

Conference of Climate Change and Tourism in Portugal:
Potencial impacts and adaptation measures (CLITOP)
Sponsored by FCT and FFCUL

“Climate Change Implications for recreational fishing”

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Summary:

- 1 - Introduction
- 2 - Present status
- 3 - Impacts and future scenarios
- 4 - Conclusions



1 - Introduction

- The big game fishing began with captures of shordfish in Chile, in the end of XIX century, and in Catalina (USA) and New Scotland (Canadá), in the beginning of XX century.
- In Portugal there is an old tradition in recreational fishing, an example of it is in the 1950's, the practice of big game fishing to the swordfish in Sesimbra, that was a symbol for the local fishermen community and also a symbol for the touristic activities in the village.
- About 1/2 million of portugueses (5% of the population) practice the recreational sea fishing, inshore or offshore, in the continental shelf or in the insular zones.

Big game fishing in a small boat – Sesimbra 1954



The fish who gives the name to an Hotel in Sesimbra and
World and European records





2 – Present status

- Tourism is one of national priorities, and the sun and sea touristic offers must be complemented, for instance, with programs/activities related with recreational fishing, in a view of sustainable tourism.
- A large number of infrastructures (e.g. adaptation of ports to recreational activities and new marinas and clubs) all around the portuguese coast appear in last years.
- This dynamic have a strong influence in diferent segments in the tourism industry, and also in others related sectors, giving a good contribution to the GDP and employment.

Infrastructures and security systems are implemented,
either to recreational fishing



Others activities involved in the maritime tourism are important and a bigger number of events every year



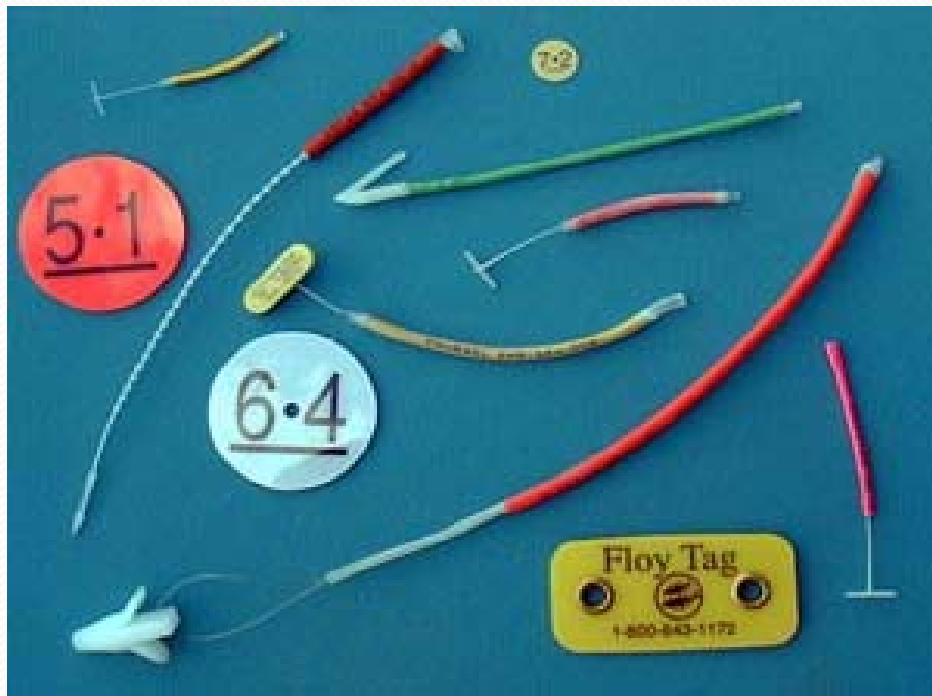
Charter (boat rentals) for big game fishing is more commun



Swordfish is one of most demanded fish targets



Blue marlin is quite corrently caught in the Algarve coast and tagging is also a prattice



Young people show already an interest in big game fish and release

de nota de seus "Olhos".

os jovens



ANDRÉ MADEIRA (1983), 15 anos. Participou nas anteriores edições, tendo até então praticado diversas modalidades de Pesca. No 1º turno sagrou-se vencedor por equipas na agregado (derivado-cornico) e foi premiado com o maior exemplar numa manga de deriva com a captura de um Anequim com 13,8 kg, para além de dois Espadins Brancos (34,2 e 21,4 Kg).

Para além disso tem como referência a captura de um Espadim Branco com 49,20 kg, em condições de mar de agitação moderada.



FRANCISCO PAIÃO

Praticante de vela, participa com a pesca nas actividades desportivas. Participante no seguimento foi o melhor júnior com a captura de um Agulha com 1,2 kg, se pode considerar notável para a sua espécie. A sua equipa, uma senhora, é exemplo em como praticar um desporto saudável.



JOSÉ MARIA C





3 – Impacts and future scenarios

- The Project SIAM analyse the evolution of climate in the XXI century, under different emissions scenarios, using the circulation models HadCM3 and HadRM3.
- Was characterize the ecological, social and economic impacts of climate change on portuguese fisheries resources, and identified mesures for mitigation and adaptation, as also integrate outreach process with stakeolders from the sector.
- The evolution of oceanic and atmosferic parameters to 2100 was compared with data between 1941 and 2000.



3 – Impacts and future scenarios

- The climate scenarios for 2100, in the portuguese continental waters indicate a increase in sea surface temperature as much as 4°C, and also alterations in the wind paterns.
- It seems reasonable to forecast an enhancement of abundance of same subtropical species who could extend is distribution to the North, attempt also the presence of seamonts, submarine canyons and upwelling zones.
- The sea environmental conditions became more favorable to extend some migrations further northward, and increase the presence of billfishes, tunas, sharks and others groups of species, with special interest for inshore and offshore recreational fishing.

Yellowfin tuna are common in insular waters



Atlantic sail fish is also a target species

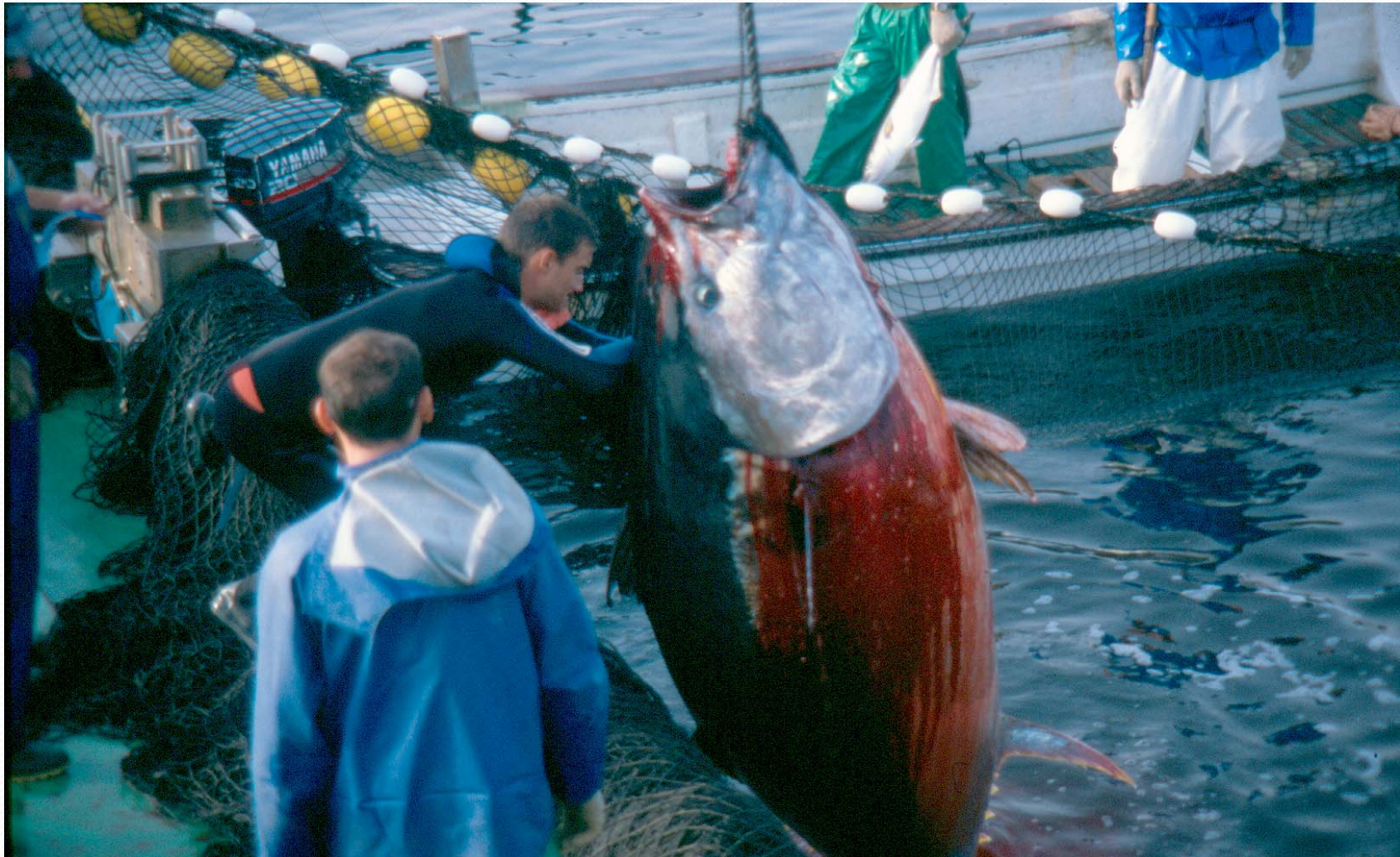




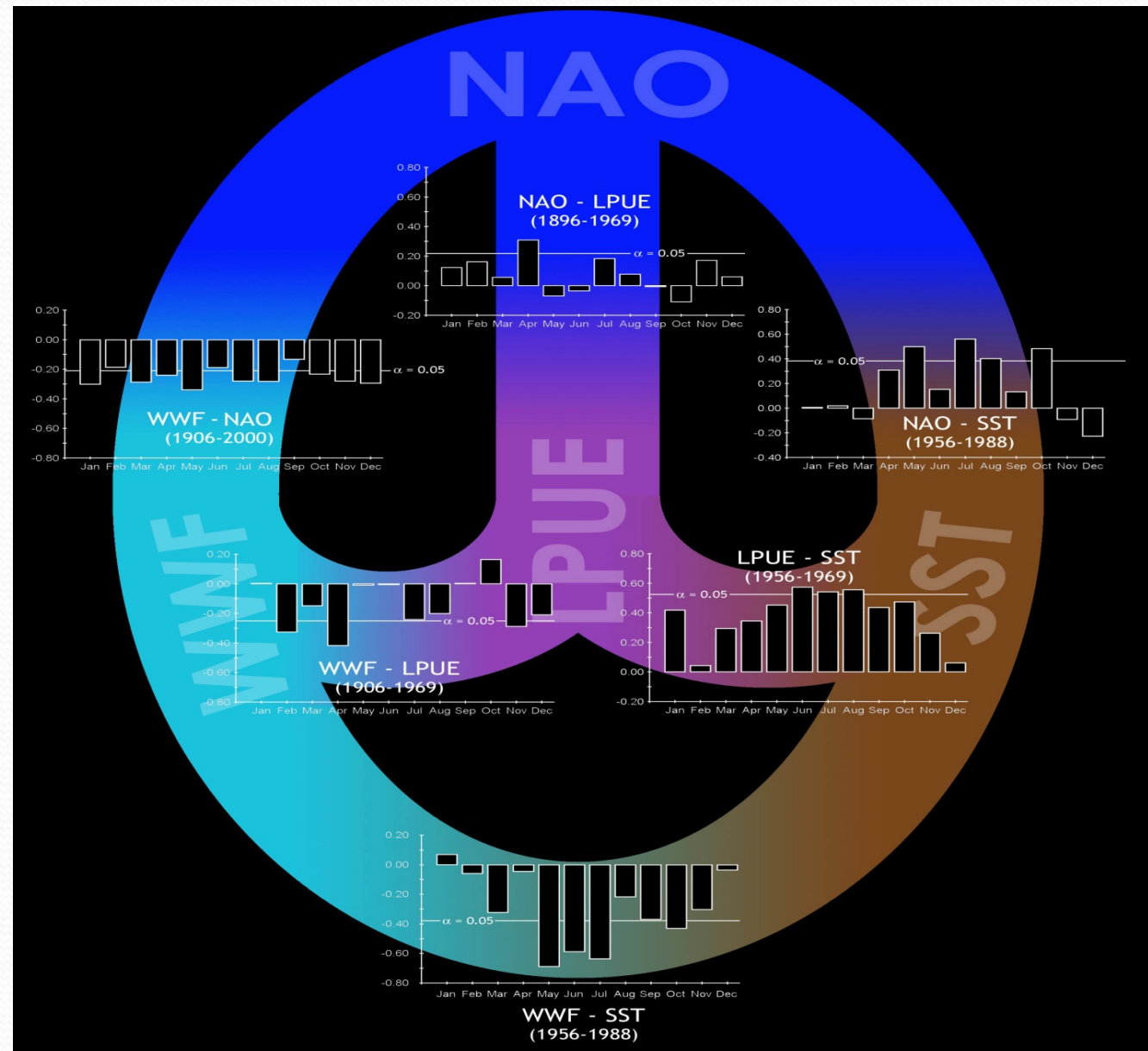
3 – Impacts and future scenarios

- Was identify the most effective measures related with the expectable evolution and the difficulties and constraints to prepare for climate change.
- Oportunities in this segment of explotation of marine ressources could be a positive impact of climate change, but must be taken adaptative measures in diferent sectores.
- A new governance of recreational sea fishing is recommended and promote multi-season recreational centers.

Bluefin tuna is an importante ressource



Correlation among annual bluefin tuna LPUE in Algarve seems to be connected with SST and Westerly Wind Frequency (WWF). The favorable influence from NAO in some the “big migrators” could be a reality.





4 - Conclusions

- Coastal developement , including commercial fisheries could have an importante factor in the local maritime tourism, but the control and monitoring efforts need to be appropriate.
- The management of maritime zones, and all the activties, need to be more concentrated.
- Public outreach and education, as local management, need to be increased as public awareness for commercial and recreational fisheries for to protect habitats and species.



4 - Conclusions

- The minimum landing size for commercial fish in opposition with the recreational need to be revised, in some cases, when applied, for instance, to the inshore recreational fishing, and this could have a compensation with seasons and locals of interdiction, for instances in estuaries and lagunar systems.
- Sea water warmer could increase the abundance of some subtropical species in the portuguese waters, an earlier spawning season, and shift in distribution to the north of others species.



4 - Conclusions

- Dolphin, whales, other marine mammals and sea birds watching could be an emergent activity.
- The commercial fishing, considered with great difficulty, could found a new potencial in the offshore recreational fishing because there are many sea anglers wishing to retain a trophy fish.
- Sharks and rays tagging programmes need to be implemented with local and global management.
- Is already significant the number of contests and competitors in big game fishing in the portuguese waters.

Whale watching and others marine mammals are clearly increasing (e.g. In Azores 23 enterprises)



A common dolphin entering in marina of Cascais





4 - Conclusions

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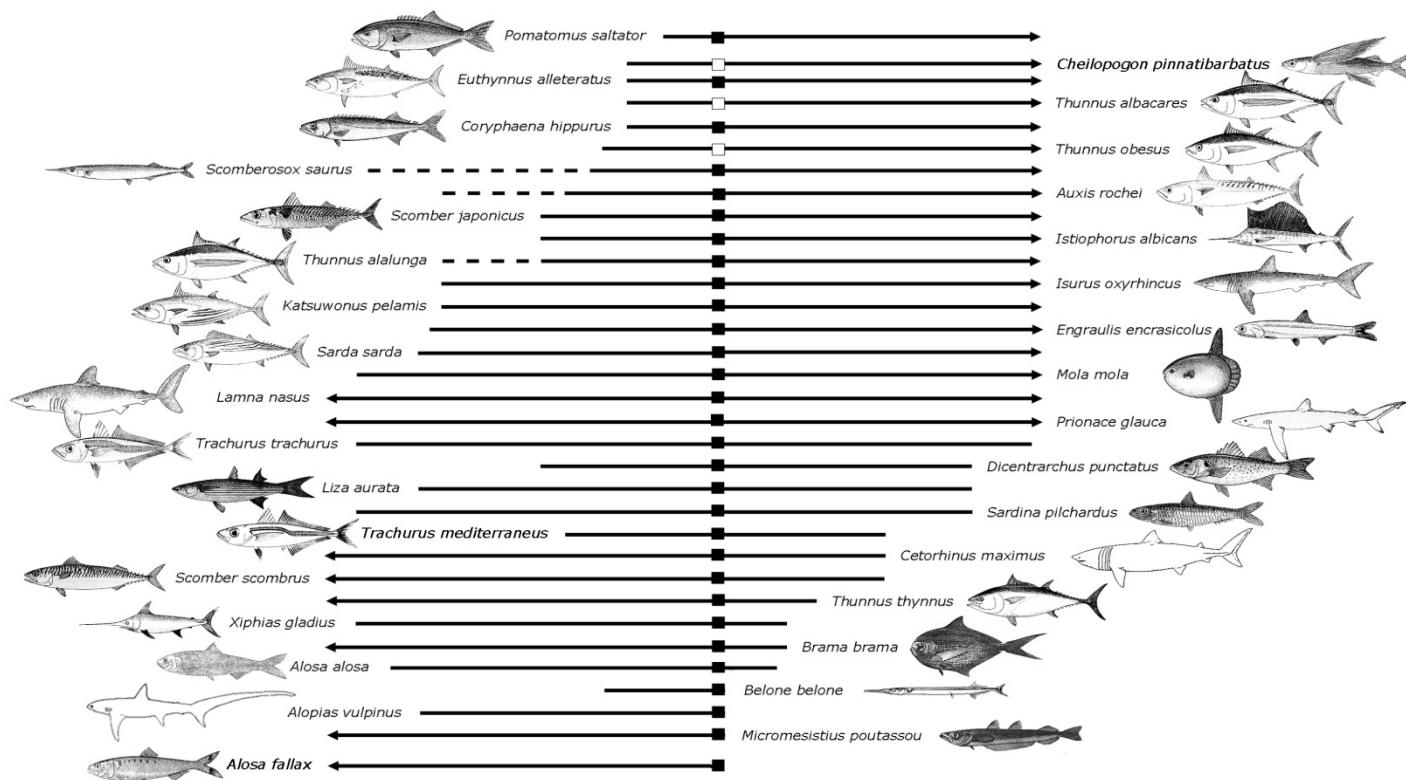
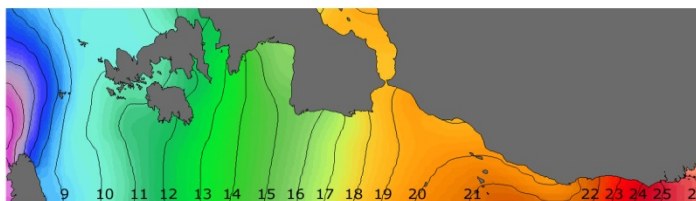
- Is an important social and economic value the contribution of recreational sea angling. The cost benefit from the activity is positive (e.g. 1kg= 5€ or 1kg= 150€)
- This interest is shown with courses developed in some universities, as in the Azores University, applied to the maritime tourism, with a mix of studies in marine biology and tourism management.
- Qualifying events of big game fishing, to the world championship, promoted by the International Game and Fishing Association (IGFA), is a reality.

4 - Conclusions

- Billfish as blue marlin (*Makaira albicans*), white marlin (*Tetrapturus albidus*), swordfish (*Xiphias gladius*), sailfish (*Histiophorus albicans*), tunas as bluefin (*Thunnus thynnus*), yellowfin (*Thunnus albacares*), flying (*Thunnus alalunga*), bigeye (*Thunnus obesus*), or sharks as mako (*Isurus oxyrinchus*), thresher (*Alopias spp*), hammerhead (*Sphyrna spp*), blue (*Prionace glauca*), or others as bluefish (*Pomatomus saltatrix*), amberjack (*Seriola spp*) and dolphin (*Coryphaena spp*), are, generally, the tops of the big game fishing in portuguese waters, but open sea botton or inshore fishing could have also an importante contribution for the maritime tourism.

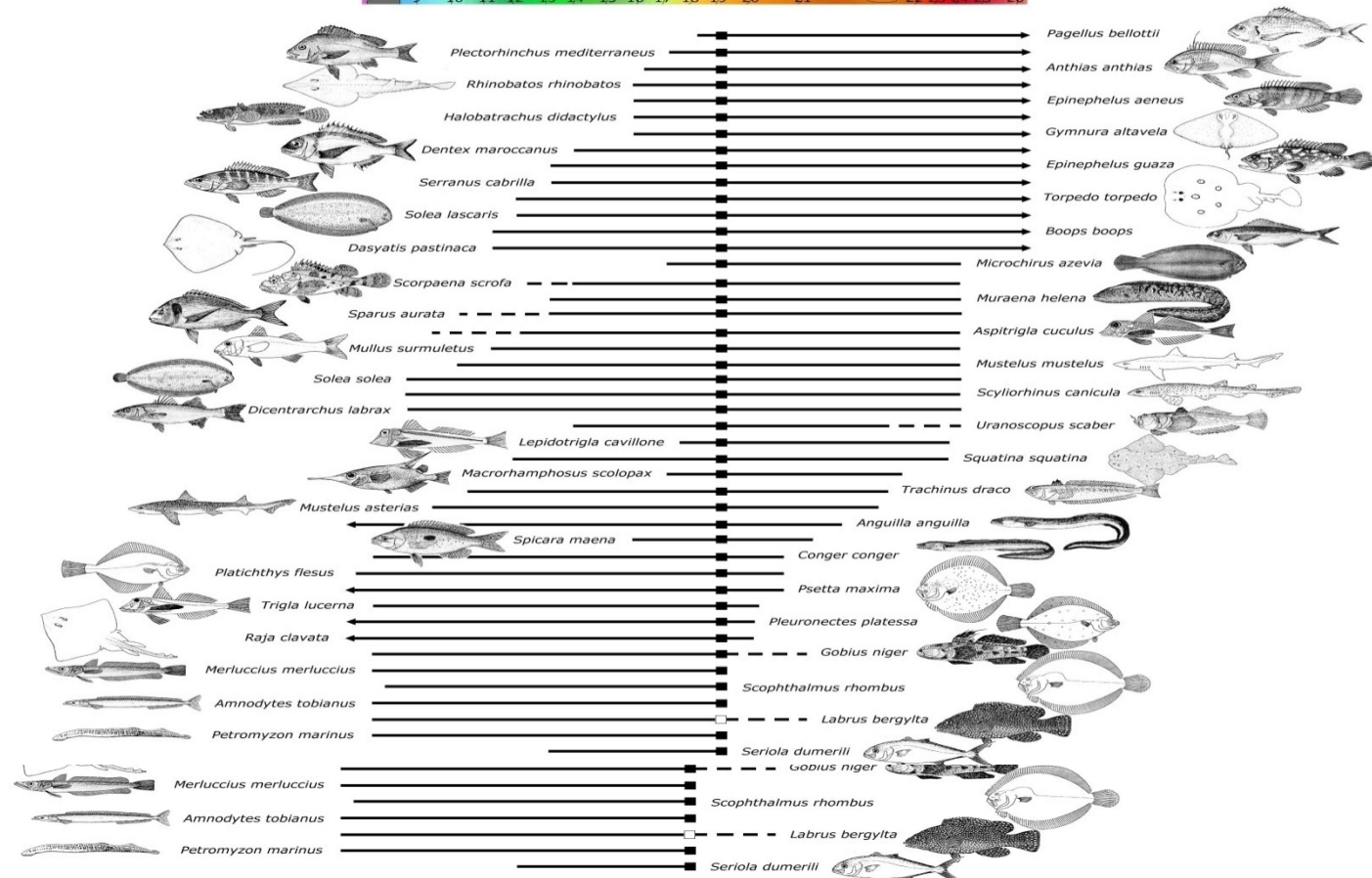
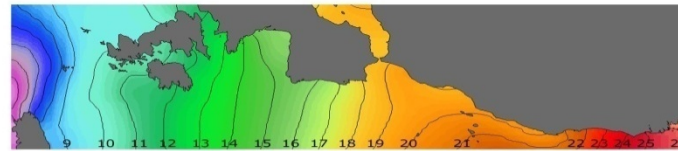
Geographical distribution of some pelagic fishes and annual isotherm (°C) values from SST

ESPÉCIES PELÁGICAS



Geographical distribution of some demersal fishes and annual isotherm (°C) values from SST

ESPECIES DEMERSAIS



“PREMONITION”
FROM
HIERONYMUS
BOSCH (1450-
1516). Fragment
of an oil paint who
are in the “Museu
de Arte Antiga” in
Lisbon.



Thank You
for your
attention

