMANN 1840)	marbled goby	R
	<i>Pomatoschistus minutus elongates</i> (CANESTRINI 1862)	sand goby	R
	Scophthalmidae	<i>Psetta maxima maeotica</i> (PALLAS 1811)	turbot
<i>Scophthalmus rhombus</i> (LINNAEUS 1758)		brill	E <sub>x</sub> ?
Bothidae	<i>Arnoglossus kessleri</i> SCHMIDT 1915	scaldblack	?
Pleuronectidae	<i>Platichthys flesus luscus</i> (PALLAS 1811)	European flounder	V
Soleidae	<i>Buglossidium luteum</i> (RISSO 1810)	solenette	?
	<i>Solea nasuta</i> (PALLAS 1811)	snouted sole	N <sub>1</sub>
	<i>Solea vulgaris</i> QUENSEL 1806	common sole	N <sub>1</sub>

**Legend:** \*\* E<sub>x</sub>? - Missing, V - vulnerable, R - Rare, N<sub>1</sub> - not endangered;? - Species listed above, whose presence is uncertain

Among the most common demersal species are *Acipenser stellatus* (Danube sturgeon), *Huso huso* (beluga), *Mesogobius batrachocephalus* (knout goby), *Neogobius melanostomus* (round goby), *Psetta maeotica* (turbot), and *Merlangius merlangus euxinus* (whiting), this latter although in very large quantity, but in terms of quality, it is a less valuable species. In the Romanian Black Sea, there are also some demersal species without commercial value, but of scientific importance, listed in the category of endangered species in the Red Book, the most important being: Sciaenidae (*Sciaena shadow* and *S. cirrosa*), Labridae (*Labrus viridis*), Callionymidae (*Callionymus* spp.) Blenniidae (*Blennius sphynx*, *B. zvonimiri ponticus*, *Parablennius* spp.) Ophidiidae (*Ophidion rochei*), and Scorpaenidae (*Scorpaena porcus*) (MAXIMOV & ZAHARIA, 2002) (Table 1).

### Dynamics of demersal fisheries in the Black Sea Evolution of the Black Sea demersal catch

The Black Sea is a continental sea, somewhat isolated and removed from the ocean. The basin shape is elliptical, oblong, slightly narrowed at middle, with an area of 423,488 km<sup>2</sup> and a water volume of 537,000 km<sup>3</sup> (NICOLAEV et al., 1994).

The total catch made in this area, between 1995 and 2004, according to FAO statistics, was 3,400,195 tons (annual catches varying between 250,570 t/1996 and 461,969 t/2003), the demersal catches are only 12% (458.412 t).

Of the aggregate catch fish in the Black Sea, marine pelagic species group has the highest share – 74% (Engraulidae, Clupeidae, Scombridae, Carangidae), followed by demersal species group (12%) (Gadidae, Mullidae, Pleuronectidae, Bothidae, Soleidae, Rajidae, Acipenseridae, Sparidae and Gobiidae), 3% of invertebrates, and other species 11% (MAXIMOV et al., 2006-2008) (Fig. 1).

Although in the demersal species group, there are plenty of commercial species with high economic value, in quantitative terms they are not up to the pelagic species.

Of the 60 demersal species reported in the Black Sea area, in FAO statistics only 20 species are mentioned (grouped in 15 families). Thus, in the total catch of 458,142 tons of demersal species, the family Gadidae (*Merlangius merlangus euxinus* - whiting) has the largest share – 40.86%, followed by families Mullidae (*Mullus surmulentus* - striped red mullet, *M. barbatus ponticus* - red mullet) with 16.43% and Sparidae (genus *Boops*, *Sparus* and *Pagrus*) with 14.64% (Fig. 2).

The rest of the families represent below 10% out of which the most importantly families are: Centracanthidae (*Spicara* spp.-Picarels) - 7.13%; Scophthalmidae (*Psetta maeotica*-turbot) - 4.26%; Pleuronectidae (*Platichthys flesus luscus* - European flounder) - 3.69%; Triglidae (*Trigla lucerna*-tube gurnard) - 3.33% and Gobiidae (*Mesogobius batracephalus* - knout goby, *Neogobius melanostomus*-round goby) - 3.07% (Fig. 2) (MAXIMOV et al., 2006-2008) (Fig. 2).

Demersal bio exploitation by the Black Sea coastal states involved all six of them, with clear separation of the Turkish fleet, with achievements over 94.3% of the total catch, followed by that of Ukraine with 2.2 %, Russia - 1.95% and Romania - 1.14%. Georgia and especially the achievements of Bulgaria are very low, representing only 0.24% and 0.16% of the catch, respectively (Fig. 3). Extremely high rate of demersal catches, obtained by Turkey (94.3%) is due to the number of ships and boats used in fishing (4,000 units).

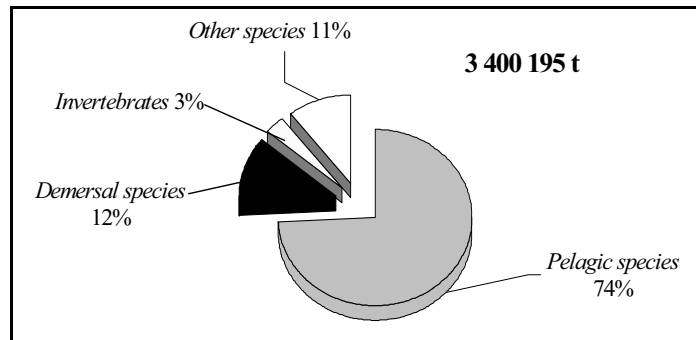


Figure 1. Share (%) of main groups of fish caught in the Black Sea between 1995 and 2006.  
 Figura 1. Ponderele (%) principalelor grupe de pești, pescuite în zona Mării Negre, în perioada 1995-2006.

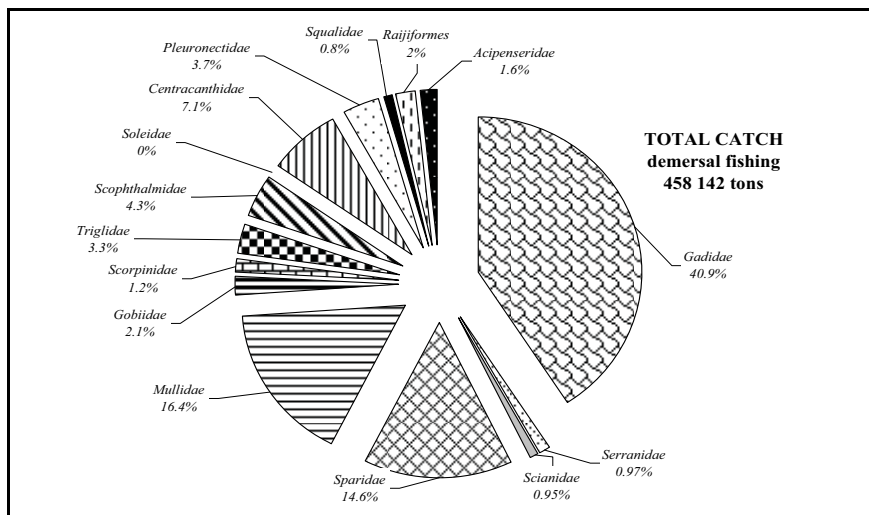


Figure 2. Share (%) of the main groups of demersal species caught in the Black Sea between 1995 and 2006 (according to FAO/2006).  
 Figura 2. Ponderele (%) principalelor grupe de specii demersale, capturate în Marea Neagră, în perioada 1995-2006 (conform FAO/2006).

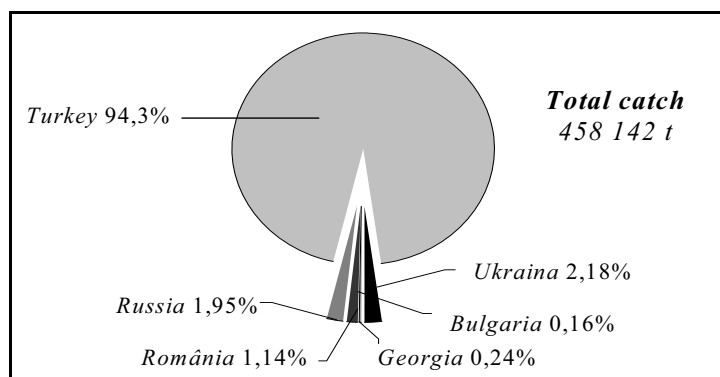


Figure 3. Share of the demersal catches by country (%) within the Black Sea between 1995 and 2006 (FAO - 2006).  
 Figura 3. Ponderele capturilor demersale pe țări (%), realizate în Marea Neagră în perioada 1995-2006 (FAO - 2006).

**Evolution of demersal catches in the Romanian marine**

Although Romania is a landlocked country with a coastline of 244 km, by 1980 the share of coastal fisheries has been low, representing only 8% of the total catch of marine fisheries mainly by, a passive gears (seines, shore seines, gillnets, long lines), located along the coast between Sulina and Mangalia.

Since the '80s, with the first vessel acquisition of B<sub>410</sub> in 1981 (the beluga and the dolphin) and the reorganization of the coastal fishing fleet by equipping trawlers (type Baltica and TCMN), Romanian catches have gradually increased from 10,080 tons/1981 to 15,835 tons/1986. Of the total catch, demersal species represented a small share of around 10%, excluding the years 1985 and 1990 when they had a share of 25.33% and 42.87%, respectively mainly due to the increasing catches of *Merlangius merlangus euxinus*. Catches at the Romanian coast are dependent on both the business and the technology used for fishing.

The diminished weight of demersal fishing was due to the fact that coastal vessels fished especially small gregarious pelagic species (sprat, horse mackerel, anchovy). Their objectives were the achievement of important physical productions, neglecting diversity and commercial value. Because of the maintenance by the state of low prices on the indigenous market, in complete disagreement with exploitation costs, demersal fishery was therefore often declared as unprofitable. After 2001, traders working in the Romanian fishery sector have changed the option, giving priority to equip vessels with specialized gear, for demersal fisheries. Between 2000 and 2006, catches of demersal fish varied between 200 and 360 tons/year (Fig. 4).

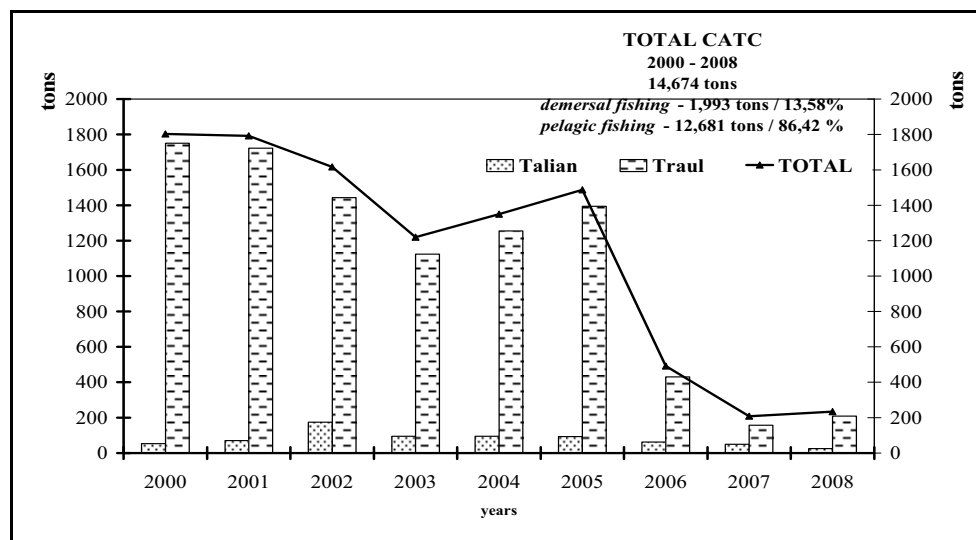


Figure 4. Evolution of the catches in pelagic and demersal fisheries, between 2000 and 2008.  
Figura 4. Evoluția capturilor realizate în pescuitul pelagic și demersal în perioada 2000 - 2008.

Of the 20 demersal fish species occurring in the FAO statistics, between 2000-2008, in the marine sector of the Romanian Black Sea there are listed only 10 species, belonging to 7 families (F.A.O., 2006; MAXIMOV et al., 2006-2008). Similar to the whole sea aggregation, in the Romanian coastal region, the highest share belongs to the family Gadidae (whiting) with more than 58.0%, a less valuable species because of its meat quality, followed closely by family Gobiidae - 17.0% (knout goby, ginger goby, round goby), Scophthalmidae families-14.0% (turbot) and Mullidae-% (red mullet) (Fig. 5). Although other demersal species have a high value both in terms of meat quality and commercial value, their share is quite reduced – 3% - Soleidae family (common sole), 2% - Squalidae family (picked dogfish), and 1% - Acipenseridae family (beluga, stary sturgeon, sturgeon Danube) (MAXIMOV et al., 2006-2008).

#### Evolution of the catches of the main fish species of commercial interest

##### Turbot (*Psetta maxima maeotica* L. 1758)

The catches caught at the Romanian shore have always been dependent on the activity and the technology used for fishing. After 2001, economic operators working in the fishing sector along the Romanian coast have changed their options and interests, giving priority to vessel equipping with specialized fishing gears for this kind of species. Catches have slightly increased, from one year to another, with production of 12,327 kg /2001 and over 40,000 kg in recent years (48,064 kg/2007 and 47,112 kg/2008) (MAXIMOV et al., 2006-2008) (Fig. 6).

##### Whiting (*Merlangius merlangus euxinus* L. 1758)

Between 2000 and 2008, the whiting catches were constant, varying between 306,391 kg/2001 and 19,092 kg/2007 (MAXIMOV et al., 2006-2008) (Fig. 7). In the past five years, the interest for this species has decreased, being reported only as accessory species. High whiting catches are obtained in the years when the water temperatures decrease, because of its cold water preferences.

##### Family Gobiidae

Between 2000 and 2008, the gobiidae catches, especially the *Mesogobius batracephalus* and *Neogobius melanostomus* species, made by amateur fishermen, varied around 50 t, annually, except for 2004 when they reached 74 tons (MAXIMOV et al., 2006-2008) (Fig. 8). The catches are approximate; a clear evidence of this species does not exist.

##### Red mullet (*Mullus barbatus ponticus*)

Red mullet, bottom species with valuable meat, appears in the net catches only in the sector Agigea - Mangalia, the catches being of about 100 t/year (146t/1975), and 105 t, between 1990 and 2009. Except for 2004 and

2005, when catches of 39.786 kg/2004, and 30.354 kg/2005, respectively, were obtained, the annual catches of red mullet varied between 219 kg in 2008 and 4.500 kg in 2006 (MAXIMOV et al., 2006-2008) (Fig. 9).

**Picked dogfish (*Squalus acanthias*)**

The dogfish catches had high values only between 1975 and 1990, when they were situated between 100 and 150 t/year (115 t/1975 and 134 t/1985). After 1990 the interest of fishing this species has decreased (especially between 1995 and 2005, when there were no reports) and the catches reduced below 10 t/year (MAXIMOV et al., 2006-2008) (Fig. 10).

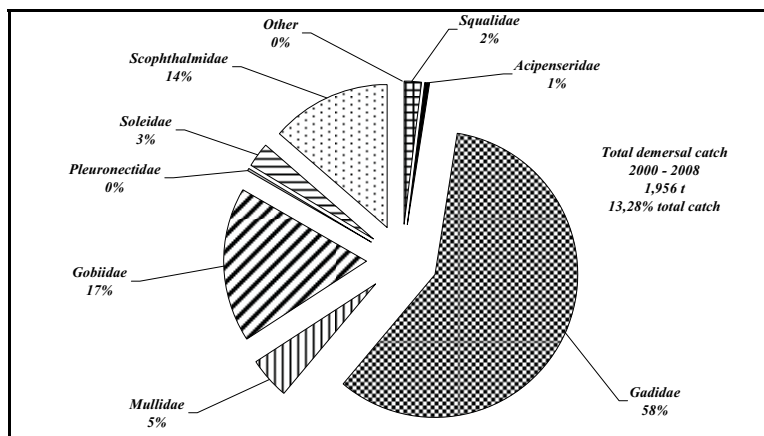


Figure 5. Share (%) of main demersal species achieved by the Romanian fishing, between 2000 and 2008.  
 Figura 5. Ponderea (%) principalelor specii demersale, realizate în pescuitul românesc, în perioada 2000 - 2008.

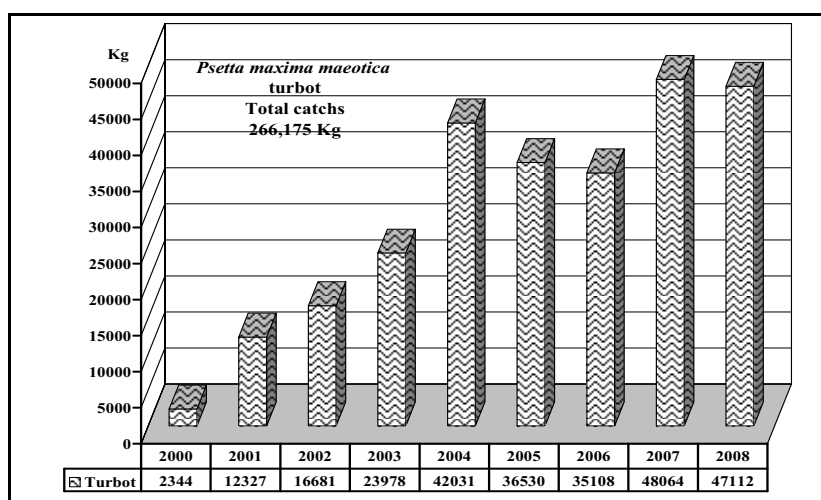


Figure 6. Turbot (*Psetta maxima maeotica*) catches (kg), between 2000 and 2008.  
 Figura 6. Evoluția capturilor de calcan (*Psetta maxima maeotica*) (kg), realizate în perioada 2000 - 2008.

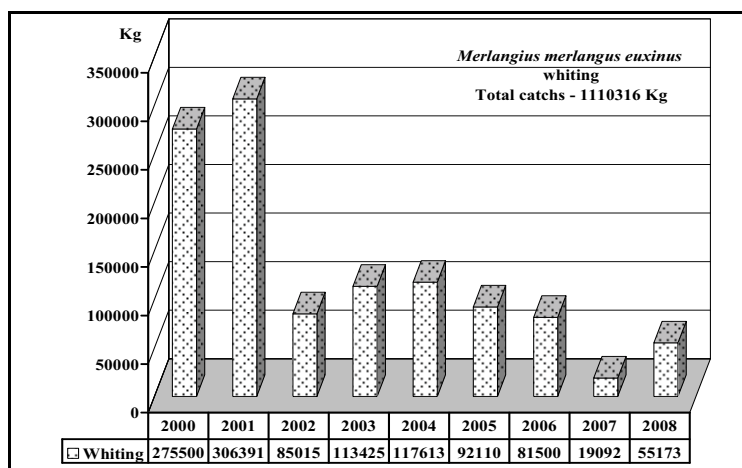


Figure 7. Whiting (*Merlangius merlangus euxinus*) catches (kg), between 2000 and 2008.  
 Figura 7. Evoluția capturilor de bacaliar (*Merlangius merlangus euxinus*) (kg) realizate în perioada 2000 - 2008.

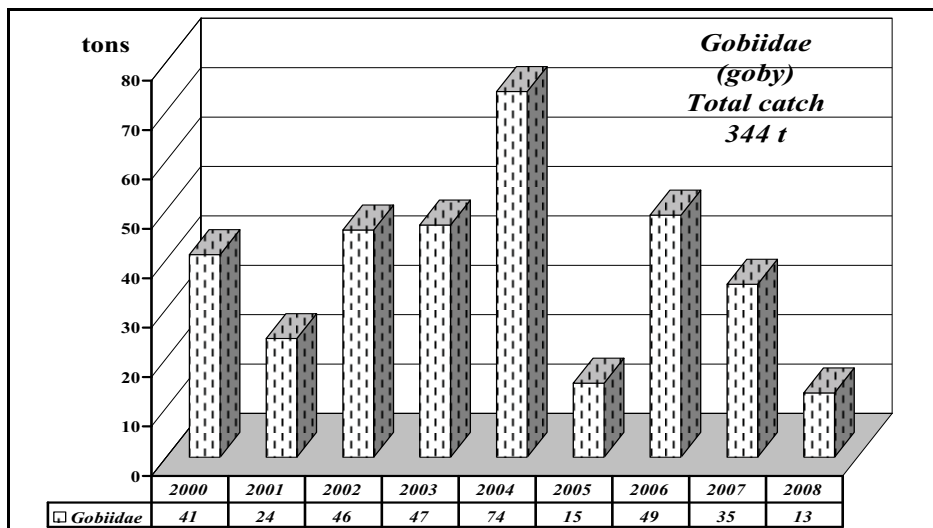


Figure 8. Gobies (*Gobiidae*) catches (tons), between 2000 and 2008.  
 Figura 8. Evoluția capturilor de guvizi (*Gobiidae*) (tone) realizate în perioada 2000 - 2008.

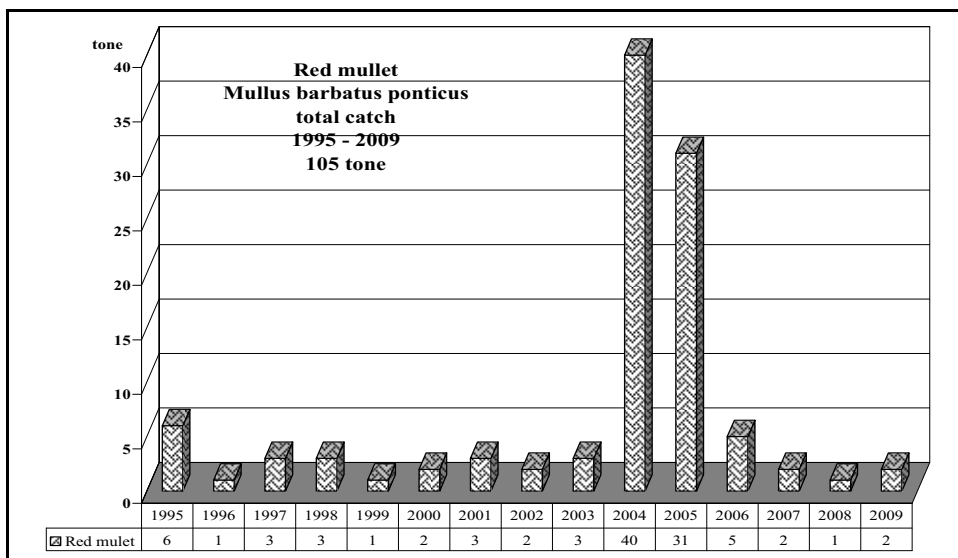


Figure 9. Red mullet (*Mullus barbatus ponticus*) catches (tons), between 1995 and 2009.  
 Figura 9. Evoluția capturilor de barbun (*Mullus barbatus ponticus*) (tone) realizate în perioada 1995 - 2009.

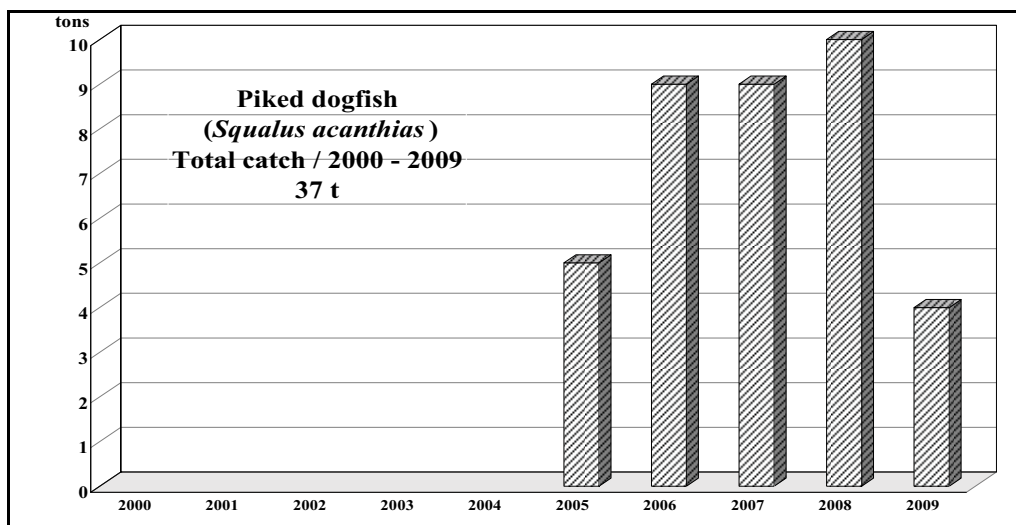


Figure 10. Picked dogfish (*Squalus acanthias*) catches (tons), between 2000 and 2009.  
 Figura 10. Evoluția capturilor de rechin (*Squalus acanthias*) (tone) realizate în perioada 2000 - 2009.

## CONCLUSIONS

In the Black Sea, the presence of more than 60 species of demersal fish belonging to 20 families, was reported, most important being: Acipenseridae (starry sturgeon, Danube sturgeon, beluga), Serranidae, Sciaenidae (shad), Mullidae (red mullet), Sparidae, Labridae (green wrasse), Gobiidae (knout goby, round goby) Scophthalmidae (turbot) Pleuronectidae (European flounder), and Soleidae (common sole).

If in the '60s, in the Romanian marine sector several demersal species were fished (60 species), which brought a major contribution to marine fisheries, currently their number decreased greatly, with only frequent species: *Acipenser stellatus*, *A. güeldenstaedti colchicus* (Danube sturgeon), *Huso huso*, *Mesogobius batrachocephalus*, *Neogobius melanostomus*, *Psetta maeotica* and *Merlangius merlangus euxinus*; the latter, although it is abundant quantitatively, has a less valuable its quality.

The total catch in the Black Sea (1991-2000), according to FAO/2000 statistics, was 3,400,195 tons, which is only 458,412 tons of demersal catches (12%). The largest share is registered by family Gadidae - 40.86%, followed by families Mullidae - 16.43%, Sparidae - 14.64% Centranchidae - 7.13%, Scophthalmidae - 4.26%, Pleuronectidae - 3.69%, Triglidae - 3.33%, and Gobiidae 3.07%. Demersal bio exploitation of the Black Sea coastal states involved all six riparian states.

In the Romanian marine sector, in the total catch (between 15,835 tons and 2,116 tons), the proportion of demersal species is low, around 10-15%, except for 1985 and 1990 when they had values of 25.33% and 42.87 %, respectively, particularly due to increased catches of whiting (*Merlangius merlangus euxinus*). The low share of demersal catches was due to the fact that fishing vessels have as priority small gregarious coastal pelagic species (sprat, horse mackerel, anchovy).

In the Romanian coastal zone, the highest share belongs to the family Gadidae (*Merlangius merlangus euxinus* - whiting) with more than 58.0%, a less valuable species because of its meat quality, followed closely by family Gobiidae - 17.0% (*Mesogobius batrachecephalus* - knout goby, *Neogobius cephalarges* - ginger goby, *N. melanostomus* - round goby), Scophthalmidae families 14.0% (*Psetta maxima maeotica* - turbot), and Mullidae 5% (*Mullus barbatus ponticus* - red mullet).

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