



International Action for Sustainability of the Mediterranean and Black Sea Environment

MARINE RESOURCES

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Final Scientific Conference - Istanbul, 11 May 2006





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The Mediterranean Sea



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The Mediterranean Sea (Fishing Area 37)



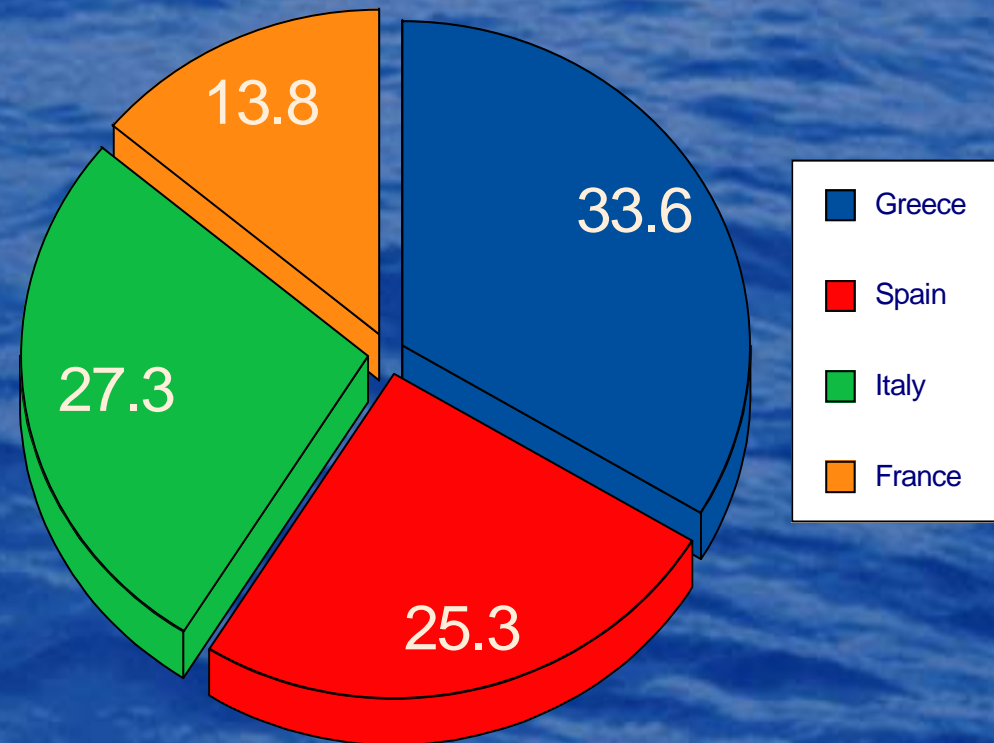
- Maximum length = ~3,700 km, width = ~600-1,000 km, maximum depth ~5000 m
- Divided in 2 basins: Eastern and Western
- Specific fisheries characteristics : 80% small scale fisheries of multi-species and multi-gear nature





Mediterranean Fleet Distribution

- The EU Mediterranean fleet in 2002 was composed of 58,767 vessels
- 80% of the fleet is composed of vessels below 12m in length



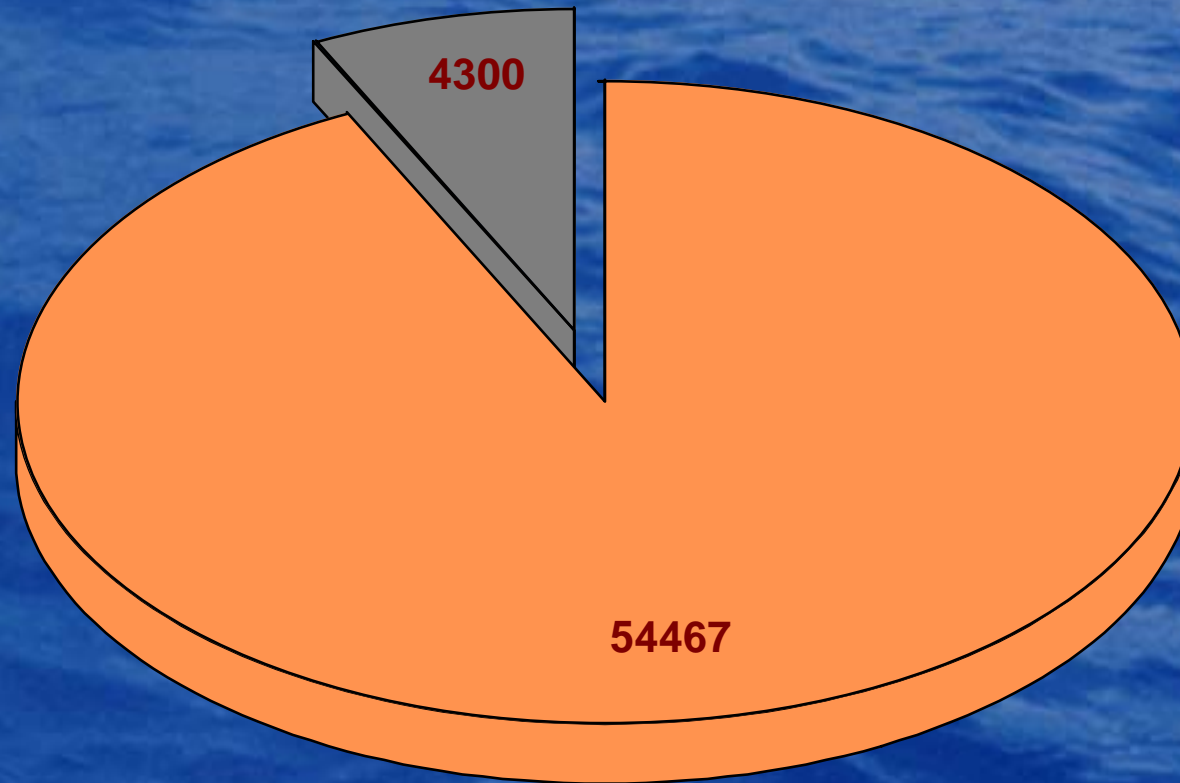


Mediterranean Fleet Composition

 Small scale fisheries

 Industrial fisheries

Industrial fleet
(trawlers and purse seiners)



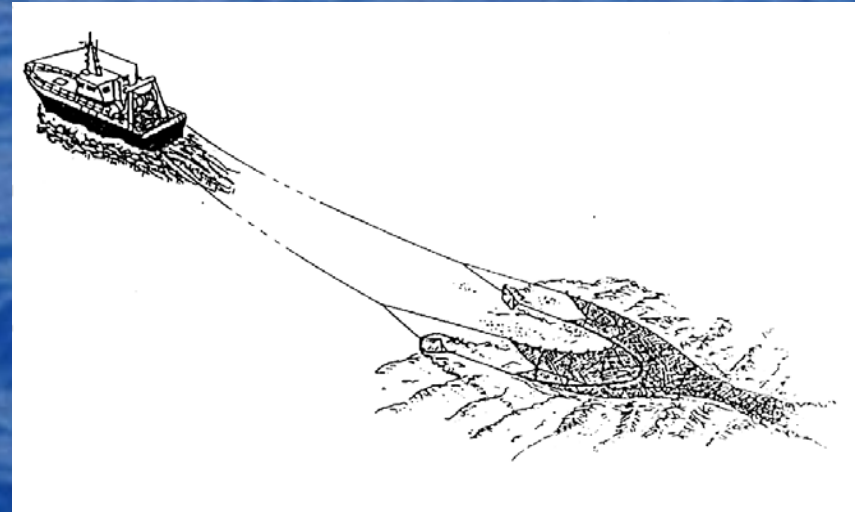
Small scale fishery fleet





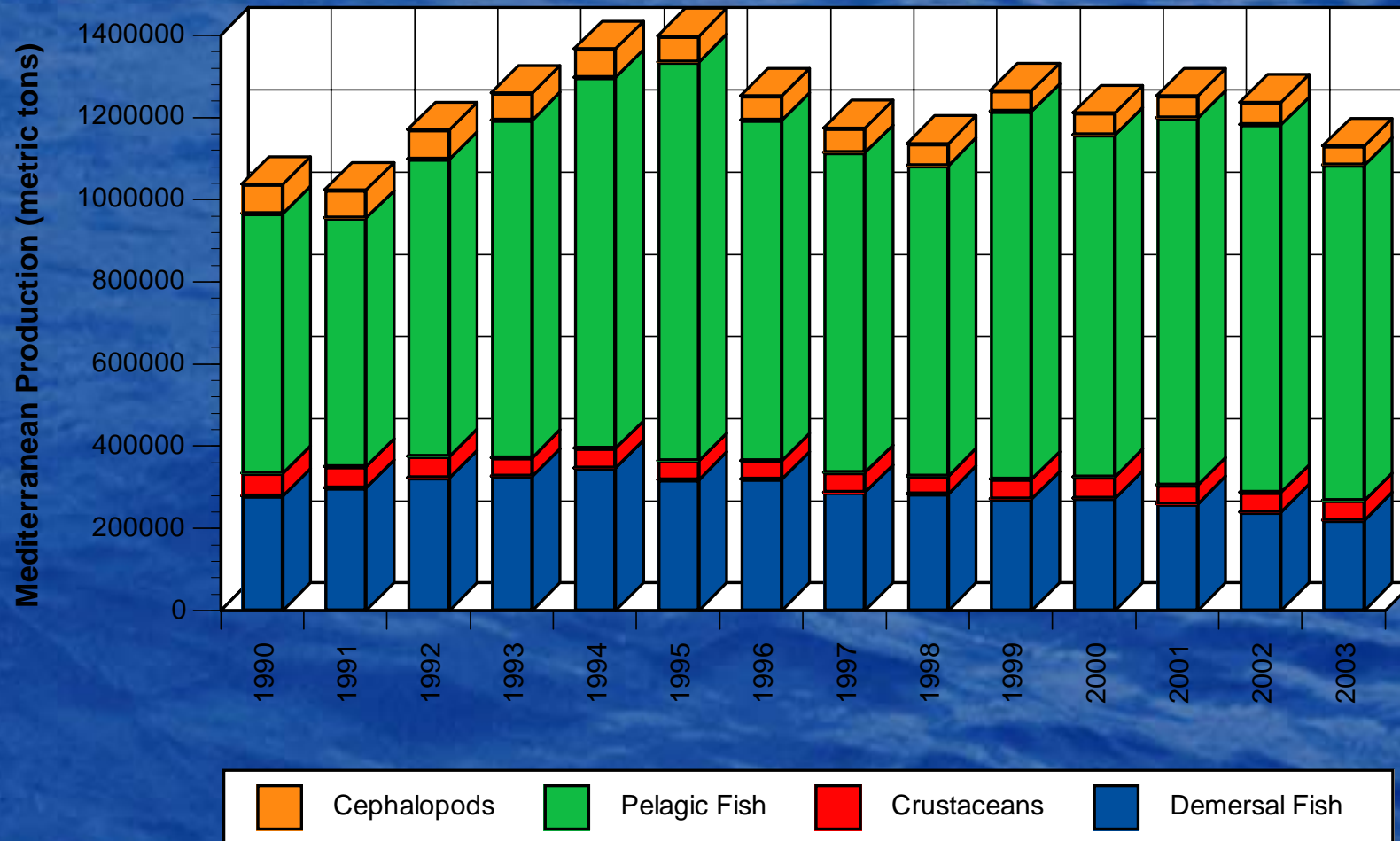
Mediterranean Fishing Practices

- Common methods of fishing are trawling, purse seines and static gillnets
- Other methods include traps/pots, hand-lines, dredges, and long-lines



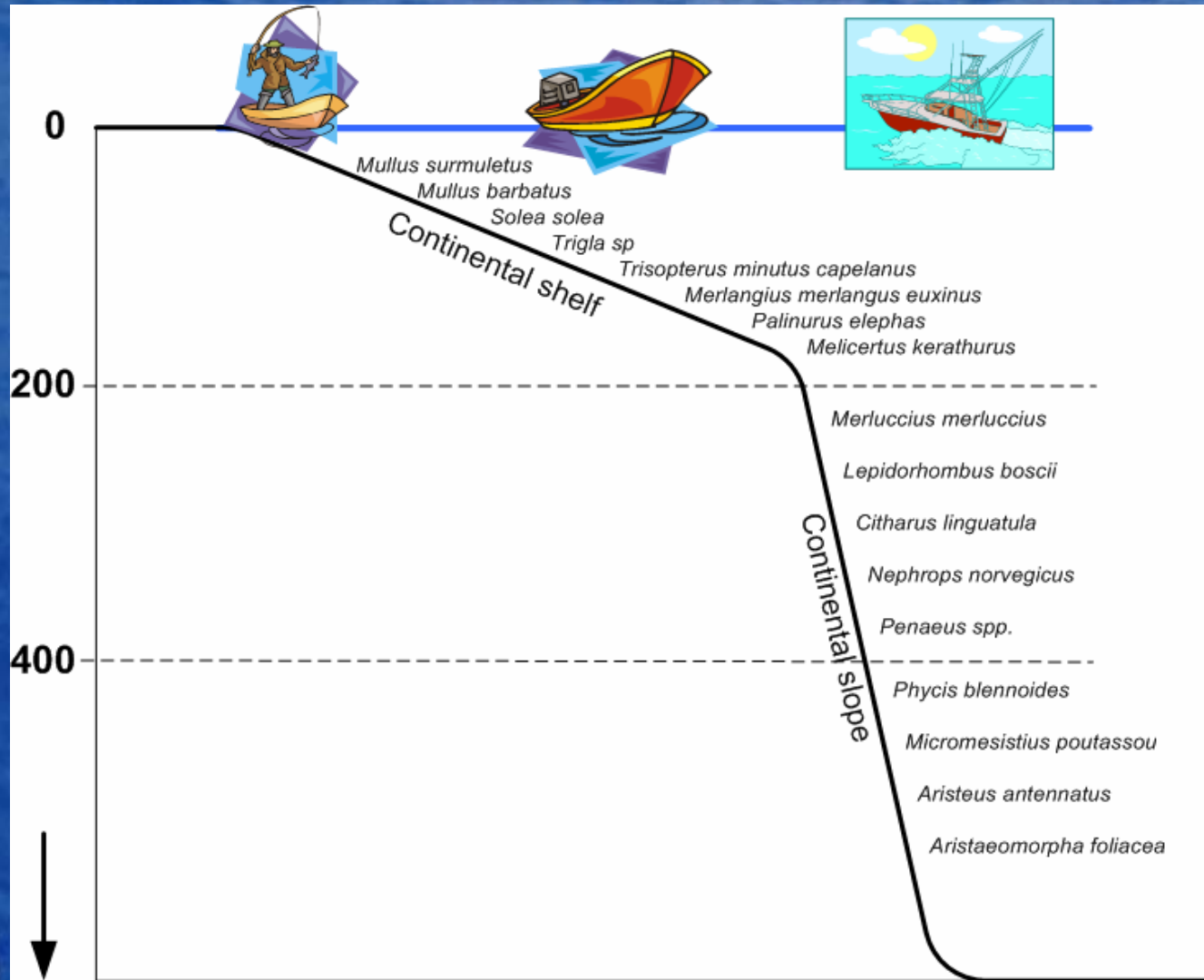


Mediterranean Fishery Production





Common Species





State of Mediterranean stocks

- Catch statistics on demersal and small pelagics species show a negative trend in the 1990's for the most important species or groups of species
- Daily catch rates per vessel have fallen dramatically despite the fact that the power and efficiency of fishing vessels has increased in recent times.
- Catch quality, both in terms of species and size composition, has been changing over time. Long life-span species and bigger size specimens have practically disappeared from demersal catches in several areas and fisheries.





State of Mediterranean stocks

	NEW	RECOVERING	RISING	DOME-SHAPED	STABLE	DECLINING	INTERMITTED	COLLAPSED
WEST	11%	9%	33%	11%	3%	8%	25%	1%
EAST	12%	18%	41%	4%	5%	4%	17%	0%





State of small pelagic stocks

- **Anchovy (*Engraulis encrasicolus*)** The state of the anchovy in the Mediterranean basin varies according to management area. In most areas in the Mediterranean (except the Gulf of Lions) the evolution of the catches and the CPUE values indicate a decline in the resource. Only in the Adriatic, following a decade of decreased production, today trends are stable and increasing. Recruitment is also highly variable and correlates with catch rates, indicating the importance of recruitment for catch rates in this fishery.
- **Sardine (*Sardina pilchardus*)** occurs everywhere in the Mediterranean. Sardine is a coastal pelagic species, which is exploited both at juveniles and adult stages by purse-seiners and mid water pair trawlers. However it is a species with a low overall level of exploitation.





State of demersal stocks

- **Red mullet (*Mullus barbatus*)** is a highly exploited resource widely dispersed over the entire Mediterranean basin. Assessments carried out regionally indicate that the stocks appear to be over-exploited and subject to growth over-fishing.
- **Norway lobster (*Nephrops norvegicus*)** is a very valuable resource. Specialized otter bottom trawlers from Spain, France, Italy and Greece exploit this species. In several areas the state of the stocks is unknown. In general, however, different analyses indicate situations from moderate exploitation to weakly over-exploited.
- **Red shrimps (*Aristeus antennatus* and *Aristeomorpha foliacea*)** are exploited in deep bottom trawl fisheries. *A. antennatus* is more abundant in the W. Mediterranean, while *A. foliacea* is caught more frequently in the Central Mediterranean (Italian waters). The state of the stocks of red shrimps in the Mediterranean is not known. Assessments have been carried out regionally for *A. antennatus*, but there is no information on the overall state of the stocks. For the Strait of Sicily and Tunisia, the stock of *A. antennatus* appears fully exploited.
- **Hake (*Merluccius merluccius*)**, is caught all over the Mediterranean and is the most important commercially exploited demersal resource in the area. A significant proportion of the landings of hake from the Mediterranean is composed smaller than the minimum legal landing size (20 cm TL). Assessments have been carried out locally, but there is no information on the overall state of stocks. In all areas it appears fully- or over-exploited.





State of large pelagic stocks

- **Bluefin tuna (*Thunnus thynnus*)** catches reached an average of 30,000 MT in the 1950-65 period, and then decreased to an average of 14,000 MT during the period 1965-1980. Since then, there has been a continuous increase of bluefin catches. The annual landings were probably over 50,000 t during the last three years. Many of the inputs to the assessment of this stock are highly uncertain.
- **Albacore (*Thunnus alalunga*)** is exploited mainly by Italy and Greece. French purse seiners, Spanish coastal fleets and sport fishery, also occasionally catch albacore. Reported albacore catches in the Mediterranean are still small, fluctuating between 2,000 and 4,000 t since 1984.
- **Swordfish (*Xiphias gladius*)** fishing has been carried out in the Mediterranean since ancient times. Landings showed an upward trend from 1965-72, stabilized between 1973-1977, and then resumed an upward trend reaching a peak of 20,000 t in 1988. Since then, the reported landings have declined and since 1990 they fluctuated between 12,000 t and 16,000 t.





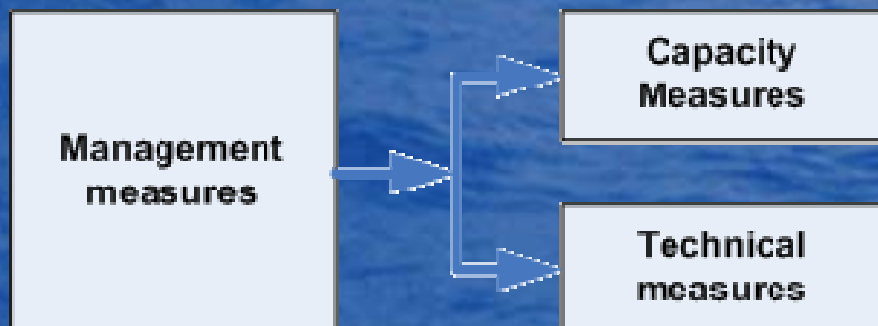
Conservation of Mediterranean resources

- Regulation (EC) No 1626/94 laying down certain technical measures for the conservation of fishery resources in the Mediterranean.
- A number of amendments have been introduced to that Regulation in order to implement recommendations issued by the International Commission for the Conservation of Atlantic Tunas (ICCAT) for the management of bluefin tuna and swordfish. These concerned minimum landing sizes, seasonal closures and restrictions on the use of aircraft as an aid to fishing operations.
- The new Common Fishery Policy Regulation (2371/2002) recognized that the Mediterranean is an area with special characteristics and therefore cannot be managed in the same way as the other European waters
- Until now the technical measures Regulation for the Mediterranean has not been success. They may be a need to seriously re-evaluate mesh-sizes and landing sizes. There is also a need to consider the introduction of an effort-control management scheme in the absence of TACs. The current inability of the GFCM to adopt such a scheme for the whole area should make the Community reflect on the initiatives that need to be taken on their part.





Management of Mediterranean resources



The first set of measures is based on restrictions imposed on the number or fishing capacity of the vessels, rather than on catch limits and control of discards and by-catches, upon which the fisheries policy in the Atlantic mostly relies. Among these measures, some aim at preventing the

expansion of the number of fishing vessels through a licensing system, and can be characterized as direct, while other measures aim at placing upper limits on the fishing capacity of individual vessels, through engine power and tonnage limitations, and can be characterized as indirect.

The second set of measures is based on provisions concerning gear specification, gear deployment, fishing practices or techniques, fishing seasons or areas, and resource exploitation patterns, and are commonly known as technical measures. However, in the absence of satisfactory results from scientific investigations on spawning or nursery grounds, first maturity sizes, mesh selectivity studies etc, the adequacy, effectiveness and suitability of many measures have yet to be verified.





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The Black Sea

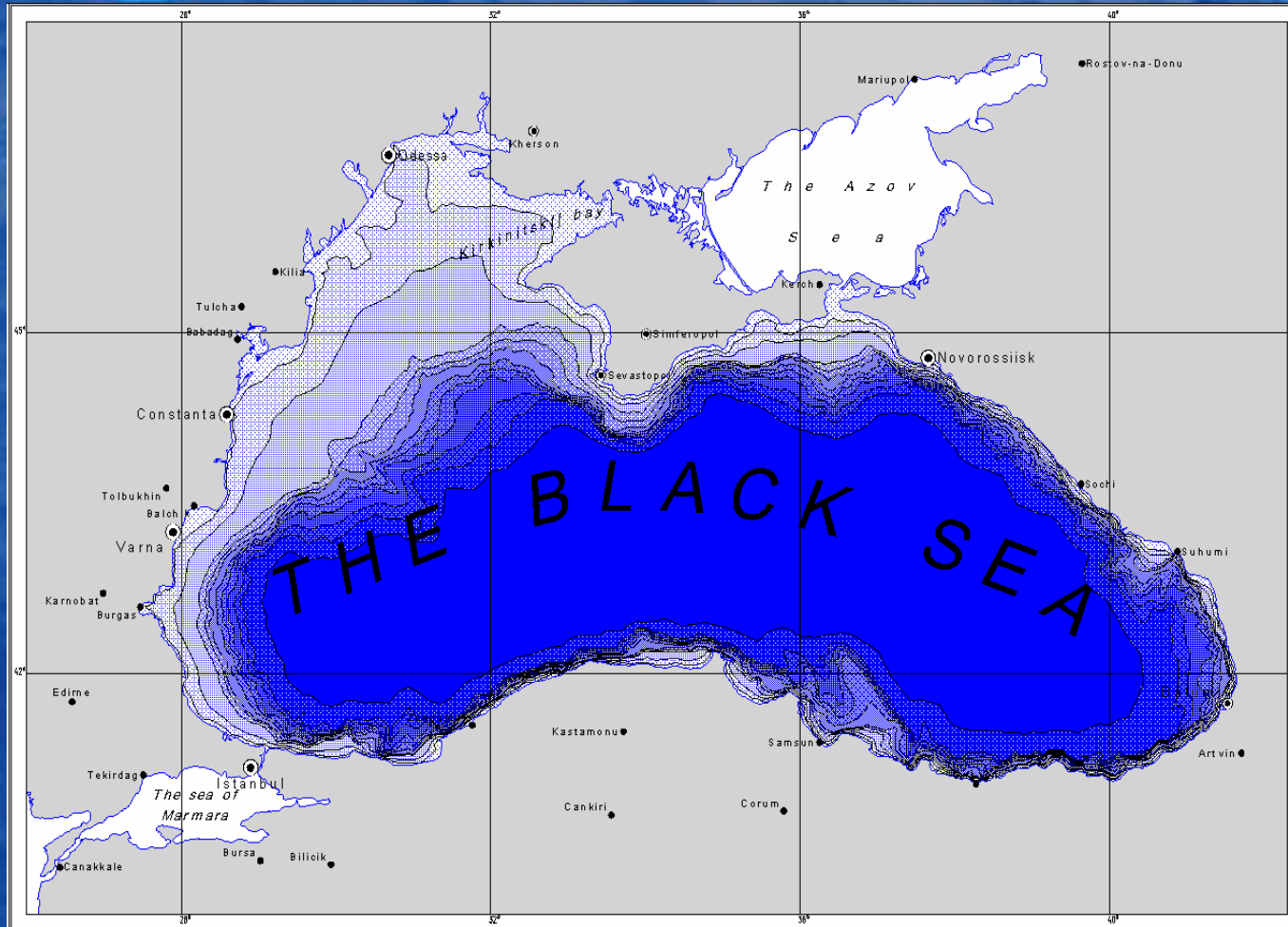


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The Black Sea (Fishing Area 37)



- maximum length ~ 1100 km
- width ~400-550 km
- maximum depth ~2000 m
- only the upper 200 m sustain life due to anoxia and H₂S in lower depths





State of the Black Sea

Degradation of the Black Sea that was experienced most dramatically since the 80s is both an ecological and an economic problem.

The main ecological problems of human origin are:

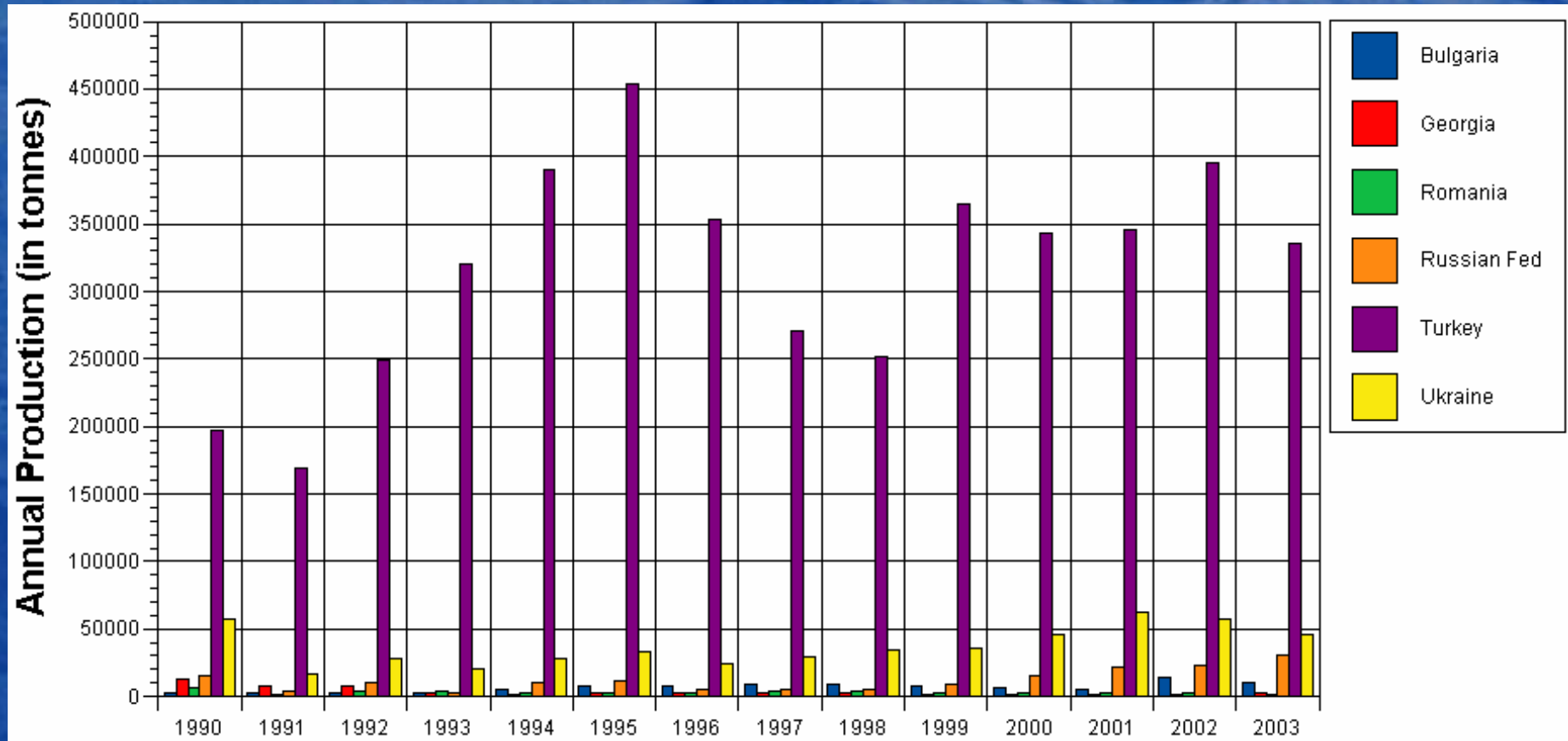
- inflows of nutrients, resulting in eutrophication;
- the loss of higher trophic level predator species, which has altered the food web structure;
- the introduction of exotic species, especially the jellyfish *Mnemiopsis leidyi*;
- and modifications in river flow regimes, which have affected the salinity of the Black Sea and had other effects.

As a result, the Black Sea fishery is suffering from major reductions in catches, losses of key species as commercially exploitable populations, etc. There was a dramatic decline in landings from some 850,000 (762 000) in the mid-80s to a low of 250,000 (201 000) tons in 1991, since when some recovery is evident.





Black Sea fishery production





Common Species

- *Sprattus sprattus* (most important)
- *Trachurus mediterraneus*, *Scomber scombrus*
- *Engraulis encrasicolus*
- *Psetta maxima*
- *Squalus acanthias*
- *Huso huso*, *Acispenser stellatus*, *A. queldensraedti*
- *Sarda sarda*
- Grey Mulletts (5 species)
- *Pomatomus saltatrix*
- *Mullus barbatus*
- *Alosa kessleri pontica*
- *Raja clavata*
- *Odontogadus merlangus euxinus*
- Others (molluscs)





State of small pelagic stocks

- **Sprat (*Sprattus sprattus*)** catches dominate after 1970. The species production is TAC regulated. The production has declined and today averages 3500 tonnes annually. The stock is mostly distributed along the Danube delta and the north part of the Black Sea
- **Mediterranean horse mackerel (*Trachurus mediterraneus*)** stock has declined to ~20000 tonnes. The stock is mostly distributed along the Danube delta and the north part of the Black Sea
- **Anchovy (*Engraulis encrasicolus*)** stock is of primary importance for the basin. Mostly landed by the Turkish fleet. Average production in the basin is around 350000 tonnes





State of demersal stocks

- **Turbot (*Psetta maxima*)** is one of the most valuable species in the basin and currently is fished with gillnets and bottom trawls even though, at present, the latter gear is prohibited. The turbot catches had been largest during 1955 – 1969, at the average 320 tons
- **Gobies (Family Gobiidae)** showed an increase in catches in the period 1995 – 1999, with mean catch of 460 tons. In 2000 – 2002 the catches were almost at one level and have only slightly varied from 140 to 145 tons





Management of Black Sea resources

The protection and sustainable utilization of marine living resources includes a number of measures generally aiming at:

- Actualizing the existing norm basis and its harmonizing with conventions treating the problems of preserving species diversity and sustainable utilization of biologic resources
- Control and assessment of the economic activities in sea in respect of their ecologic conformity
- Introduction of protection-recovering activities
- Accomplishment of annual assessment of the stocks of the commercially exploited by contemporary methods aiming at defining the magnitude of total allowable catch by species





Required actions

- *For sustainable utilization of marine living resources and biodiversity conservation, approaches considering the contemporary state of living resources and such sparing the Black Sea ecosystem has to be applied. For the purpose it is suggested the following measures to be implemented.*
 - *Limiting of the fishery activity impact on the environment*
 - *Applying of ecosystem approach in the fishery*
 - *Applying of preventive approach in fishery*
 - *Conservation of biodiversity and endangered species*
- *The effective management of fisheries on regional level must be built through the implementation of:*
 - *Regionally harmonized regulations*
 - *Regular regionally coordinated stock assessment*
 - *Regional/national quota system*
 - *Regional/ national vessel licensing system*
 - *Implementation of FAO Code of Conduct for Responsible Fisheries*
 - *Establishment of fisheries free zone*

