

2007 Black Sea TDA: The 4 Major Transboundary Problems

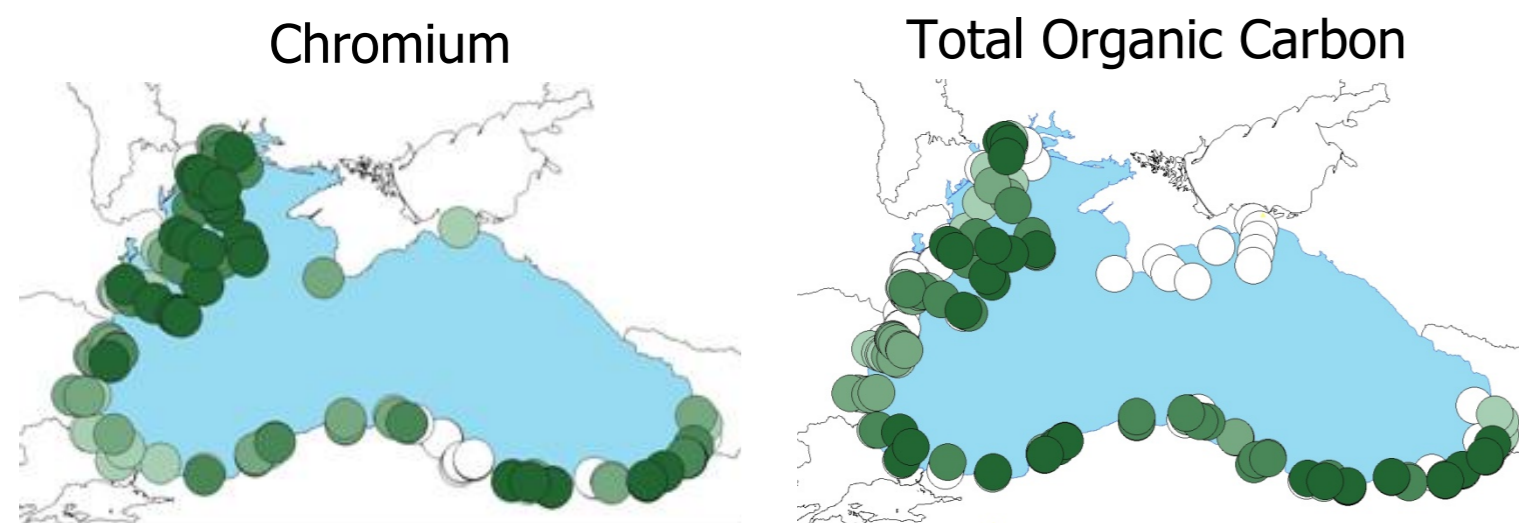
Stakeholders ranking of importance:

- 1st** Chemical pollution
- 2nd** Changes in marine living resources
- 3rd** Changes in biodiversity/habitats/alien species
- 4th** Nutrient over-enrichment/eutrophication

Each problem is dealt with in terms of causes and consequences, missing information and suggested actions for improvement

Chemical pollution

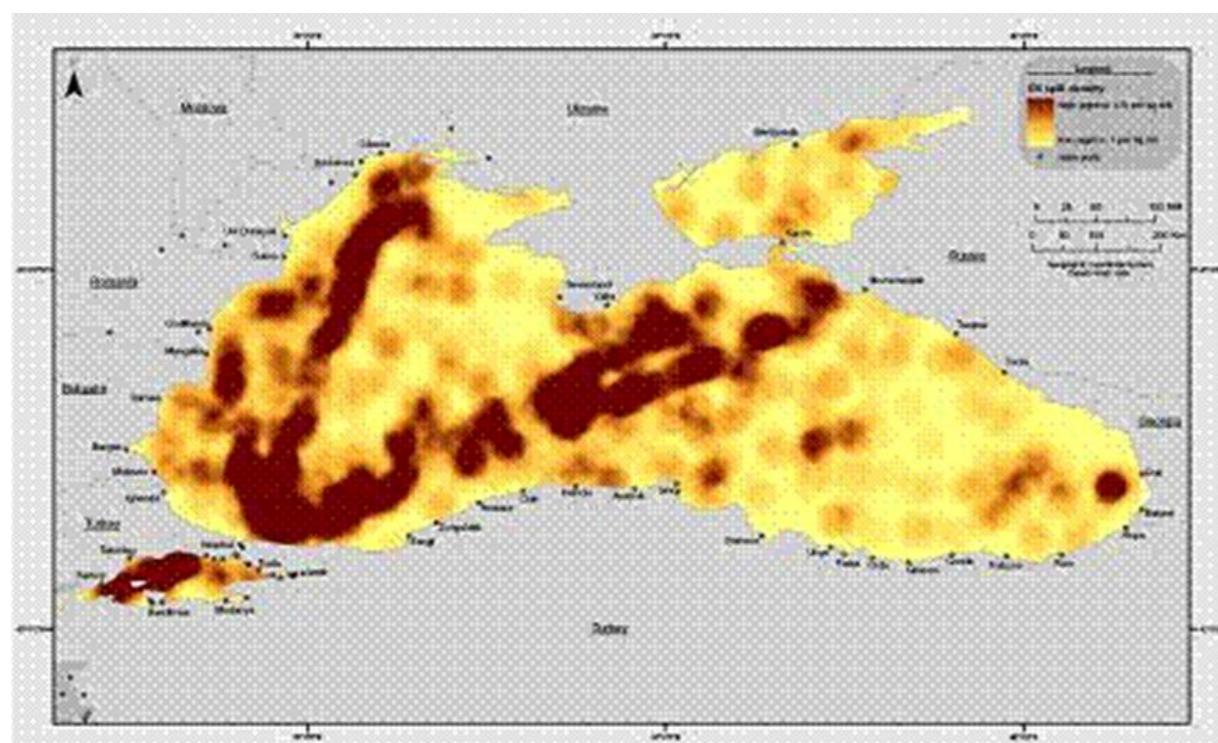
Contaminant status assessed:



Contaminant concentration in sediment

Colour	Chromium (mg/kg)	Total organic carbon (mg/g)
White	<40.00	<0.85
Light Green	40.00-64.00	0.85-1.40
Medium Green	>64.00-89.00	>1.40-1.94
Dark Green	>89.00-112.00	>1.94-4.32
Black	>112.001	>4.32

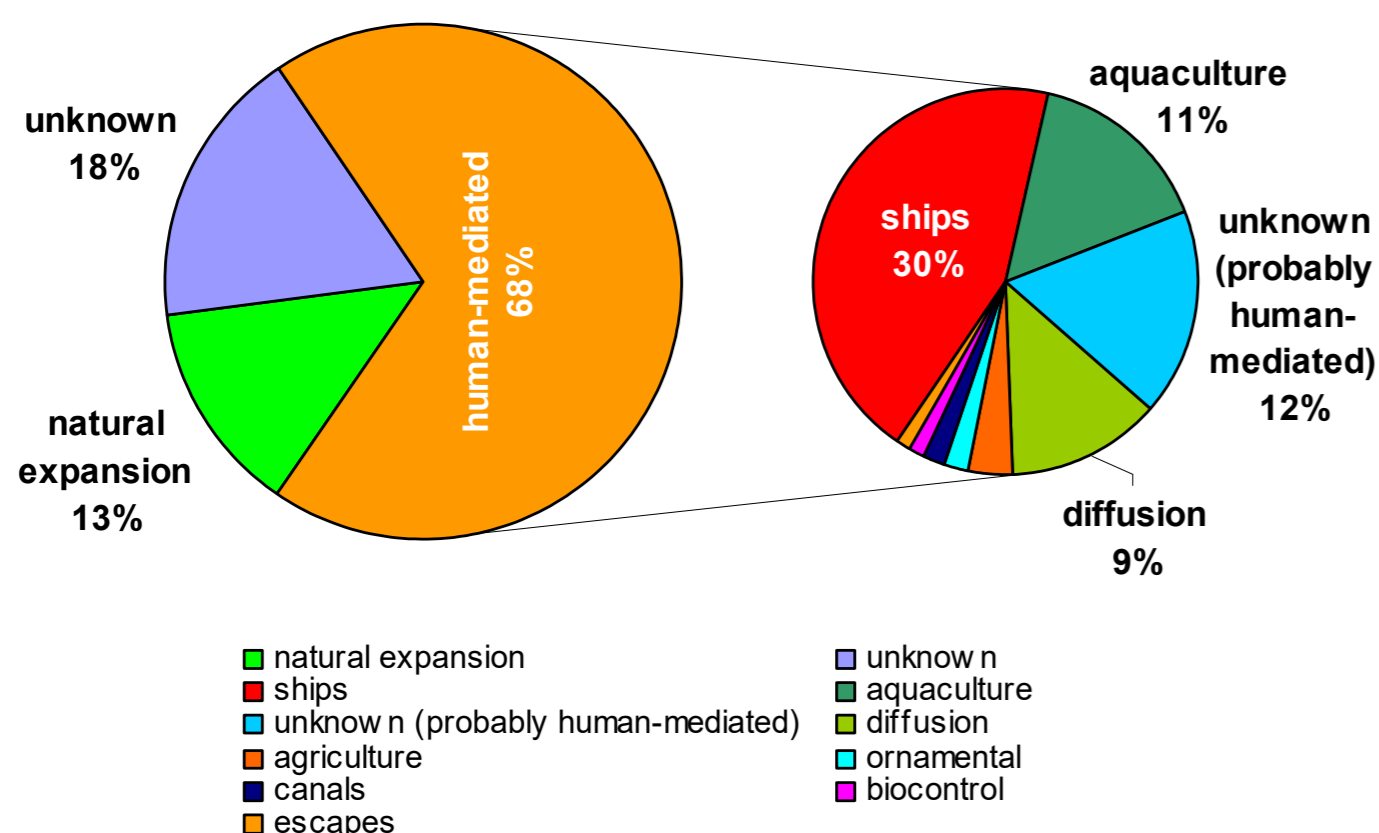
Individual pollutants considered in terms of sources and pathways of entry to the Sea



Pattern of likely oil spills follows major shipping routes

Changes in biodiversity/habitats/alien species

- All 5 coastal margin habitats are in a critical status in at least one country
- Benthic pelagic habitats are critical in at least one country
- 13 of 37 types of benthic habitat are considered to be critical in at least one country
- Those habitats most at risk include the neritic water column, coastal lagoons, estuaries/deltas and wetlands/saltmarshes

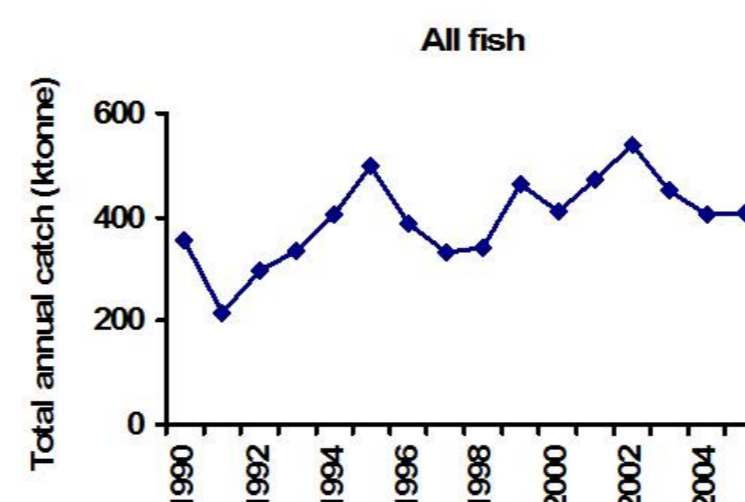


Vectors of alien species introduction

- Aquaculture and shipping are the most important vectors of alien species introduction
- The number of registered alien species at the regional level amounts to 217
- A quarter of these are highly or moderately invasive
- Between 1996 and 2005, 48 new alien species were recorded

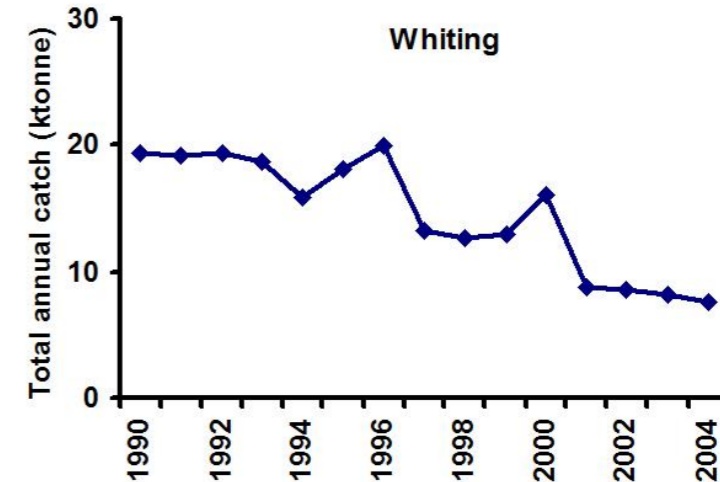
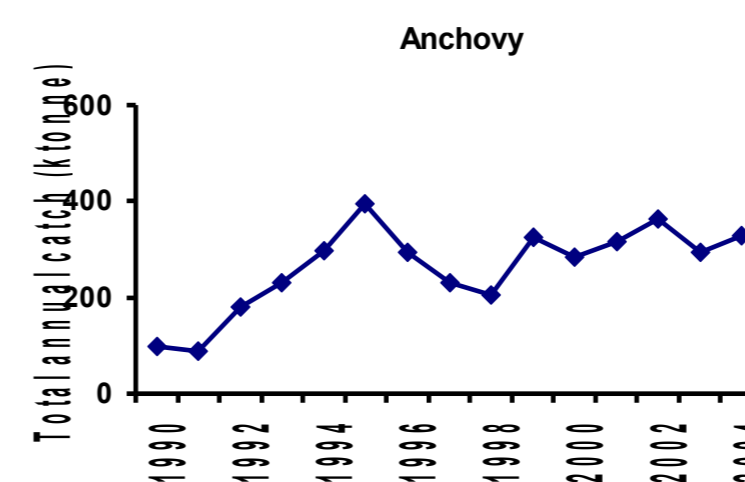
Changes in marine living resources

Total landings appear to be increasing; still only about half the levels recorded in the 1980s

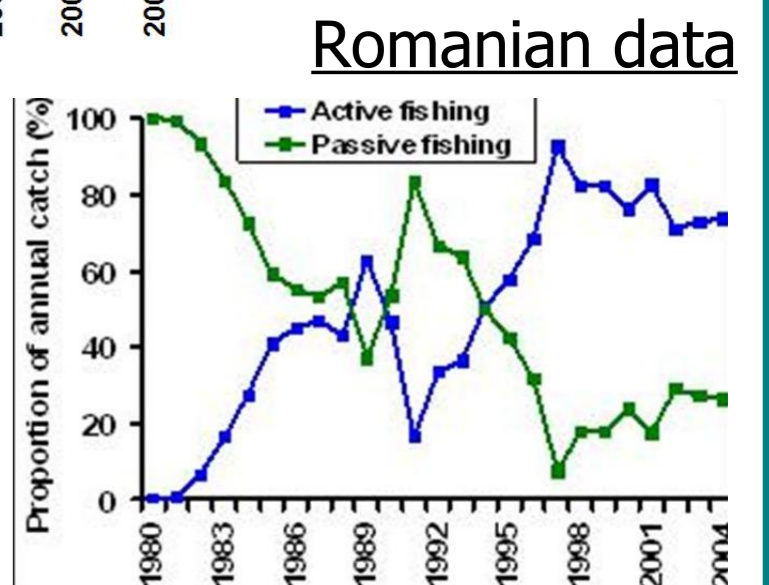


- However, this hides the real situation
- While landings of some species have increased, others have decreased

Total Black Sea fish landings data



- This still tells a very incomplete story
- Landings data underestimate catches
- No account is taken of fishing gear or practices
- National fish stock assessments are often incomparable and out of date
- Illegal fishing puts additional pressure on the most threatened species
- Ghost fishing from discarded nets remains a considerable problem



Abandoned fishing nets

Nutrient enrichment/eutrophication

Annual nutrient budget for the Black Sea

Nutrient source (tonnes)	DIN	%DIN	PO ₄ -P	%PO ₄ -P
Direct discharges from large UWWTPs	6,120	1	2,150	8
Direct discharges from large industrial sources	1,180	0	250	1
River loads	497,590	52-68	20,043	70
Istanbul Strait	29,000	3-4	6,000	21
Kerch Strait	?	?	?	?
Atmospheric deposition	203,040-431,460	28-45	0	0
Total	736,930-965,350	100	28,443	100

Nutrient budget for the Black Sea established

- Rivers (the Danube in particular) represent the main pathway of delivery
- Considerable uncertainty in atmospheric nitrogen deposition estimate
- Little change in nutrient loads since 1996
- Agriculture represents the most important nutrient source to tackle
- However, the agricultural sector is in crisis

Contribution of agriculture to national GDPs

