FACTORS TO BE TAKEN INTO ACCOUNT FOR A CORRECT READING OF TUNA TRAP CATCH SERIES

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SEVERAL SCIENTISTS AND ICCAT-SCRS ARE WORKING SINCE MANY YEARS FOR STANDARDISING THE TUNA TRAP CATCH DATA.

IT IS A VERY IMPORTANT AND DIFFICULT JOB, ABLE TO FINALLY MAKE THESE LONG HISTORICAL SERIES AVAILABLE FOR THE STOCK ANALYSIS

GBYP IS PROVIDING HUGE DATA SETS, COMING FROM IMPORTANT ARCHIVES, WHICH WILL IMPROVE IN A CONSIDERABLE WAY THE ICCAT DATA BASE, WITH SEVERAL HUNDRED THOUSANDS OF DATA, GOING BACK TO THE XVI CENTURY.

THESE DATA, AFTER THE STANDARDISATION, WILL IMPROVE OUR UNDERSTANDING OF EVENTUAL LONG TERM VARIABILITY IN THE EASTERN ATLANTIC BLUEFIN TUNA STOCK

AS WE KNOW, AFTER THIS ESSENTIAL WORK, THEN A FURTHER AND MUST REFINED ANALYSIS WILL POSSIBLY HELP IN BETTER DEFINING THE VARIABLES ABLE TO AFFECT THE CPUE DATA

(CPUE is actually used to define the abundance of tuna in the stock analysis)

THIS FURTHER WORK WILL REQUIRE A LOT OF DEEP KNOWLEDGE OF EACH DATA SET, ALL THE INFORMATION BEHIND IT AND THE HISTORY OF EACH TRAP

ENVIRONMENTAL & NATURAL VARIABLES

- **Oceanographic abnormalities** (NAO, EMT, etc.) (able to modify mass movements in large areas);
- **Climate changes** (able to modify the large-scale distribution of tunas, with effects on multi-year or single-year parameters);
- **Metereology** (particulary winds) **and hydrography** (able to affect either the presence of spawners in some areas or the tuna trap structure at sea);
- **Natural turbidity** of the coastal waters (able to induce tuna schools to leave some areas)
- **Food web changes** (either distribution, structure or quantitative variables)
- **Marine Earthquakes** (suspected to induce tunas to leave the areas for some time)

ENVIRONMENTAL & NATURAL VARIABLES

- **Dramatic changes in the marine environment** (like the situation in the Black Sea in the '60s);

- **Attacks by top predators** (the presence of large sharks or some marine mammals may affect either the yields or the migratory courses);

- **Underwater eruptions** (able to induce changes in migrations or in the food web);

- **Epidemies** (able to seriously affect trap workers and then yield);

- **Alterations of electromagnetic fields** (which possibly affects migration patterns);

- **Unforecastable events** (as local storms or huge waves, able to destry a trap).

HUMAN-INDUCED VARIABLES - 1

- **Mistakes in setting the trap** (if the Rais made a mistake in one year, this fact might cause a drop in catches, indipendently from the natural abundance);

- **Late or anticipated deployment** of the trap (in the first case the CPUE can be lower than usual, while the second case migth affect mostly the economy of the activity)

- **Pollution** (many evidences about the effects of pollution, and particularly the industrial one, on the presence of tuna in tuna traps, while effects of the increasing turbidity of coastal waters, induced by increasing humans inhabiting the coastal areas is only suspected)

- **Anthropogenic noise** (evidence of direct effects of ships and hydrofoils noise on the abundance of tunas in some traps)

HUMAN-INDUCED VARIABLES - 2

- **Underwater explosions** (common after the 2nd WW and now related to oil exploration)

- **Alterations of the natural light conditions** (this factor might be either positive or negative);

- **Conflicts among traps** (well documented over the centuries and able to affect the yeilds);

- **Conflicts with other fishing gears** (evidence of impact by bottom trawlers when operating in near areas, by large-scale driftnets operating along the incoming course or by other tuna traps set before the trap along the incoming course);

- **Staff and crew management conflicts** (between owner and rais, owner and crew, rais and crew, often based on economic factors or a new ownership);
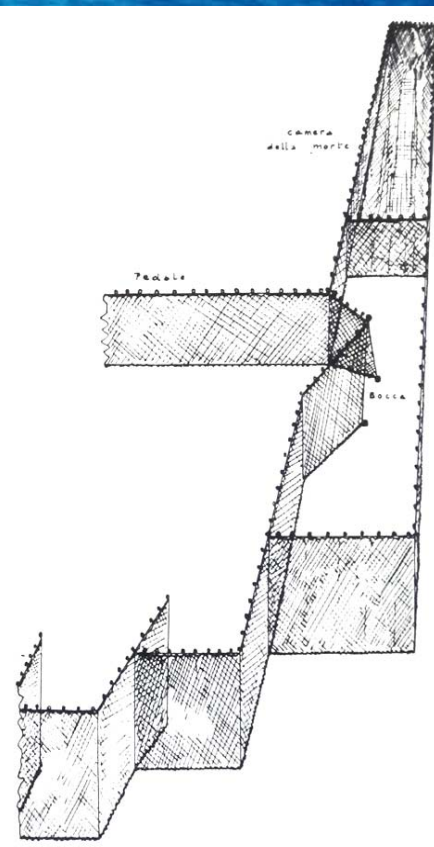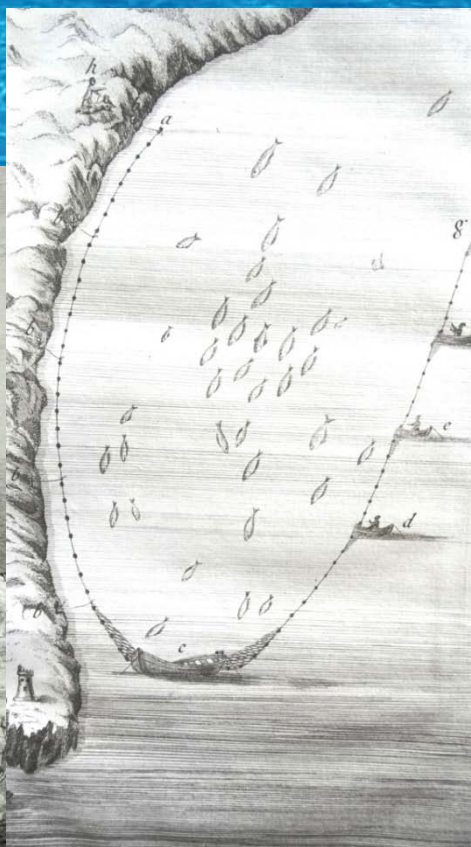
- **Pirates, corsairs and war events** (another well-documented problem, able to affects yields in specific traps or in large areas);

- **Economic and financial problems** (lack of sufficient economic resources induced by many factors, including market problems);

- **Unreliable or manipulated catch statistics** (it is well-known that sometimes different data sets were created, for various reasons, while different types of statistics were commonly adopted in many traps);

- **Unforcastable events**.

TECHNOLOGICAL VARIABLES - 1

Type of gear (there is a great difference between a passive gear like a set trap or an active gear like a seine, and this need to be examined in ancient data sets)
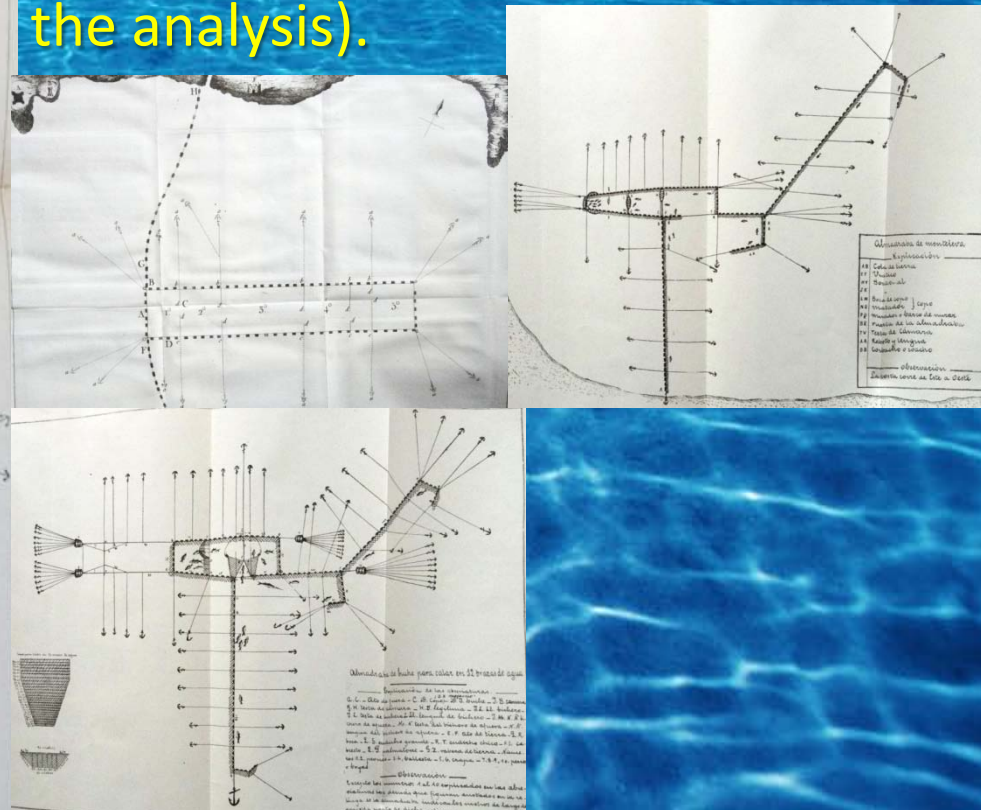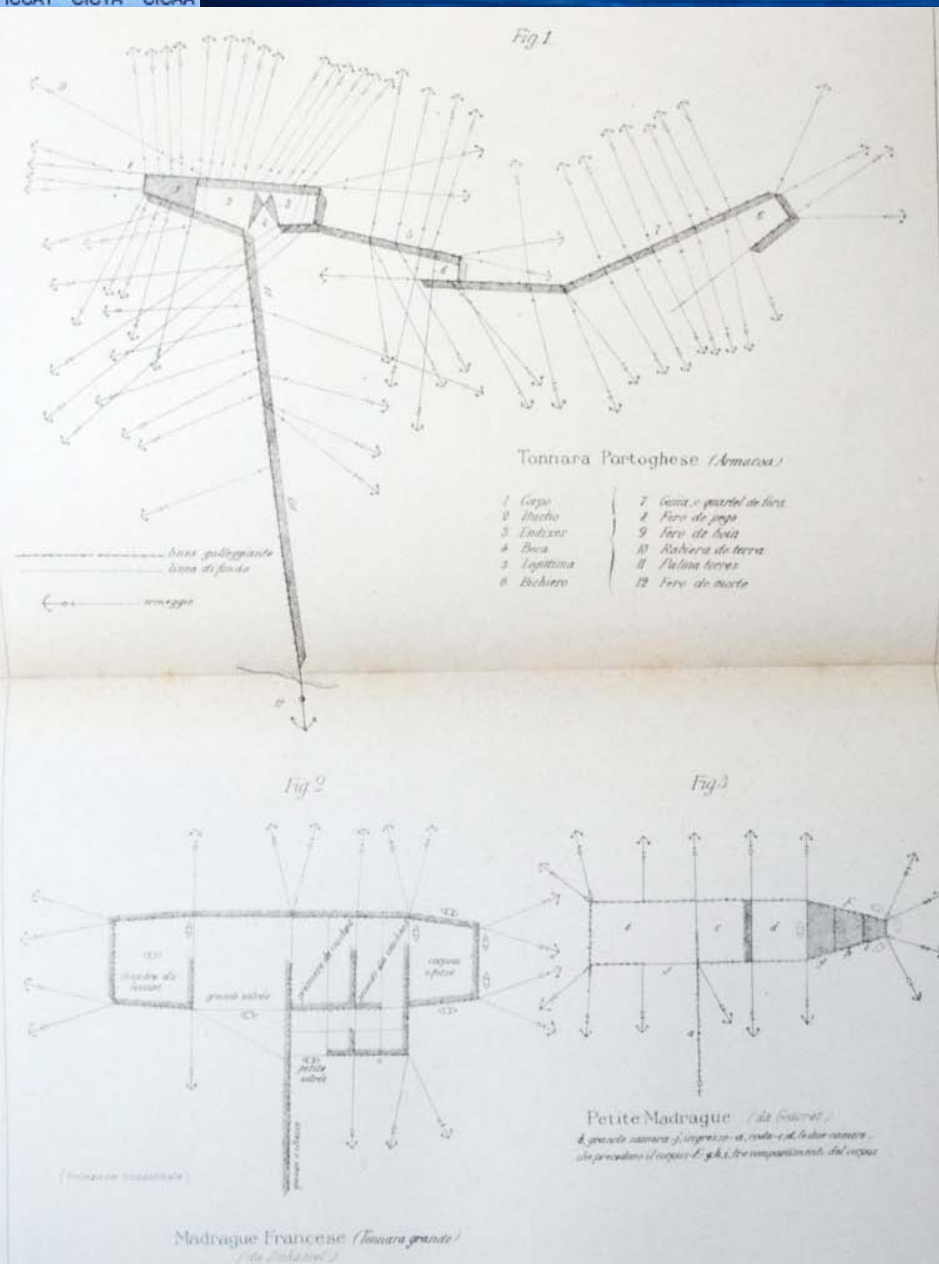
Type and size of the trap (many types of traps have been used in various places, with different catch capability; if a specific tuna trap had a technological creeping this should be taken into account for the analysis).

POSITION VARIABLES

Position of the trap (changing the position of setting the trap should be considered as starting a new data series and any trap having other traps before it, according to the tuna course, have less possibilities to catch tunas)
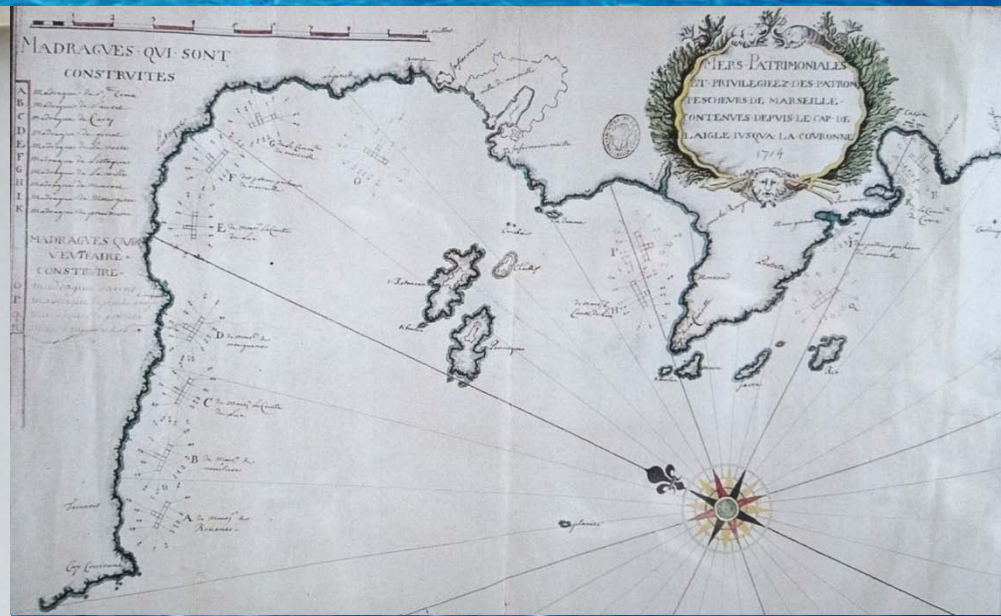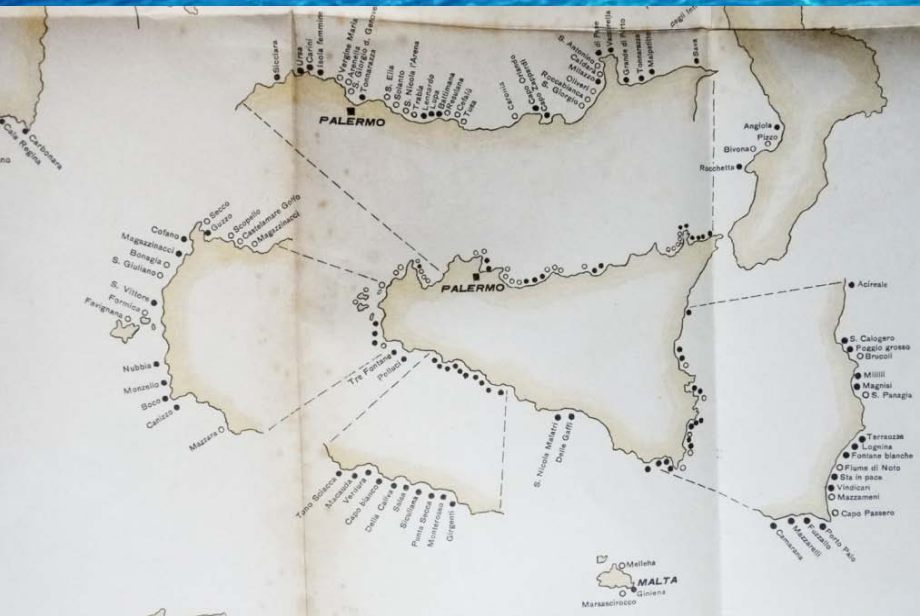
IMPACT OF REGULATORY MEASURES

In historical times, there are many evidences about decisions taken by courts for imposing rules or even for stopping the trap activity.

In more recent times, regulatory measures have been imposed (quota, minimum size limits, etc.) within the ICCAT Bluefin tuna multi-annual recovery plan, but also by single countries, and these measures clearly affects the CPUE.

THERE IS A CLEAR CONCLUSION:

Historical data series of tuna traps needs a very deep analysis for better understanding the variability in yields.

Some of these analyses require a lot of effort and time, but they are essential for better discriminating the various factors, attributing them different weights, according to the information available.

It will be not an easy duty!

THANKS!

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