

Unsustainable Fisheries from a Different Angle: Science, Arts, Local Knowledge and Youth



Mundus maris
Sciences and Arts for Sustainability

Prof. Stella Williams
Vice-President *Mundus maris* asbl

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and 3rd Symposium on Gender in Fisheries and Aquaculture**

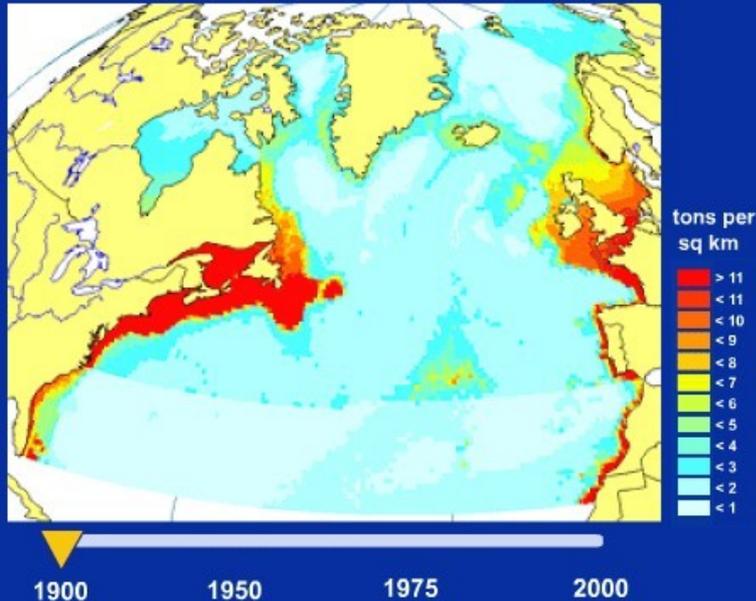
Structure of the talk

Context: international cooperation for sustainable fisheries in the interface between research, arts, local knowledge and education

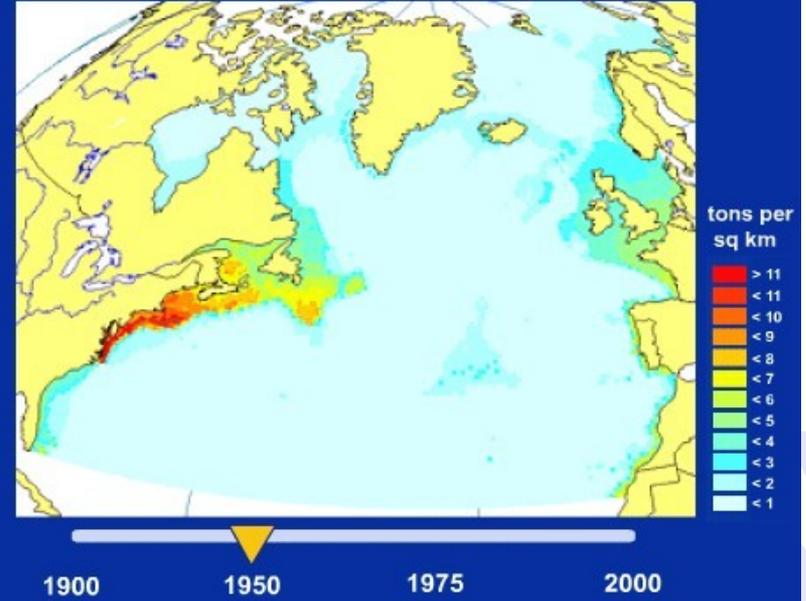
- Why do we talk about a fisheries crisis
- Why does it matter?
- Some 'unconventional drivers' of unsustainable fisheries
- What we can do together ...

Why do we talk about a fisheries crisis starting in the North? (1)

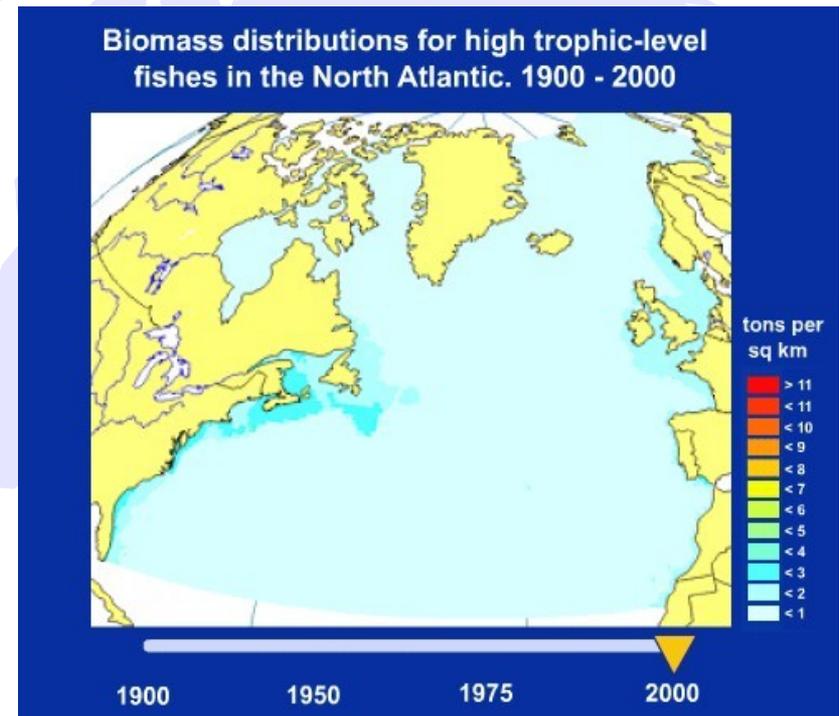
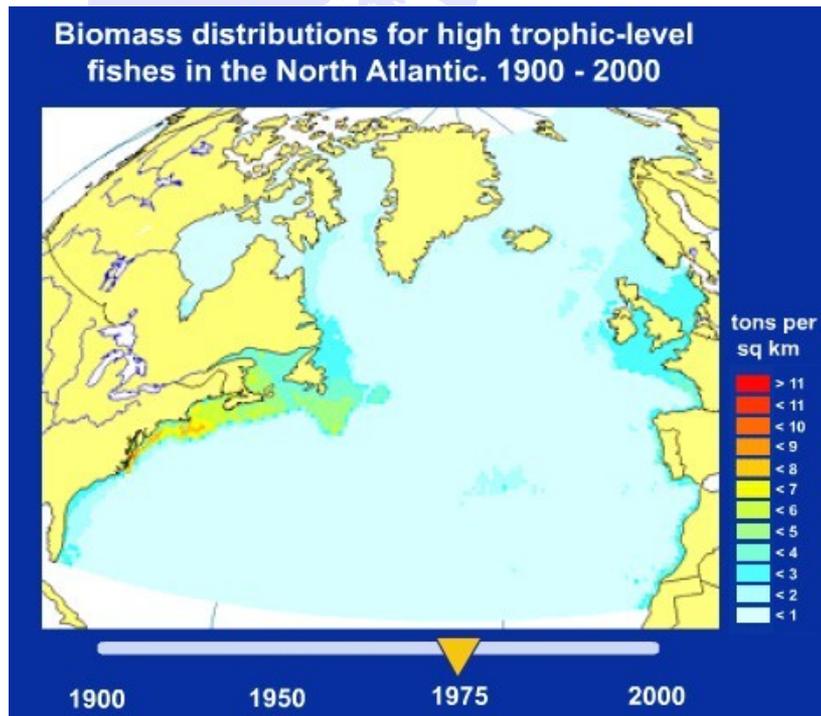
Biomass distributions for high trophic-level fishes in the North Atlantic. 1900 - 2000

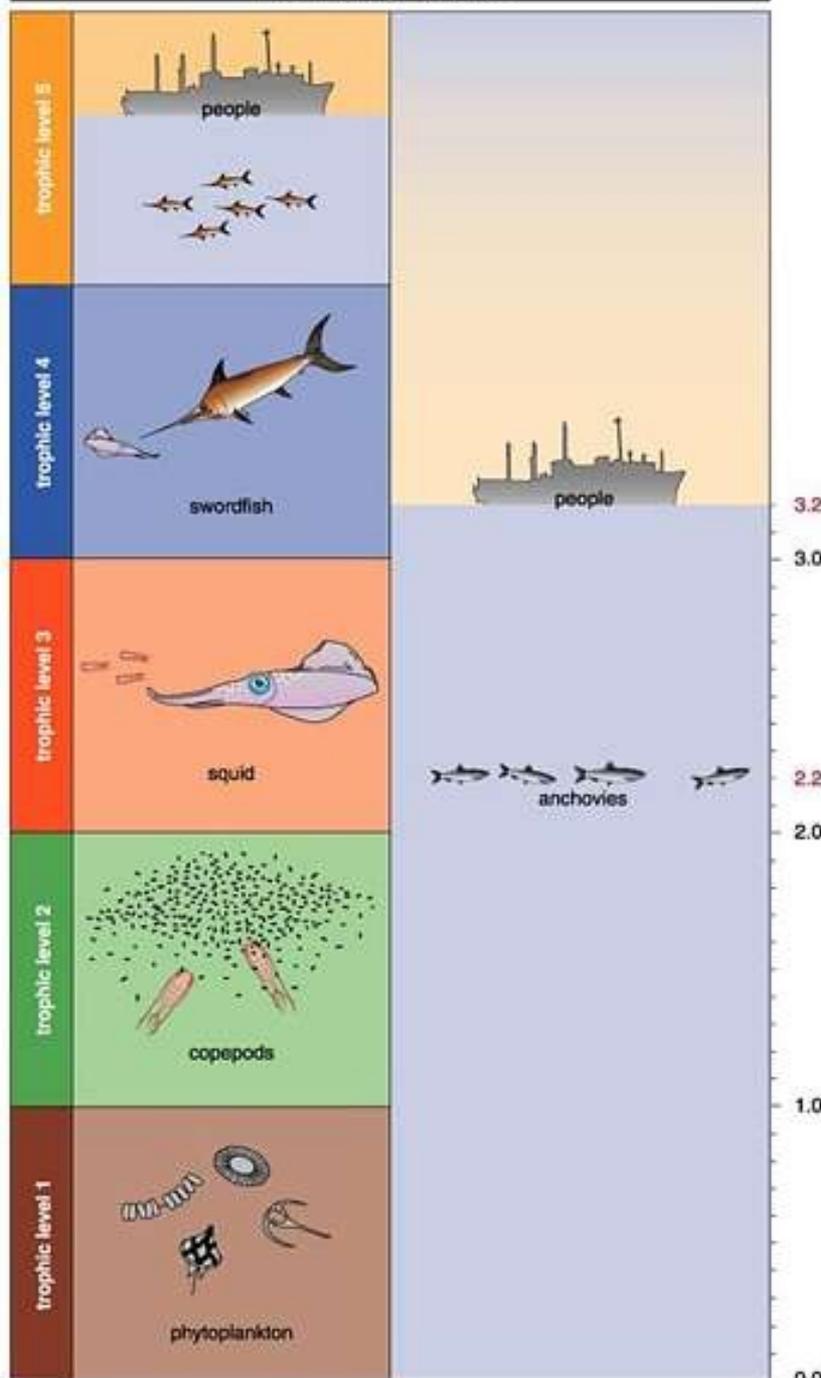


Biomass distributions for high trophic-level fishes in the North Atlantic. 1900 - 2000



Why do we talk about a fisheries crisis starting in the North? (2)



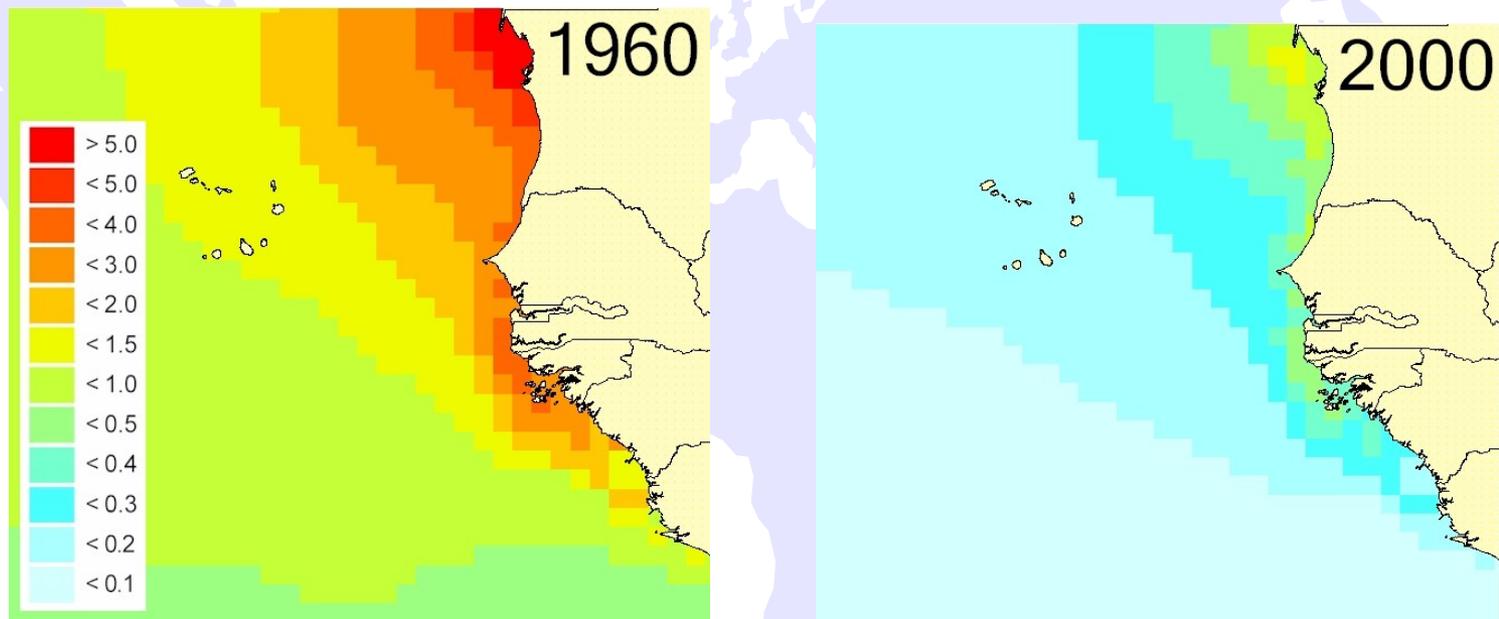


Why do we talk about a fisheries crisis? (3)

In an ecosystem, where big fish or whales eat small fish or other organisms, we distinguish trophic levels from level 1 (phytoplankton as primary producers capturing the energy of the sun) to levels 2 to 5 (consumers feeding on plants and animals). Humans are consumers at the top of the food web.

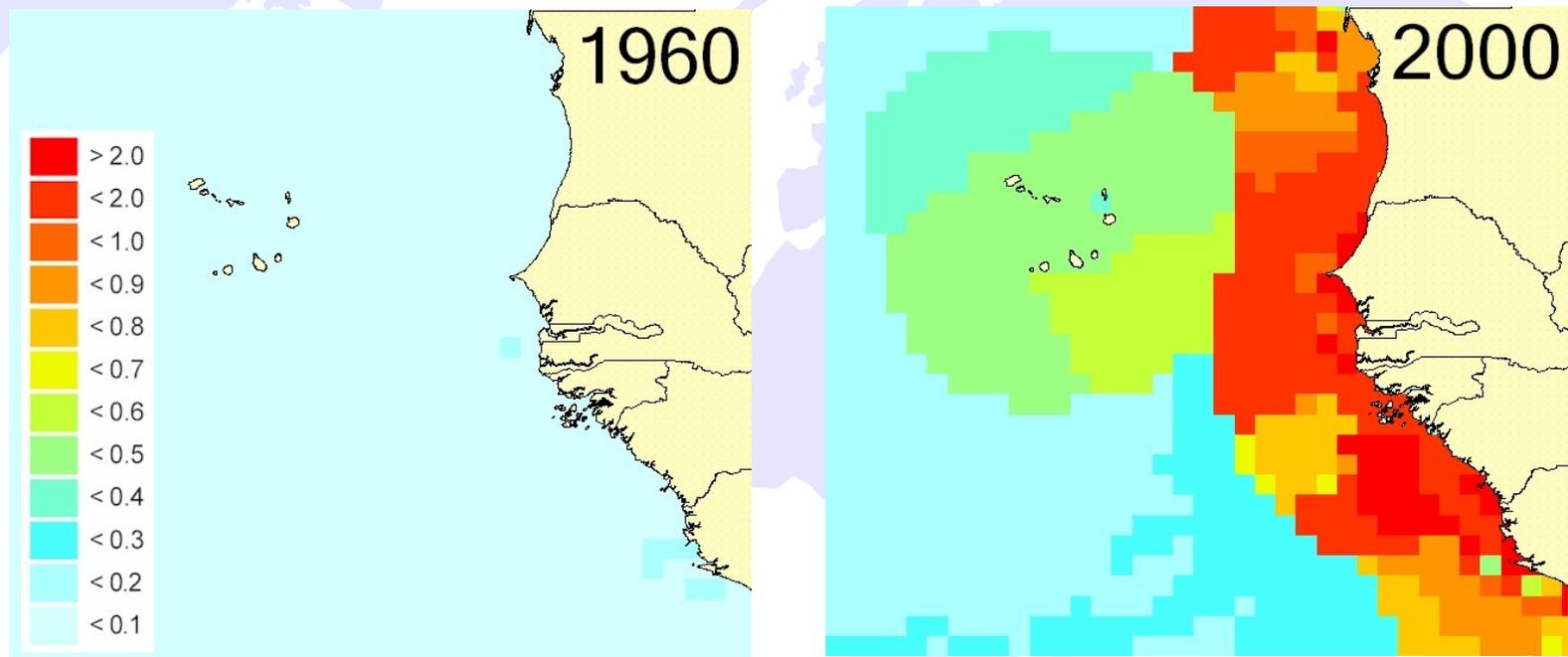
Fisheries affect ecosystems very heavily by taking fish and other organisms out of their web of relations. Degraded systems (biomass <20%) can not sustain fisheries nor maintain basic ecofunctions (Froese & Proelss, 2010) and are prone to wild fluctuations.

Why do we talk about a fisheries crisis affecting the South? (1)



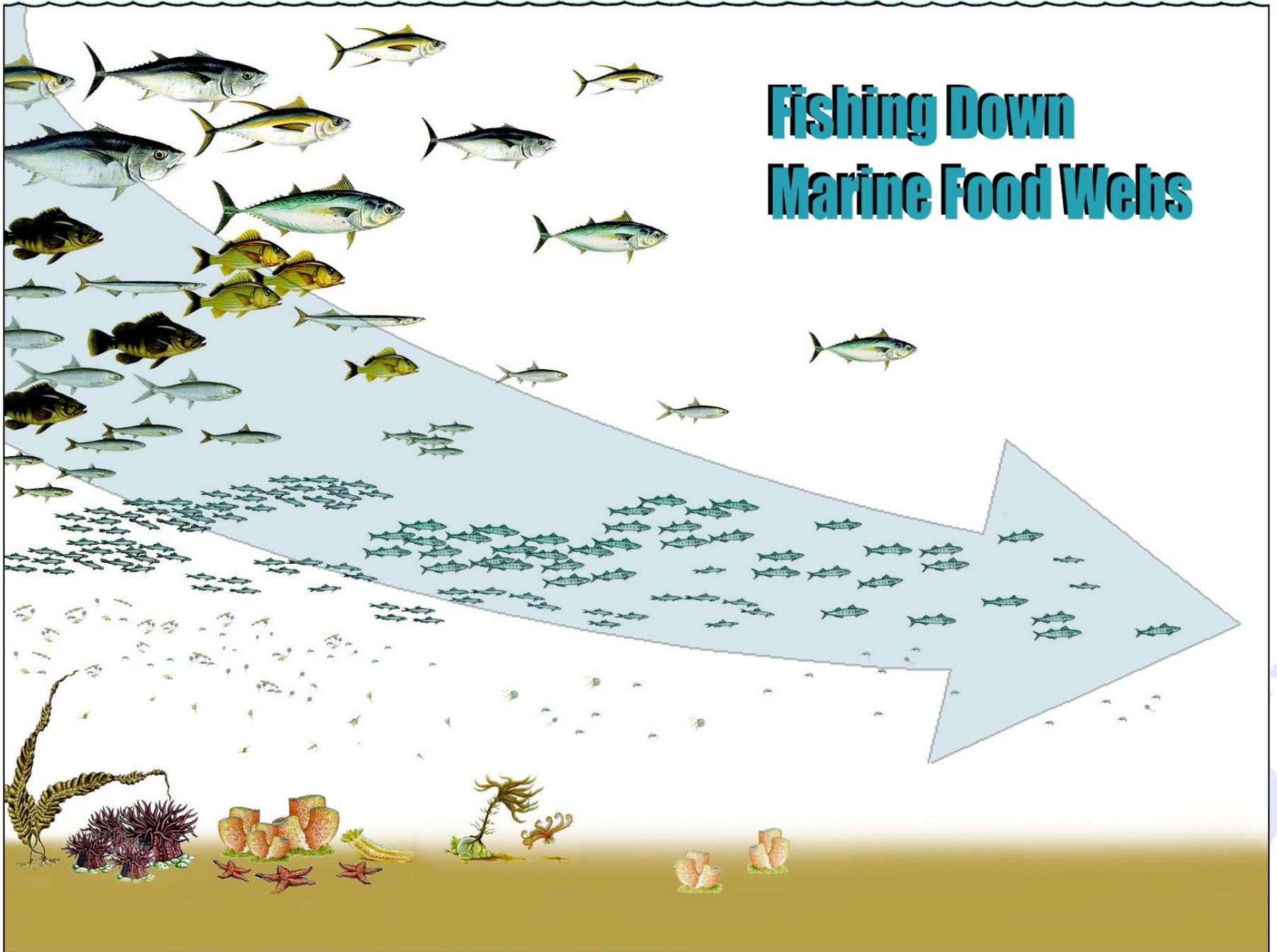
Biomass distributions for fishes (trophic level ≥ 3.0 , excluding small pelagics and mesopelagics) off West Africa in 1960 and 2000 [tons per sq km]

Why do we talk about a fisheries crisis affecting the South? (2)



Fishing intensity (= catch/biomass ratio)
for fishes (trophic level ≥ 3.0) in units per year

Fishing Down Marine Food Webs



Why does it matter? (1)

At current trends in overfishing worldwide, we will not have the fisheries we know today by about 2050, many have already collapsed.

Namibia, a country in Southwest Africa (between South Africa and Angola) had **15 million tons of fish** in its water and was able to get a good portion of that through fishing – that was a good deal for many years.

Overfishing led to the collapse of the fisheries and now Namibia has **12 million tons of jellyfish** and much less fish than before.

Why does it matter? (2)

In some of the Pacific Islands entire small-scale fisheries disappeared from overfishing without that being reflected in the official statistics or estimates as reported by FAO.

'Small-scale' fisheries are often considered marginal – that prevents local knowledge being used.

However, a closer look reveals that, in most countries, small scale fisheries account for most people working in the sector and almost half of the catch.

They often produce high-value fish for human consumption and also do so in a much more energy(fuel)-efficient way than industrial fisheries (Chuenpagdee *et al.*, 2006) not to mention larger income-distribution effects.

Why does it matter? (3)

Analysing qualitative and quantitative indicators about well-being of fishing communities e.g. in Senegal, there are clear signs that their initial wealth and well-being is being eroded rapidly:

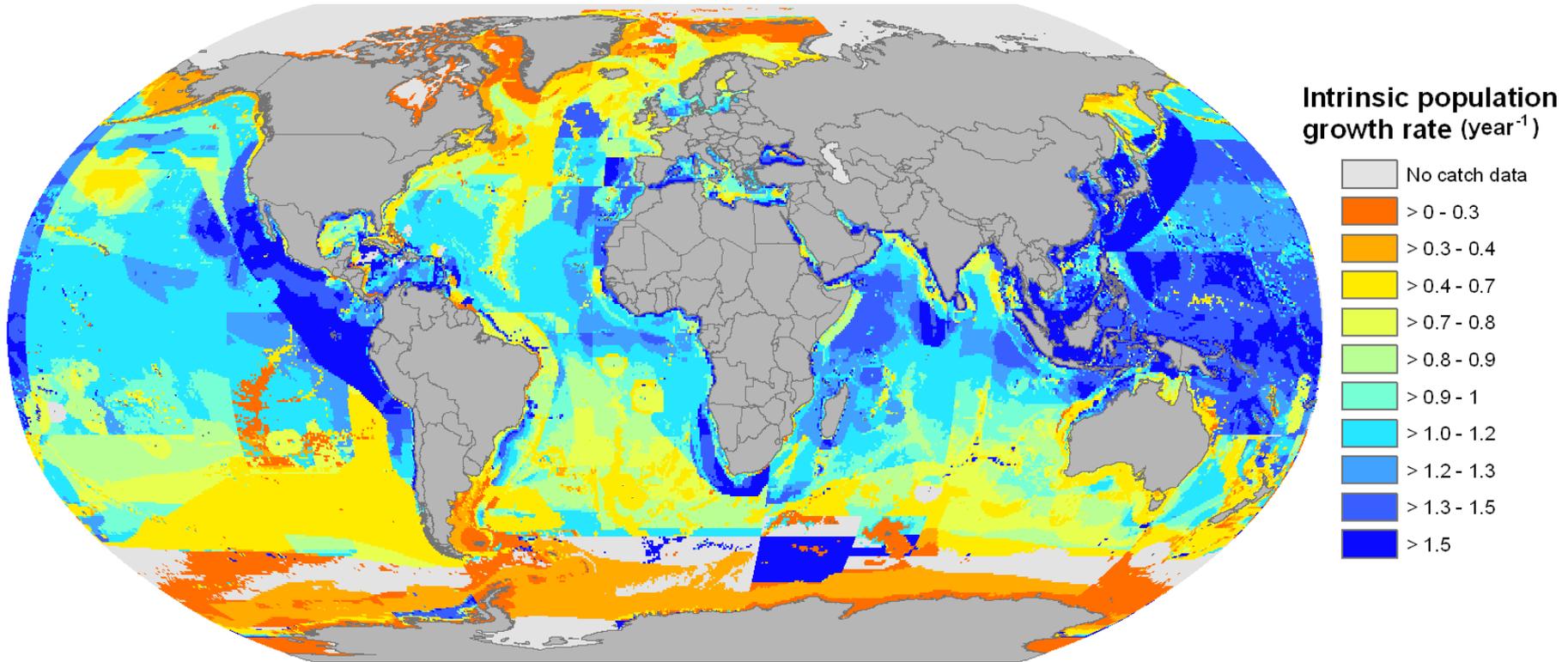
- 'Thiof', an emblematic grouper has all but disappeared
- Instead, people now make do with sardines and mackerel, which used to be disdained (though they are good quality food)
- Children are taken out of (private) schools
- Instead of attracting labour, people start migrating out, if they can from the fishing villages

Some 'unconventional drivers' of unsustainable fisheries (1)

Pursuing economic efficiency (maximizing present value of returns):

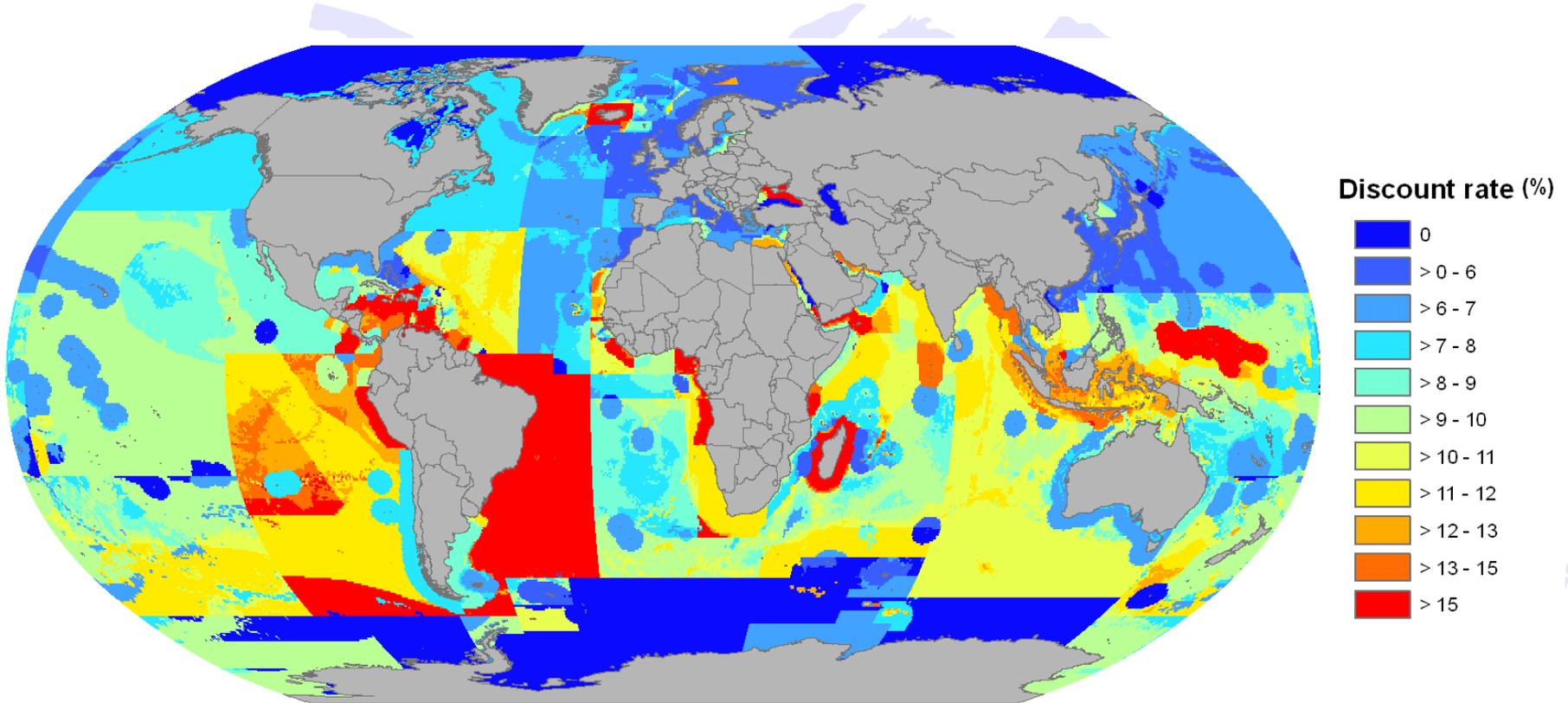
- without due regard to risk in a broad ecosystem context – degraded ecosystems have low productivity, are prone to wild fluctuations – bad news for business;
- in a narrow sectoral sense;
- ignoring the fact that it is becoming more difficult to use taxation as a policy instrument;
- neglecting the effects of corruption;
- weighing immediate returns much more than future returns and a distorted understanding of historical trajectories of productivity.

Mapping intrinsic growth rates



Courtesy: Sumaila, 2009

Mapping official discount rates



Courtesy: Sumaila, 2009

Some 'unconventional drivers' of unsustainable fisheries (2)

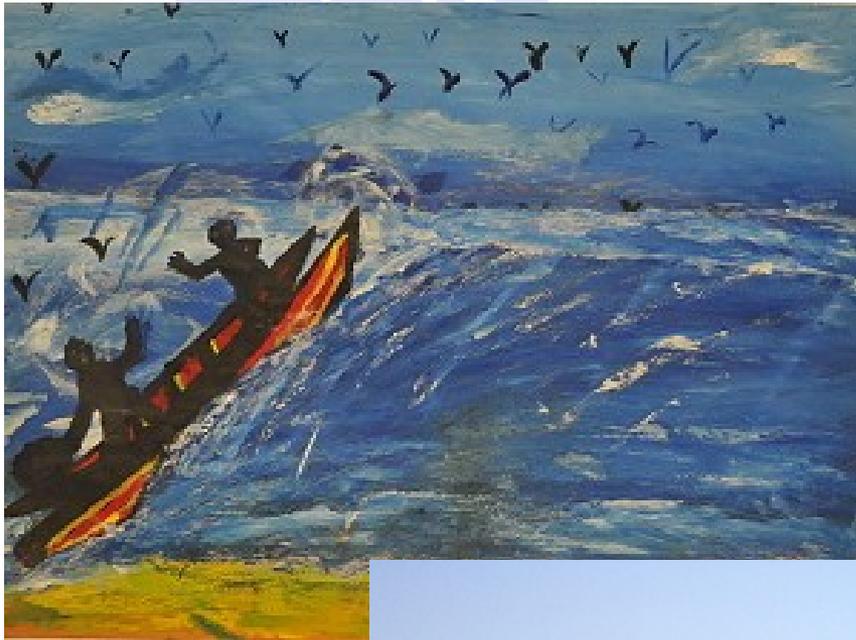
Demography and trade

- Humanity has more than doubled since 1950 to close to 6.7 billion people;
- The notion of fish as healthier food than red meats is an incentive to shift consumption patterns (forget about $\Omega 3$)
- Some 40% of fisheries production is internationally traded (rice 3-5%) - a global reach even into s/s fisheries
- Europe, Japan and North America are major import markets.

How do these broad trends pan out in the lives of people e.g. in West Africa – just one example – valuing local knowledge – taking it seriously.



How youngsters in Kayar, a fishing village in Senegal, experience the new realities – from being proud to brave the swell near the beach to suffering from the hardship of migration in unsafe boats.





Artistic digestion
of scientific facts
opens new
understanding

Explaining works
opened eyes to
interdependence
between Europe and
West Africa, which
nobody had realised
in their daily lives.



Towards Sustainable Development – Looking at old problems through new lenses



Small scale fisheries are mostly much more sustainable.

- They use less energy
- They are less destructive
- They are more selective
- They employ more people
- They produce high value fish.
- They distribute benefits widely.

What can we do together? (1)

- Buy insurance against risk and uncertainty by creating marine protected areas (Lauck *et al.*, 1996; Sumaila, 1998) – incidentally, this is what the 2002 Johannesburg Plan of Implementation prescribes;
- Value our grandchildren's fish as their fish, not ours (Sumaila and Walters, 2005);
- Integrate economics with ecology and other disciplines and focus research on rebuilding degraded ecosystems and on low-impact fisheries;
- Reduce sectoral approaches in favour of those that cut across all sectors of the economy in line with observed reality and organise research accordingly.

What can we do together? (2)

- Stop bad government subsidies to fisheries (e.g. fuel subsidies) – Asia US \$ 11.5 billion, Europe \$ 5 billion, Latin America and Caribbean \$ 4.5 billion – back up with policy research
- Help establish effective marine protected areas – the Convention on Biological Diversity foresees to protect part of the oceans - some progress - yet less than 1% are protected (probably 0.1% effectively)
- Promote sustainable forms of small-scale fisheries, recognise cultural diversity and local knowledge and support by participatory integrated research.

What can we do together? (3)

- Work on integrating sustainability principles, sciences and arts into school curricula and engage with young people and their teachers
- Make scientific knowledge more widely available in the public domain and provide tools for citizen action (e.g. fish rulers about min. size, INCOFISH)
- Encourage quantitative research about s/s fisheries
- Encourage story telling, registration of local memories to build bridges between different knowledge communities for mutual recognition and ability to cooperate on shared challenges.

Partners (scientists, artists, schools, local fishing communities)

- Belgium
- Brazil
- Cameroon
- Ecuador
- Germany
- India
- Italy
- Morocco
- Nigeria
- Senegal





For more ...

all fishes: <http://www.fishbase.org>

coastal zones: <http://www.incofish.org>

marine fisheries: <http://www.seaaroundus.org>

development: <http://acpfish2-eu.org/>

<http://www.mundusmaris.org>



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Thanks!

info@mundusmaris.org