



Overview IEO activities on fisheries scientific research and stocks advisory in CECAF area

CECAF

Committee for the Eastern Central Atlantic Fishery

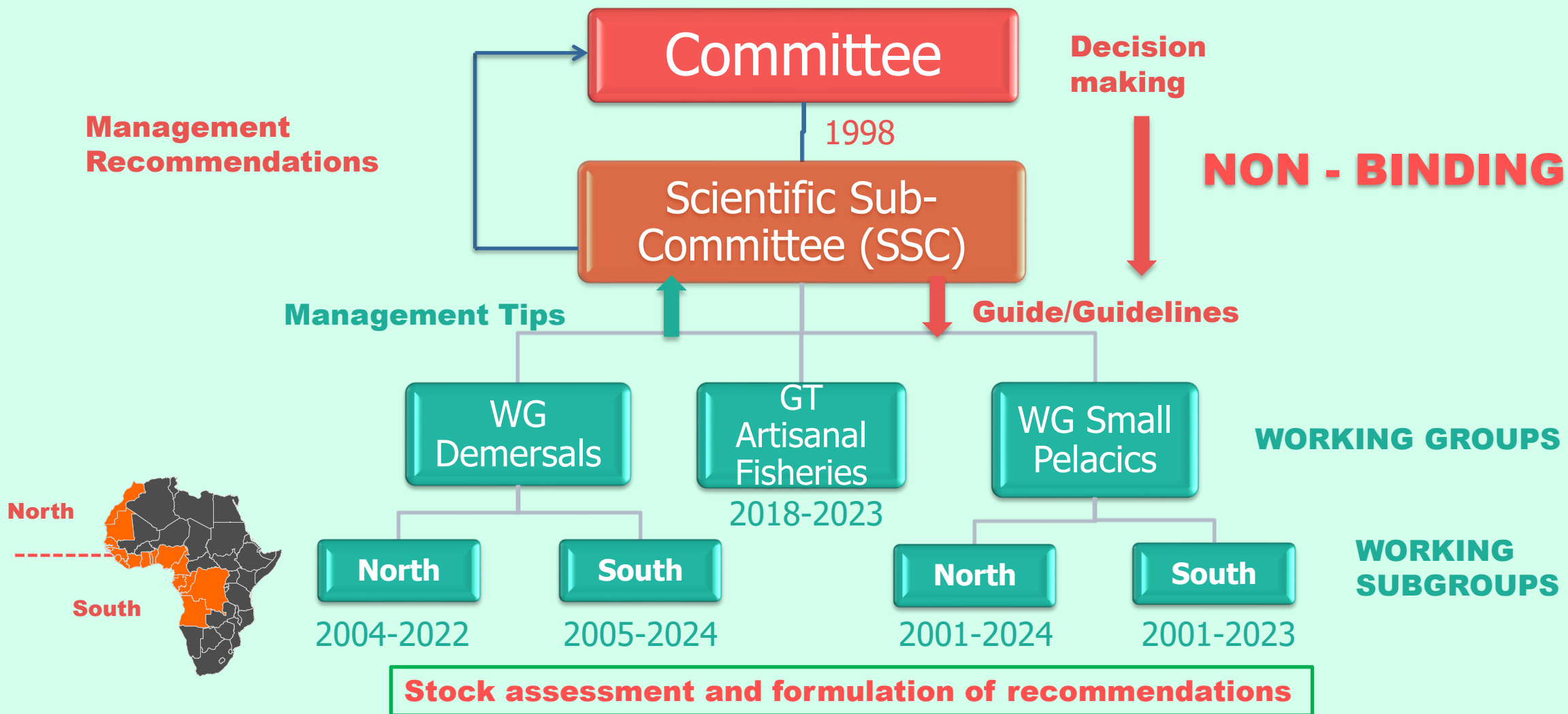


FAO Regional Fisheries
Organisation (RFO)

34 Member States



STRUCTURE CECAF



SPANISH FISHERIES

Fisheries in Africa

- Framework **SFPA** (Sustainable Fisheries Partnership Agreements) – UE
- Framework **SMEFF** (Sustainable Management of External Fishing Fleets)

Fisheries in Canary Islands

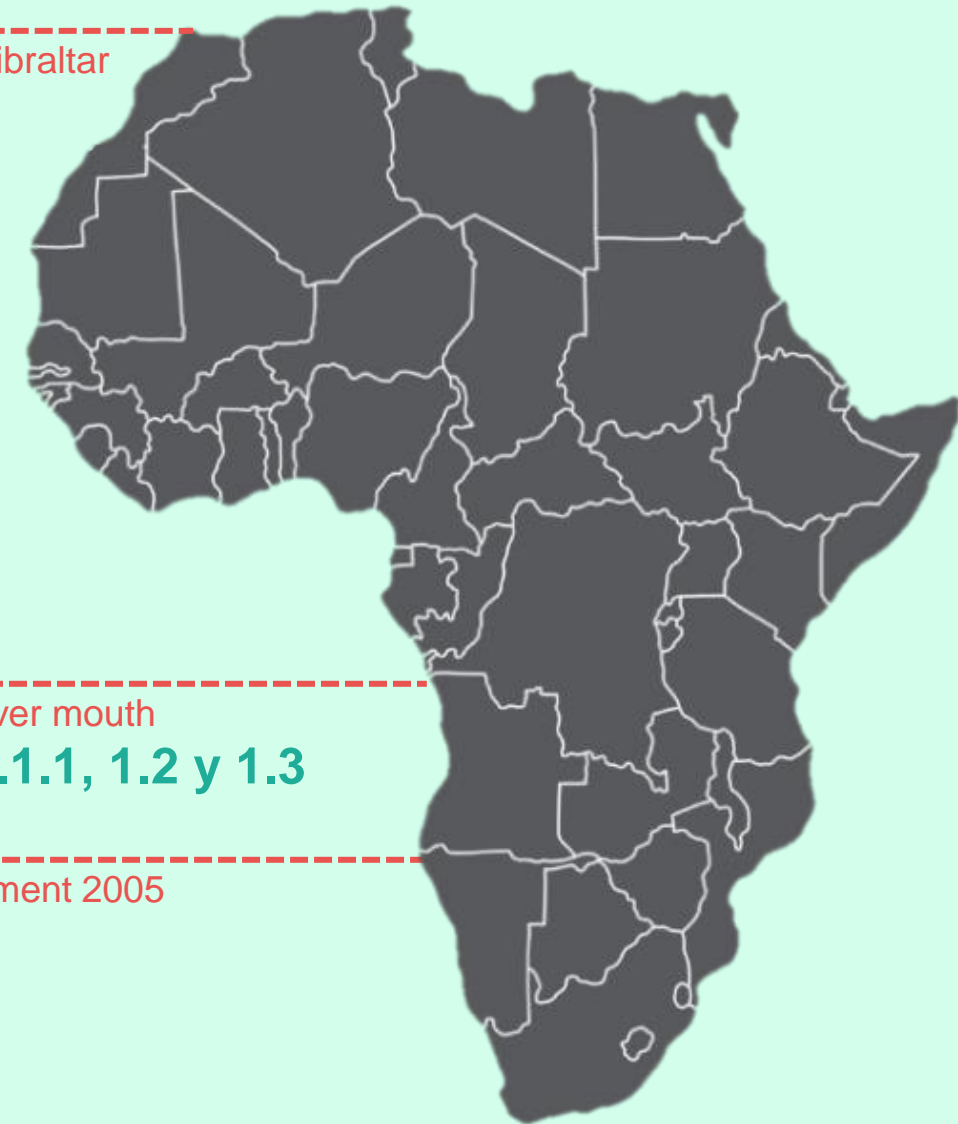


Area 34 FAO

Strait of Gibraltar

Congo river mouth
Area 47.1.1, 1.2 y 1.3
FAO

Enlargement 2005



SPANISH FISHERIES – SFPAs AFRICA



Marruecos



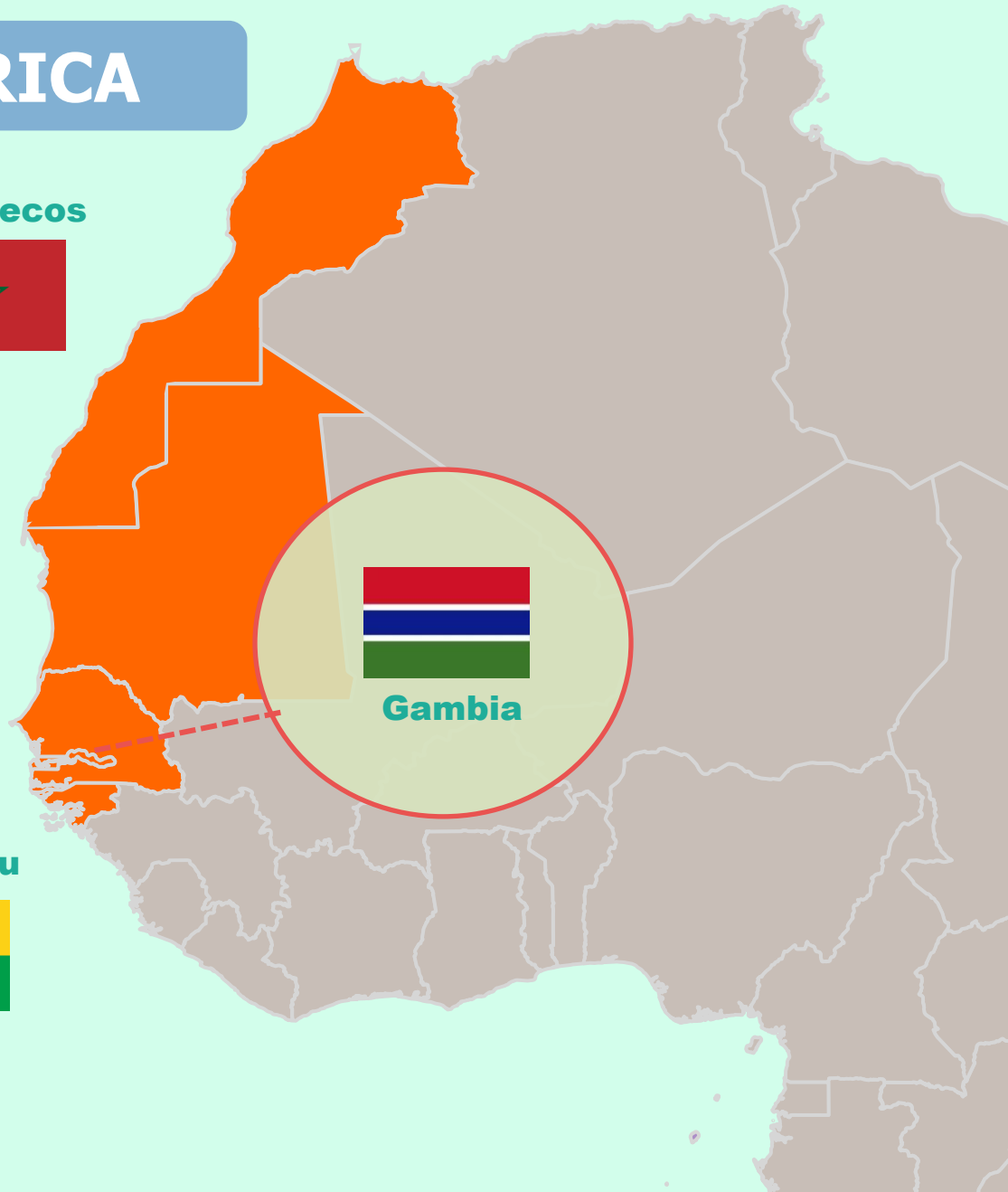
Mauritania



Senegal



Guinea-Bissau



Gambia

SPANISH FISHERIES – SFPAs AFRICA

Morocco



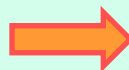
- Purse seine North (anchovy, sardine)
- Artisanal longline North (Sparidae)
- Artisanal Sout traps, line, rod (rubberlip grunt, black seabream)
- Bottom trawl and longline South (black hakes) (F and Fr)
- Bottom longline South (Atlantic pomfret)

Mauritania



- Bottom shrimp trawl (deep-water rose shrimp, pink shrimp, alistado) (Fr)
- Bottom trawl (black hake) (F and Fr)
- Bottom longline (Atlantic pomfret)

Senegal Gambia

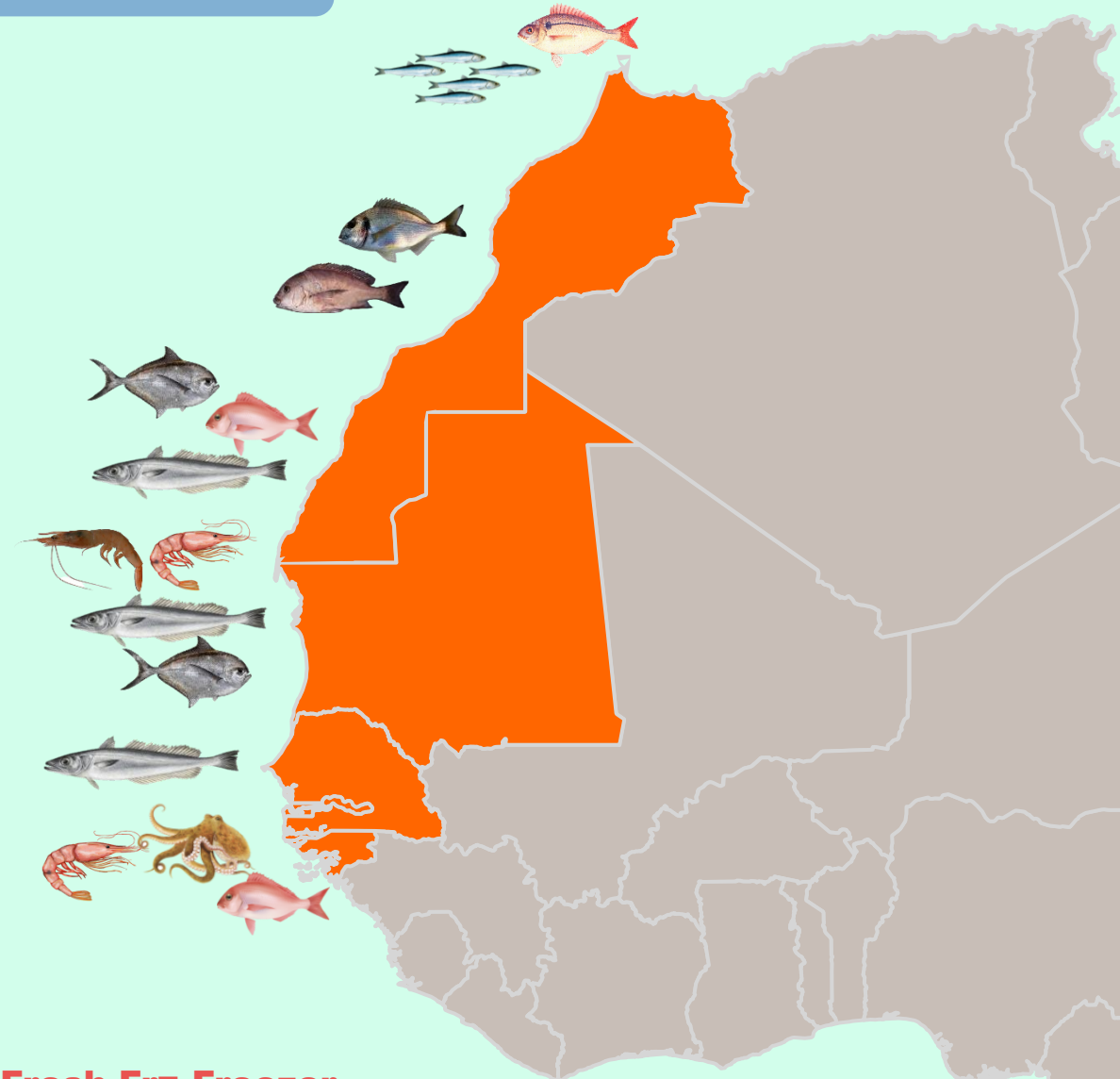


- Bottom trawl (black hake) (F and Fr)

Guinea -Bissau



- Bottom shrimp trawl (deep-water rose shrimp, pink shrimp, alistado) (Fr)
- Bottom cephalopods (octopus, cuttlefish, squid) and fishes (black hake, horse mackerel) trawl (Fr)



F= Fresh Fr= Freezer

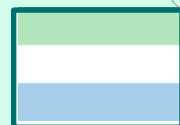
SPANISH FISHERIES – SMEFF AFRICA

Direct authorisations framework SMEFF
(Sustainable Management of External
Fishing Fleets). Regulation (EU) 2017/2403

<https://eur-lex.europa.eu/eli/reg/2017/2403/oj>



Guinea



Sierra Leona

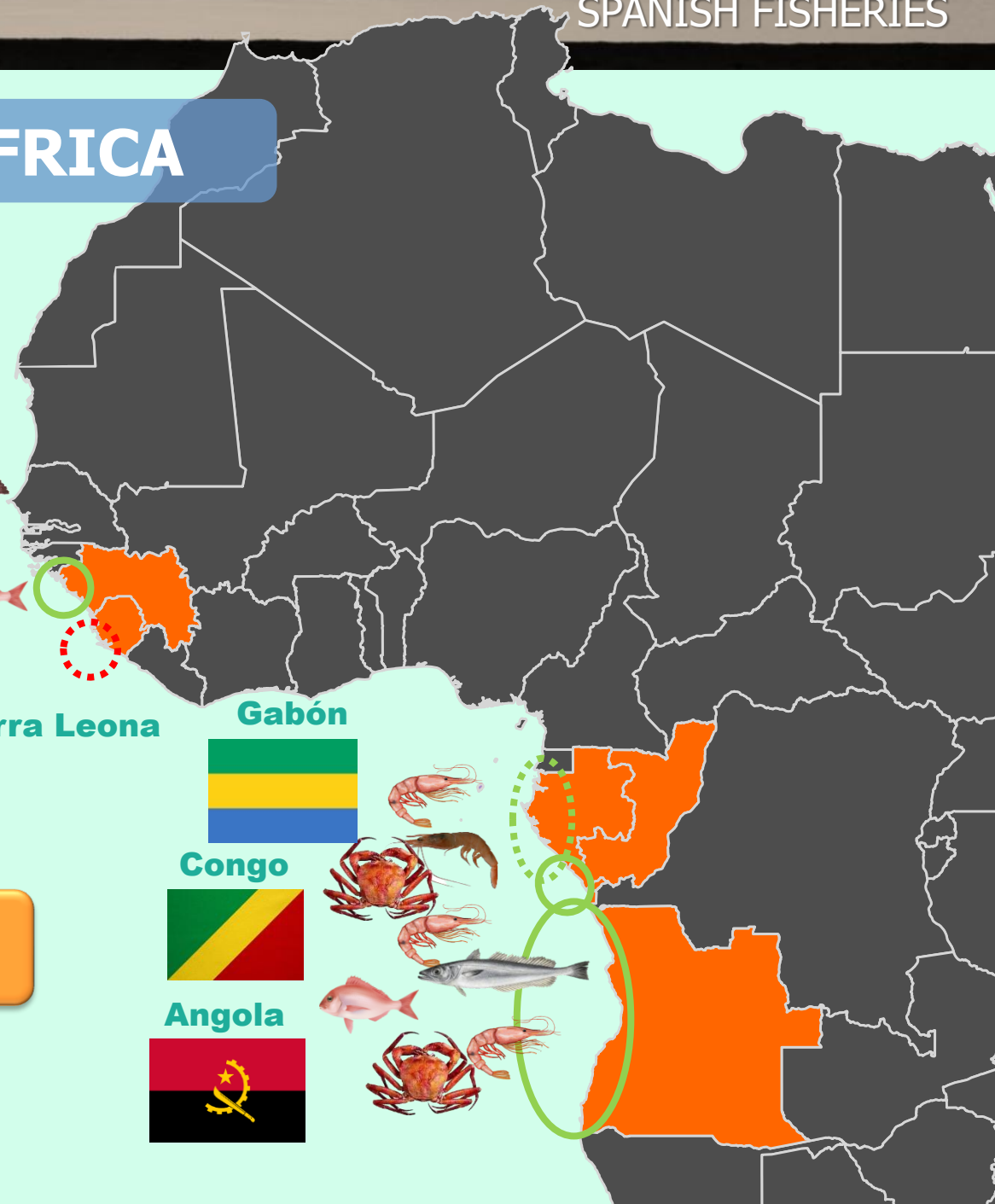
Gabón



Congo



Angola



• FREEZERS: Mainly demersal shrimps trawling (deep-water rose shrimp, alistado, red crab) and fish (hakes, Sparidae, monkfish)

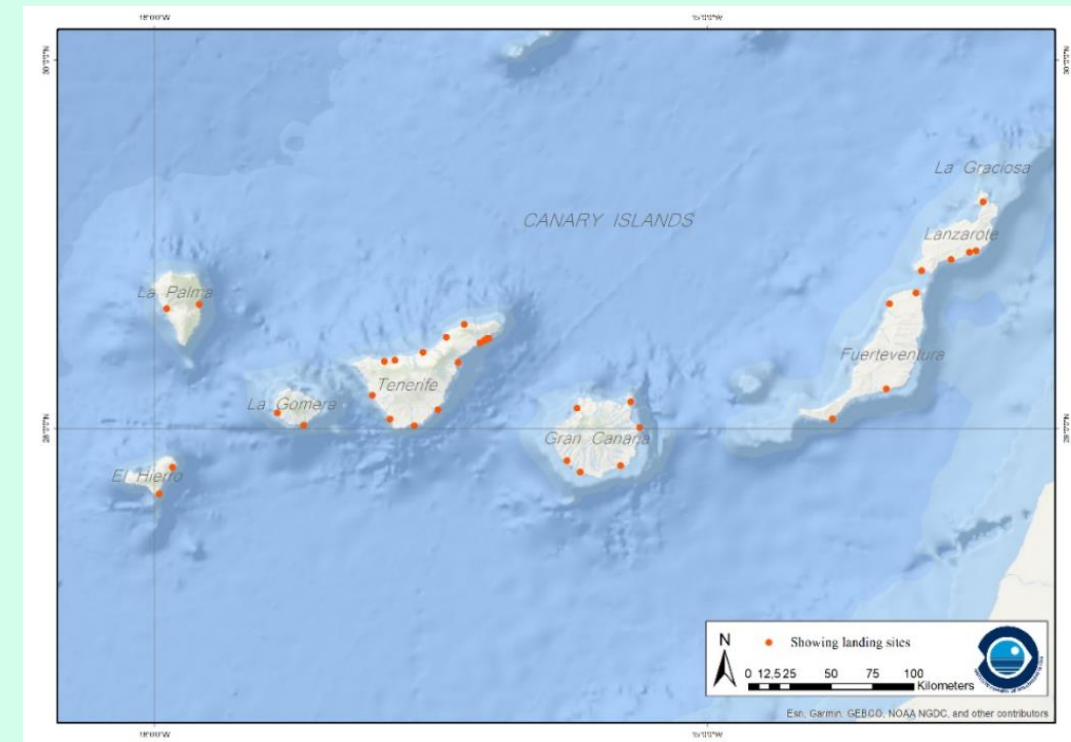
..... Possible SFPA..... **Potential fishing ground**

SPANISH FISHERIES – CANARY ISLANDS

MULTISPECIFIC ARTISANAL FISHING. Around 600 boats with <10 m length, daily trips and “minor gears” license.

- ❑ “*Traíñas*” (purse seine) targeting small pelagics. Around 30 boats.
- ❑ Multipurpose and multi-gear (traps, gillnets, hooks) aimed at demersal species of fish, crustaceans and cephalopods. Most of the boats.

TUNA VESSELS WITH LIVE BAIT. 35 vessels with “tuna” licence. They catch large quantities of small pelagic fish as “bait” (mainly mackerel and horse mackerel). Interaction with the “minor gears” licence, and their catches are unknown.



38 authorized landing points

Very complicated characterization of landing and efforts

SPANISH FISHERIES – CANARY ISLANDS

- **Framework Regulation: EU – Outermost Regions**
- **Relationships with CECAF, ICCAT, ICES, Madeira**

DEMERSALS SPECIES

FISHES



• *Sparisoma cretense* (“VIEJA”)

CRUSTACEANS



• *Plesionika* spp.

SMALL PELAGICS



• *Scomber colias*, *Trachurus* spp., *Sardina pilchardus*, *Sardinella aurita*



• *Sparidae*, *Muraenidae*, *Seriola* spp., *Beryx* spp., *Serranidae*...

MOLLUSCS



• *Octopus vulgaris*, *Sepia officinalis*, *Ommastrephiidae*

PROJECTS

17 Projects 2023

Financiación	Proyectos	Objetivo	Observaciones
FEMPA	EPAFRİK-BADE_2	Estudio de las Pesquerías de AFRICa-Estadística y BAses de DATos de África	UE (70%)-IEO, CSIC
	EPAFRİK-BIO2	Biología de recursos vivos de Africa	UE (70%)-IEO, CSIC
	EPAFRİK-2	Estudio de las Pesquerías de AFRICa	UE (70%)-IEO, CSIC
	PACA-BADE	BAses de Datos y Estadística de las pesquerías Artesanales de Canarias: Evaluación, Interacciones ambientales y Modelización de los Stocks	UE (70%)-IEO, CSIC
	PACA-BIO	Biología de recursos vivos de Canarias	UE (70%)-IEO, CSIC
	PACA-CAMACU*	CAMpañA de evaluación ACUstica y cartografiado del área de distribución de pequeños pelágicos de interés comercial en las islas Canarias. Campaña PECAN	IEO (PIE)
Contrato Marco CINEA (UE)	EASME2018_SC10	Mapping of marine protected areas and associated fishing activities: Atlantic EU Western Waters and EU Outermost Regions	UE
	EASME2019_SC02	Provision of Advice, Coordination and Participation of Scientists in International meetings of Regional Fisheries Management Organisations and bodies, Multilateral Environmental Agreements and SFPAs for DG Mare and of the EU Delegations.	UE
	EASME2019_SC04	Scientific and technical knowledge of the UE-fisheries, exploited stocks and sensitive marine habitats in the high seas and third countries waters not subject to SFPAs and/or RFMOs jurisdiction	UE
	EASME2019_SC05	2022-23 Coordination and thematic meetings between DG MARE and EU scientists involved in RFMOs and SFPAs	UE
	EASME2019_SC07	Provision of Advice, Coordination and Participation of Scientists in International meetings of Regional Fisheries Management Organisations and bodies, Multilateral Environmental Agreements and Sust.. for DG Mare and of the EU Delegations.	UE
Asistencias Técnicas (AT)	ATBISSAUSEL02	Mejora de la selectividad del arrastre y la reducción de las capturas no deseadas en la ZEE de Guinea Bissau. (BISSAU_SEL_2022)	ANACEF
	ATPLEXSESANECA	Campaña 2022 del Plan Experimental de seguimiento del sable negro en Canarias	Gobierno Canarias
	ECOAFRIKBP21	Preparación de un plan de acción para la biodiversidad (BAP) para el proyecto de gas de BP "Greater Tortue Ahmeyim" ubicado en la frontera marítima entre Senegal y Mauritania	Asociación Ecoafrik
Campañas SGP	ANGOLA2011	Evaluación de los recursos demersales de interés pesquero de la ZEE de la República de Angola	SGP
	EVABIS23	Evaluación Recursos Demersales de la ZEE de Guinea Bissau.	SGP
Competitivos externos	DEMERSTEM	DEMERsal ecosySTEMs	UE-PROGRAMA PESCAO

EMFAF PROJECTS

Fisheries monitoring and stock assessments

CECAF – West Africa and Canary Island

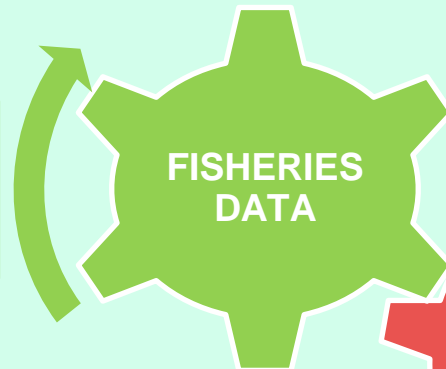


PROYECTS
EPAFRİK-BIO2
PACA-BIO

Improving data
monitoring



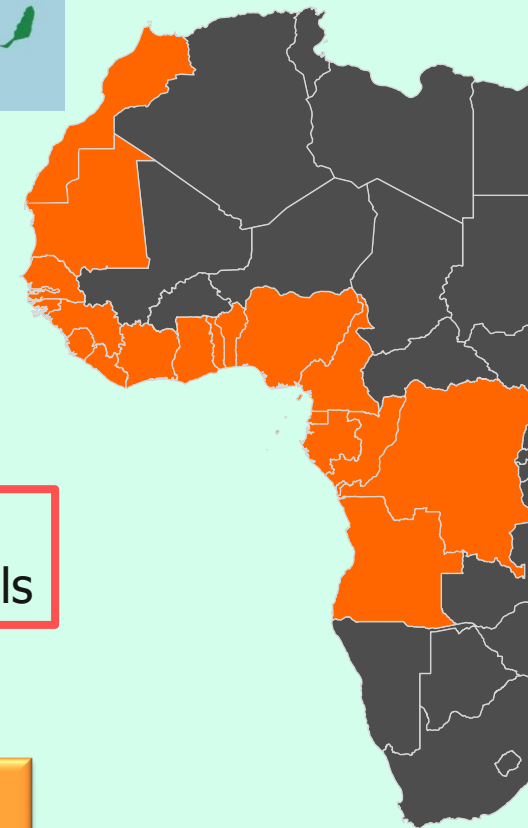
PROYECTS
EPAFRİK-BADE_2
PACA-BADE



STOCKS
ASSESSMENT
(CECAF)

PROYECT
EPAFRİK-2

Improving
assessment models



European
Maritime Fisheries
& Aquaculture
Fund (EMFAF)

Information collected by the Spanish National Programme
of the Data Collection Framework (DCF)

EMFAF PROJECTS

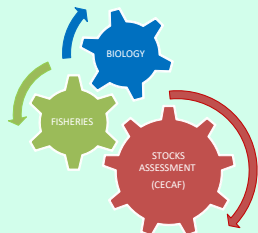
DATA SOURCES

1- Logbooks

2 - Vessel Monitoring System (VMS)

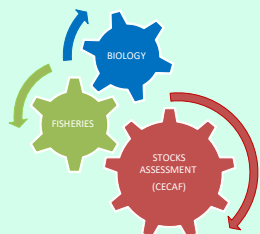
3 - IEO Information and sampling Network

4 - IEO Programs of observers on board



EMFAF PROJECTS

BIOLOGICAL STUDIES



IEO Programs of
observer on board,
sampling network
and Surveys

Shrimps



P. notialis



P. longirostris



A. varidens

**Mauritania
G. Bissau**

Black hakes and Atlantic pomfret



Merluccius polli



Merluccius senegalensis



Brama brama

**Morocco
Mauritania
Senegal
Gambia**

Cefalopods



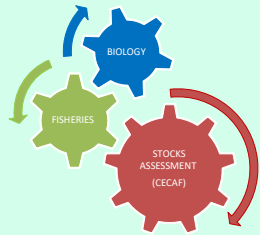
Octopus vulgaris



Sepia spp - (*S. hierredda*)

Guinea Bissau

EMFAF PROJECTS



Active participation in CECAF WGs:

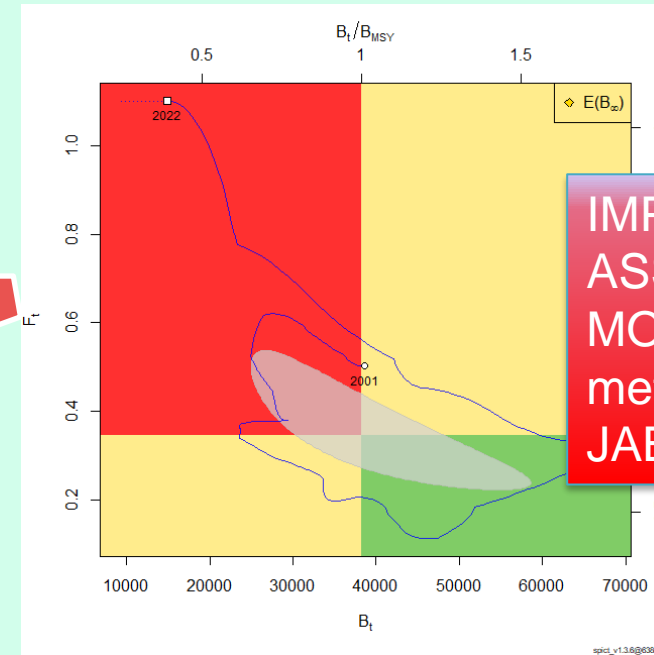
- Demersal North
- Demersal South
- Small Pelagics North
- Artisanal fisheries

Other assessment meetings:

- WG *P. longirostris* CRODT Senegal
- GT Scientifique IMROP Mauritania



ASSESSMENTS



IMPROVING ASSESSMENT MODELS: (new methods): SPiCT, JABBA, CMSY

Fisheries Research 268 (2023) 106830

Contents lists available at ScienceDirect

Fisheries Research

ELSEVIER journal homepage: www.elsevier.com/locate/fishres

Modelling drivers of trawl fisheries discards using Bayesian spatio-temporal models

M. Soto^{a,*}, L. Fernández-Peralta^a, J. Rey^a, I. Czerwinski^b, R. García-Cancela^a, M. Llope^b, J. Cabrera-Busto^b, M. Liébana^a, M.G. Pennino^c

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^c Instituto Español de Oceanografía (IEO-CSIC), Centro Oceanográfico de Madrid, C. del Coso de María, 6, 28002 Madrid, Spain

ICES Journal of Marine Science, 2022, 0, 1–15
 DOI: 10.1093/icesjms/fsac188
 Review Article

ICES
 CIEM International Council for the Exploration of the Sea
 Conseil International pour l'Exploration de la Mer

Effects of misreporting landings, discards, and Catch Per Unit of Effort index in state-space production models: the case of black hake in northwest Africa

Maria Soto^{1,*}, Lourdes Fernández-Peralta¹, Maria Grazia Pennino², Alexandros Kokkalis³, Javier Rey¹, Francisca Salmerón¹, Maria Liébana¹, Bayah Meissa⁴ and Laurie Kell⁵

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³National Institute of Aquatic Resources, Kemitorvet, Building 202, 2800 Kgs. Lyng, Denmark
⁴Institut Mauritanien de Recherche Océanographique et des Pêches (IMROP), BP 22 Cansado, Nouadhibou, Mauritanie
⁵Center for Environmental Policy, Imperial College London, South Kensington Campus, London SW7 2AZ, UK

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Food and Agriculture Organization
of the United Nations

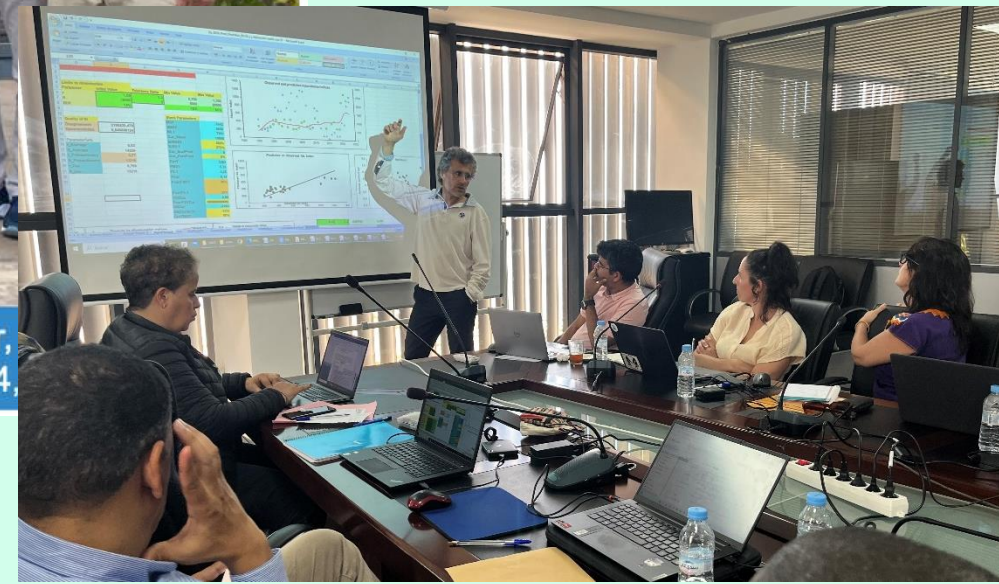
Organisation des Nations Unies
pour l'alimentation et l'agriculture



المعهد الوطني للبحث في الصيد البحري
INSTITUT NATIONAL DE RECHERCHE HALIEUTIQUE
ⵜⴰⴳⵍⴷⵓⴷⴰ ⵜⴰⵎⴰⵔⴷⴰ ⵜⴰⵔⴰⵎⴰⵏⵜ ⵜⴰⵎⴰⵔⴷⴰ ⵜⴰⵔⴰⵎⴰⵏⵜ



CECAF Demersal Species Sub-Group North Working Group | 4 - 12 June 2024, Agadir,
Groupe de travail du COPACE sous-groupe Nord sur les espèces démersales | 4 - 12 juin 2024.



CINEA PROJECTS

European Climate, Infrastructure and Environment Executive Agency

To advice about EU fisheries from external waters (West Africa) and EU-Outermost Region (Canary Islands)



CECAF-West Africa

- Analysis and exploitation of **observer reports** in EU fisheries from NW African waters (EASME2016_SC12)
- Improving environmental sustainability of **deep sea fisheries** with emphasis on the conservation of vulnerable marine ecosystems (**VMEs**) (EASME2019_SC01)
- Provision of advice, coordination and **participation of scientists** in international meetings of RFOs, multilateral environmental agreements and SFPAs, in support of the EU (EASME2019_SC02)
- On the EU-fisheries, exploited stocks and **sensitive marine habitats** in the high seas and 3rd countries waters not subject to SFPAs and/or RFMOs (EASME2019_SC04)
- Coordination and thematic meetings between DG MARE and EU scientists involved in RFMOs and SFPAs (EASME2019_SC05)

CINEA PROJECTS

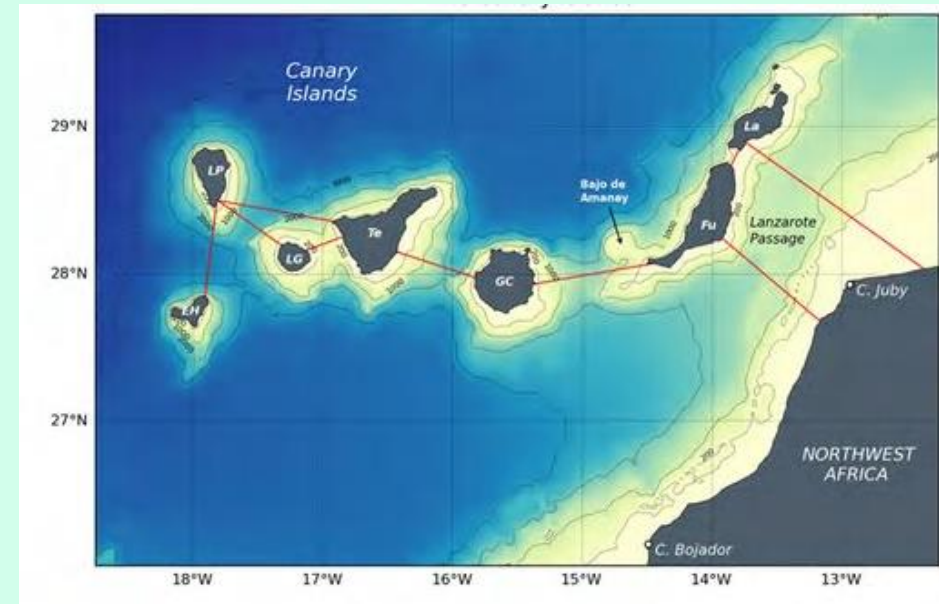
European Climate, Infrastructure and Environment Executive Agency

To advice about EU fisheries from external waters (West Africa) and EU-Outermost Region (Canary Islands)



CECAF- Canary Islands

- Overview of the state of data collection and scientific advice in the 9 European Outermost Regions (Azores, Madeira, Canary Islands, Guadeloupe, Martinique, French-Guiana, Saint-Martin, Mayotte and Réunion). (EASME2018_SC02)
- Regionalization PPC (EASME2018_SC07).
- Mapping of marine protected areas and their associated fishing activities: Atlantic EU Western Waters and EU Outermost Regions (EASME2018_SC10)



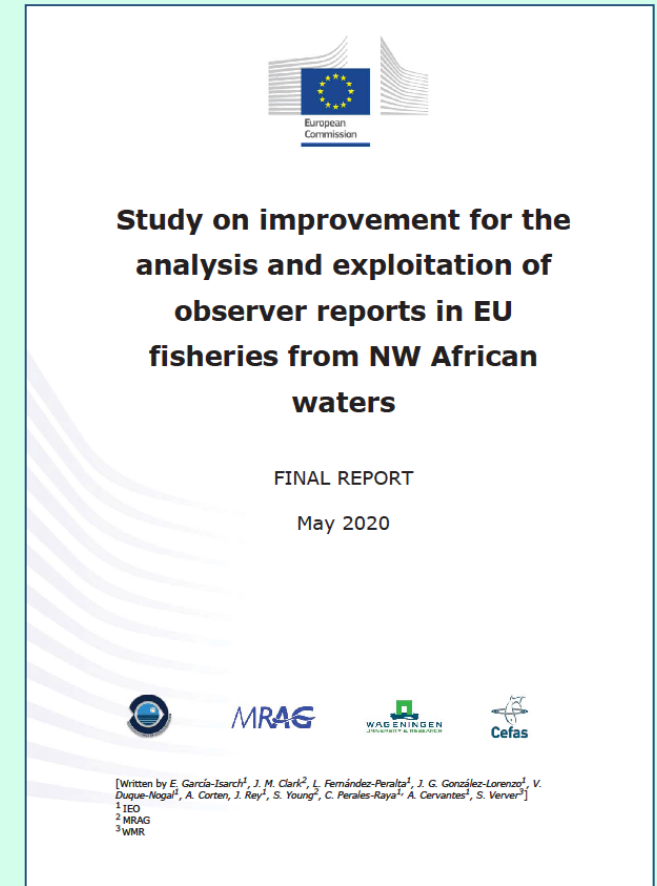
CINEA PROJECTS

European Climate, Infrastructure and Environment Executive Agency

Analysis and exploitation of observer reports on EU fisheries in West Africa



- 1) Inventory and analysis of available information
- 2) Evaluation of the implementation of scientific observation programs
- 3) Observer Operations Manual
- 4) Workshop for the standardization of scientific observation methodologies

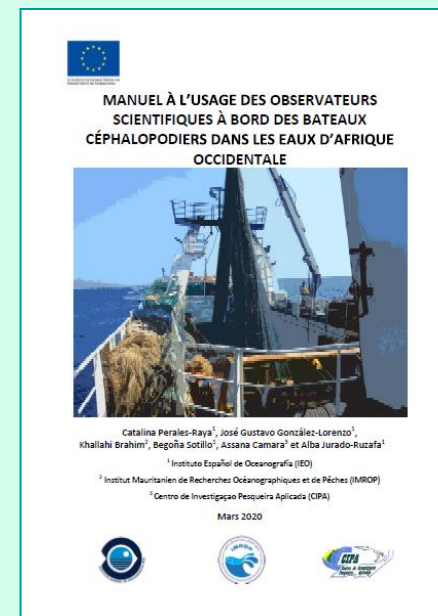
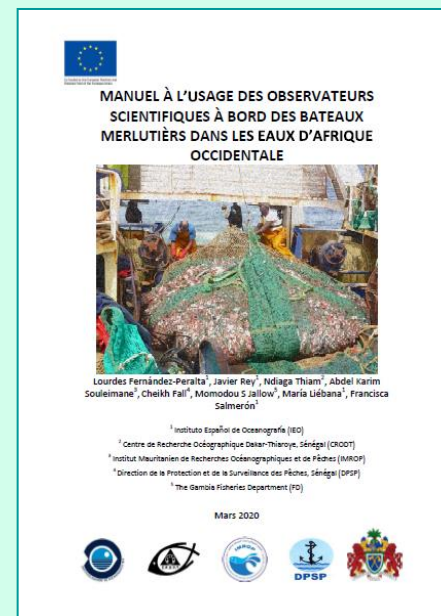
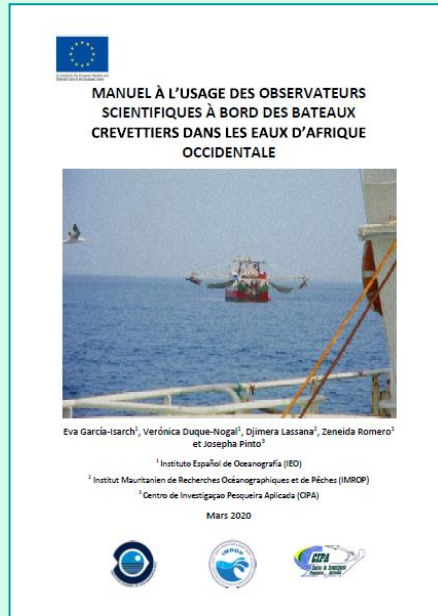


García-Isarch *et al.* 2020. <https://op.europa.eu/es/publication-detail/-/publication/18f4fe14-e745-11ea-ad25-01aa75ed71a1/language-es>

CINEA PROJECTS

European Climate, Infrastructure and Environment Executive Agency

Analysis and exploitation of observer reports on EU fisheries in West Africa



Observer Operations Manuals (Task 3 of the project)

- * Harmonize methodologies and protocols for data collection and analysis in support of fisheries management.

<https://op.europa.eu/fr/publication-detail/-/publication/aabd0b41-235d-11ed-8fa0-01aa75ed71a1>

<https://op.europa.eu/fr/publication-detail/-/publication/cc6556ec-235c-11ed-8fa0-01aa75ed71a1>

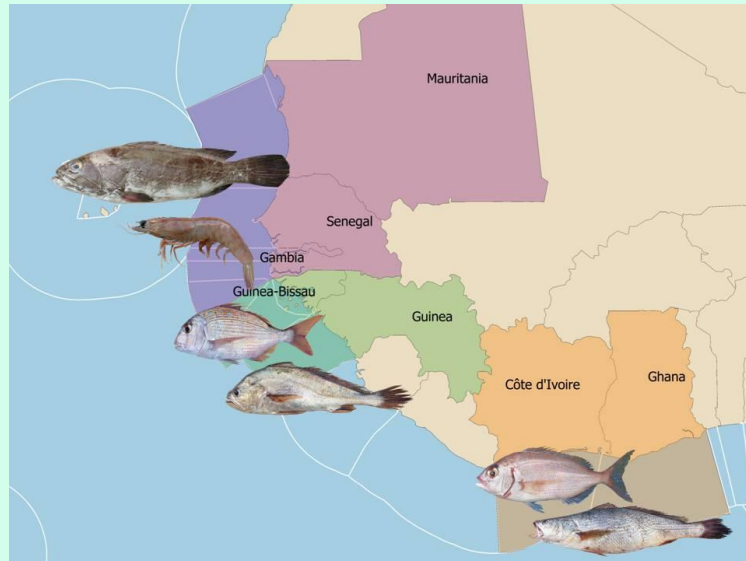
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<https://op.europa.eu/fr/publication-detail/-/publication/225e1e1c-235c-11ed-8fa0-01aa75ed71a1>

DEMERSTEM Project (DEMERSal ecosySTEMs)

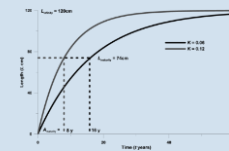


Stocks differentiation 2019-2024



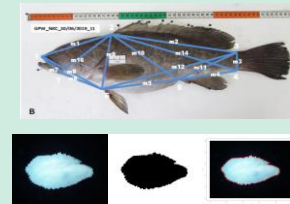
Life History Traits

- Weight parameters, reproduction, etc



Morphometry

- Study based on morphometric measurements of the species.



Genetics

- Study of the genetic structure of the populations to identify the geographical limits of stocks using microsatellite markers.



**IEO
IMROP
CRODT
FD
INIPO
CNSHB**

- *E. aeneus* → one single stock in Mauritania and Senegal (results from morphometry and genetics).
- *P. notialis* → morphometry: each sampled country-zone conforms a phenotypically homogeneous group, with clear differences to the others.
- *P. caeruleostictus* and *P. elongatus* → morphometry: phenotypically homogeneous groups can be distinguished at least at country level : 1 from Guinea-Bissau and 1 from Guinea, each species.
- New barcoding information of 4 new species in free genetic data bases.
- The results are useful for fisheries assessment and management recommendations of these species within CECAF.

<http://pescao-demerstem.org/>

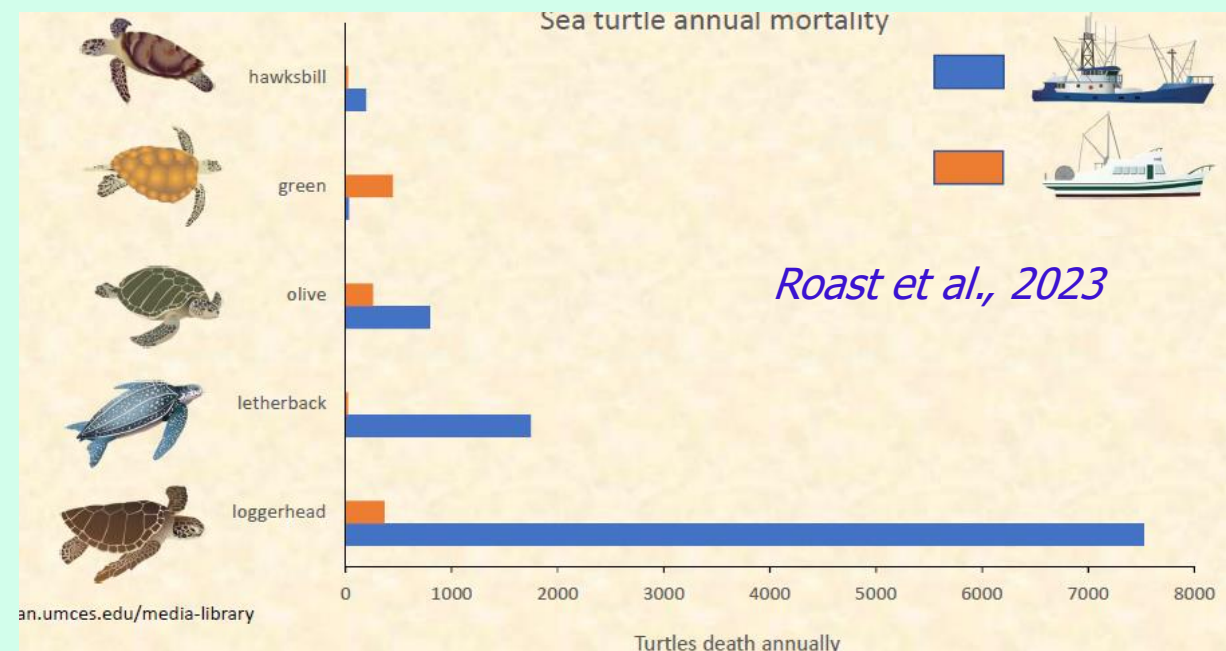
REDUCE Project



Reducing bycatch of threatened megafauna in the East Central Atlantic 2024-2027. IEO-CSIC more 12 partners from 7 countries.

Information from observers on board industrial tuna vessels and demersal trawler fleets in CECAF area and establish mitigation measures.

- Longline drifting increased incidental mortality of turtles in the Canary Current Greater Ecosystem Area (CCLME) and in the Macaronesia (industrial) region.
- Loggerhead turtle most impacted
- Hotspot Loggerhead turtle between northern Cape Verde and continental Africa

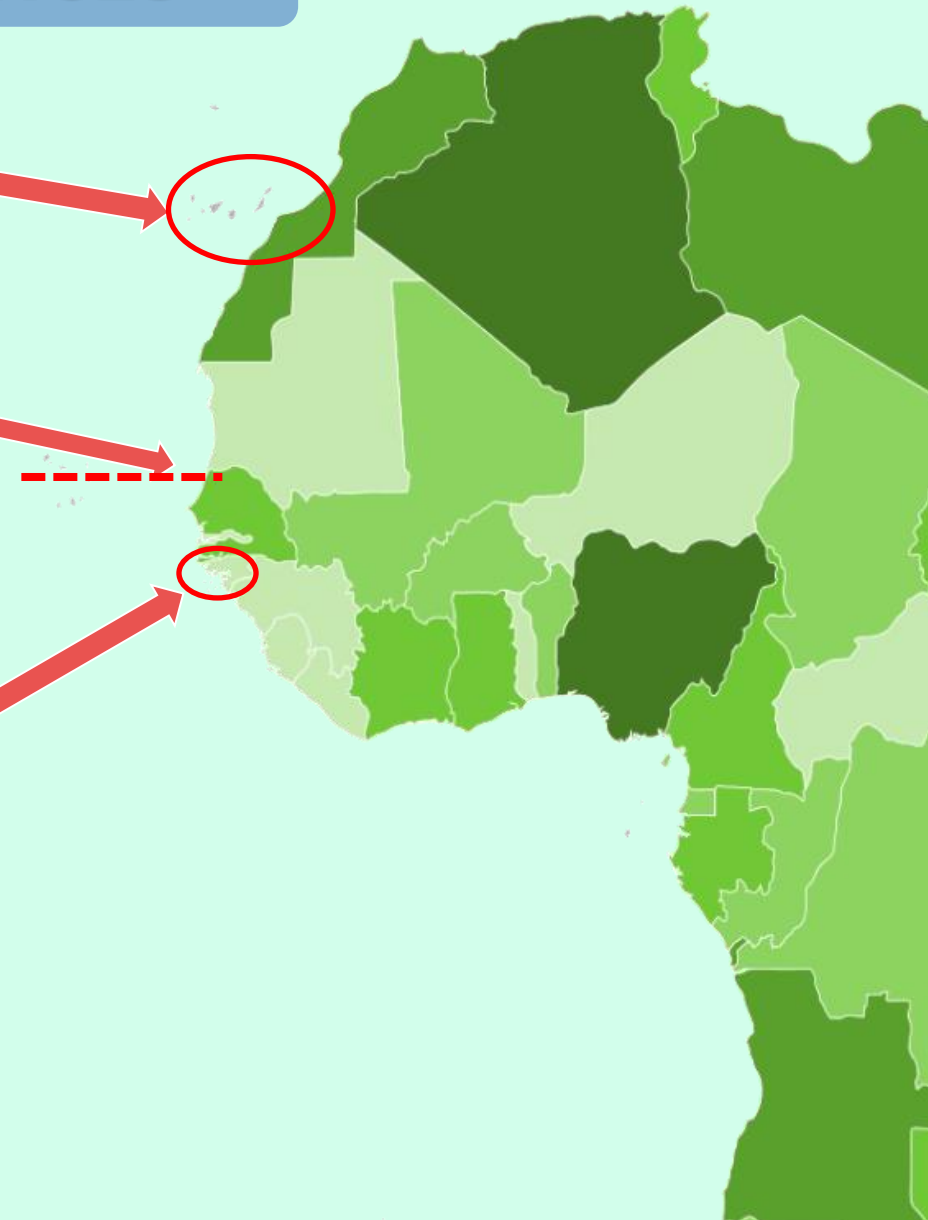


CONTRACTS AND TECHNICAL ASSISTANCES

AT-PLEXSESANECA: Experimental Monitoring Plan for the Black Scabbard (2022-)

ECOAFRIKBP21: Environmental Vulnerability Analysis (EVA) for the BP gas project "Greater Tortue Ahmeyim" (GTA) located on the maritime border between Senegal and Mauritania (2021-2023)

AT-BISSAUSEL02: Selectivity surveys EU commercial vessels for trawl gear in Guinea-Bissau (Surveys BISSAU_SEL_2022_2023).

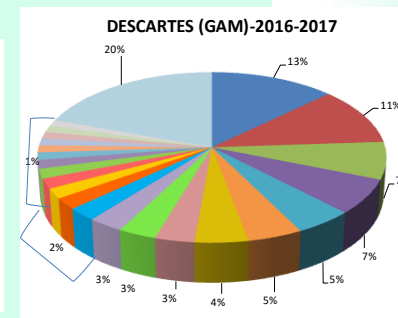
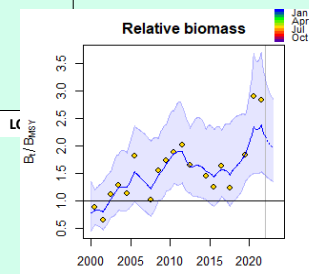
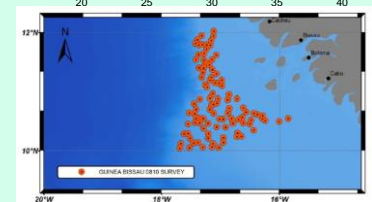
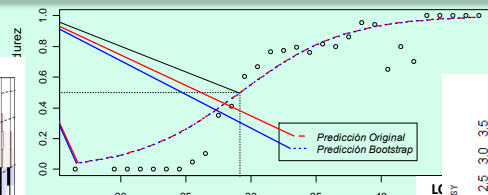
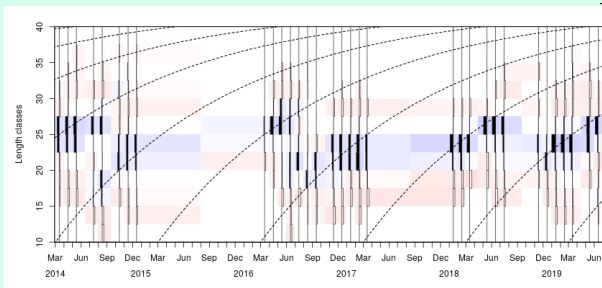
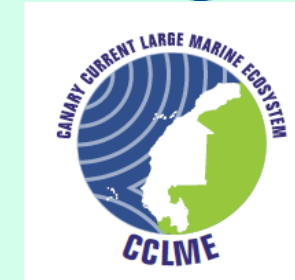


OTHER PROJECTS AND COLLABORATIONS

The Canary Current Large Marine Ecosystem **(CCLME)** project funded by the Global Environment Facility (GEF) and other partners

Towards the Sustainable Management of the Great Marine Ecosystem of the Canary Current (CCLME) – strategic combination of fisheries and ecosystem governance frameworks.

IEO provide scientific knowledge available in the African waters of the CCLME area

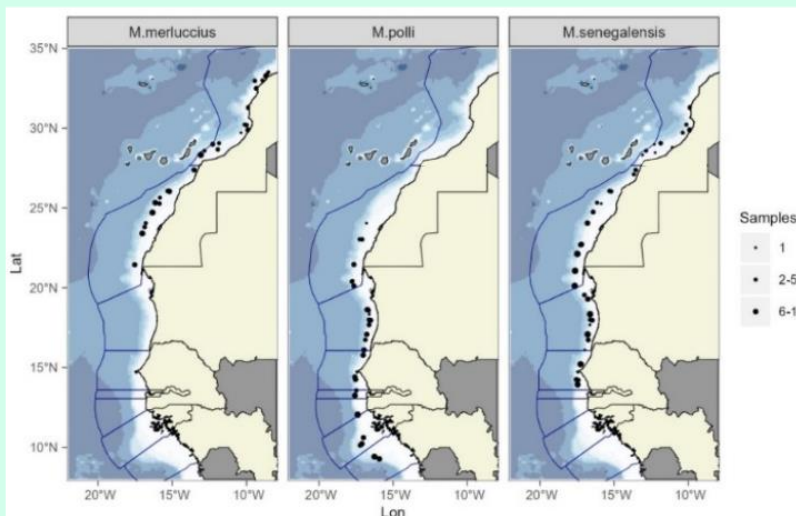


OTHER PROJECTS AND COLLABORATIONS

R/V Dr Fridtjof Nansen
Survey March-April 2022

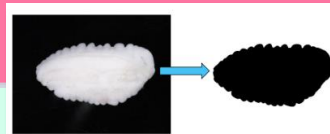
FAO EAF-Nansen
Project

Workshop “Processing of hakes for stock identification analyses”
(IEO-Tenerife, 27/02-03/03 2023)



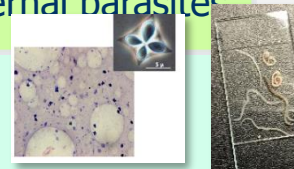
Otolith shape

- ShapeR



Parasites

- Identification and counting of external and internal parasites



Meristics

- Gill rakers count



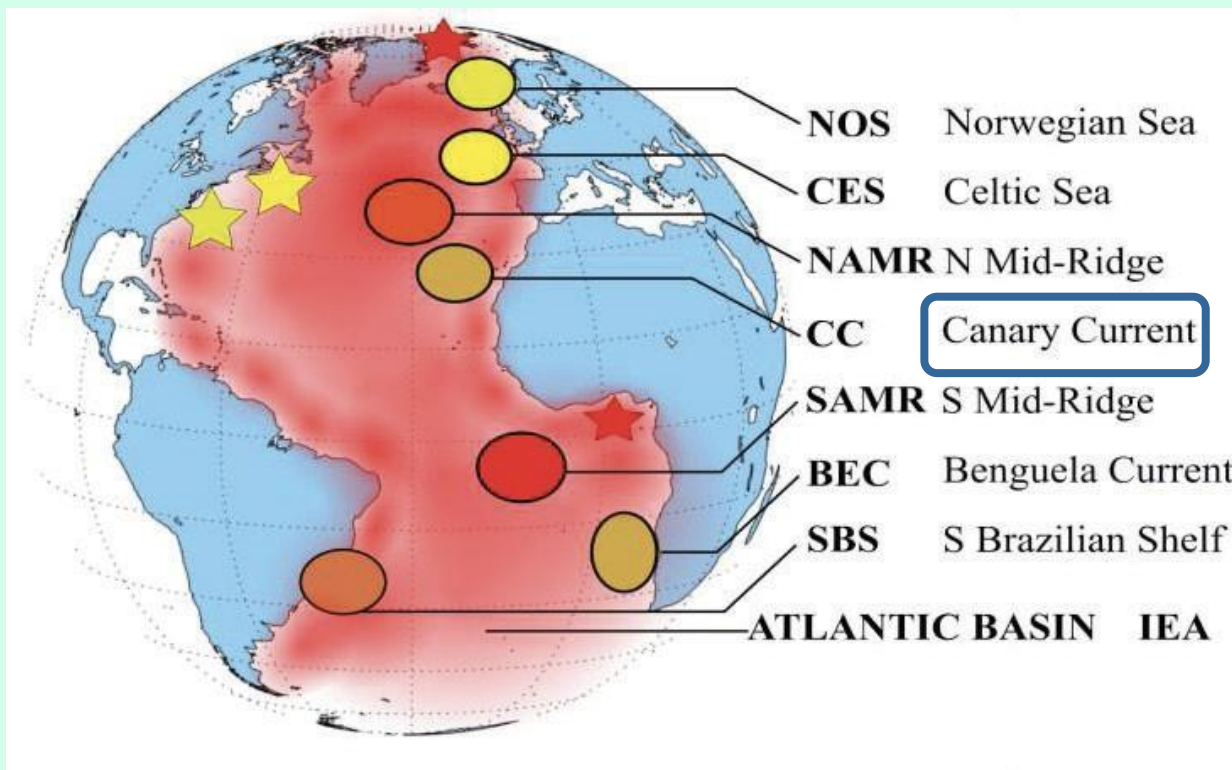
Results in progress

OTHER PROJECTS AND COLLABORATIONS



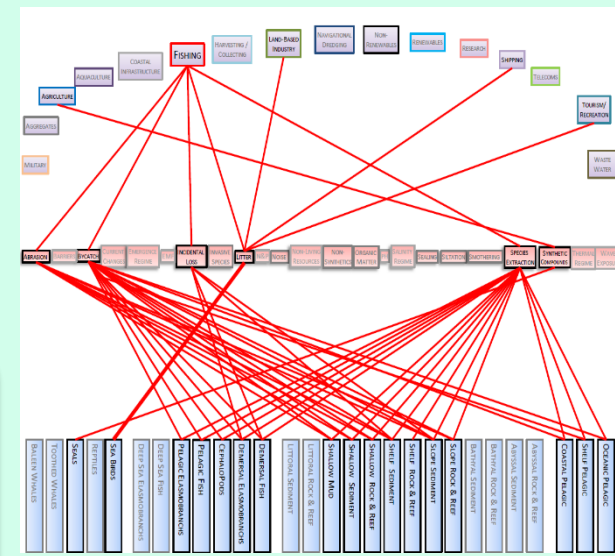
Mapping and assessing present and future status of the Atlantic marine ecosystems under multiple stressors (2020-2025)

Integrated Ecosystem Assessment (IEA)



Seven regional case studies across a broad latitudinal gradient in contrasting biogeographic regions

Analyze a ranking of sectors, pressures and ecological characteristics in each case.



SURVEYS

R/V Dr. Fridtjof Nansen – Participation IEO

- Mesopelagics transect NW Africa (December 2019)
- Demersal trawl: 1 leg Tanger-Cap Blanc (Feb.-March 2020)
- Ecosystem Cabo Verde (December 2021)
- Seamounts Sierra Leona (February 2022)
- Demersal trawl: 2 legs between Guinea –Casablanca (March-April 2022)

R/V Vizconde de Eza

- Demersal trawling Guinea Bissau 2019

R/V Lassana Conté (Jefe Campaña IEO)

- Demersal trawling Guinea Bissau 2023

C/V Releixo

- Demersal trawling Guinea Bissau 2022



R/V Miguel Oliver

- Demersal trawling Angola 2022
- Demersal trawling Guinea Bissau 2023
- Demersal trawling Angola 2024

R/V Ángeles Alvariño

- Several surveys in Canary Islands (Marine Strategy Framework Directive)

ADVICE: FAO - AFRICA

FAO/CECAF

- WG Assessment Demersal North
- WG Assessment Demersal South
- WG Assessment Small Pelagics North
- WG Artisanal Fisheries
- Scientific Sub-Committee CECAF
- Committee CECAF
- Meetings *ad hoc*

African Researchs Institutions

- WG Deep Sea Crustacean Assessment Senegal (CRODT)
- WG Fisheries Scientific Mauritania (IMROP)
- MoU IEO-CSIC – INIPO Guinea Bissau
- MoU IEO-CSIC – INIPM Angola

FAO/CCLME Project

- Towards sustainable management of the Canary Current Large Marine Ecosystem - IEO Advisory Committee Member.
- CCLME Working Group Ecosystem Analysis and Planning

FAO/EAF - NANSEN Project

- Ecosystem Approach to Fisheries (EAF)
- Workshop Processing of biological samples of hakes for stock identification analyses.
- Transparent Assessment Framework and estimates of Stock Status.

ADVICE: EUROPA

EU/SFPA

- Joint Scientific Committees Agreements
 - EU – Morocco
 - EU – Mauritania
 - EU – Senegal – Gambia
 - EU – Guinea-Bissau
 - EU – Gabon (experimental survey)*
- Joint Committees Agreements
 - UE – Morocco
 - UE – Mauritania
 - UE - Senegal-Gambia*

ICES WG/WK

- ADGHAN
- WGCEPH
- WKLIFE XI
- WKLIFE XII
- WKRDBES-INTRO2

Regional Coordination Group for Long Distance Fisheries (RCG-LDF)

- Meeting to coordinate all European fisheries carried out outside EU waters

ADVICE: SPAIN

Secretaría General de pesca (SGP)

- SMEFF Regulation fleet (Scientific endorsement)
 - Guinea
 - Congo
 - Angola

- Miscellaneous reports
 - Experimental survey Gabon
 - Experimental survey Canary I. Black Scabbard
 - Angola Survey 2211
 - Octopus in pots Category 3 SFPA Morocco
 - Small pelagic La Palma volcano
 - TAC Canary Islands horse mackerel
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Government Canary Islands

- Technical Assistance black scabbard monitoring (*Aphanopus carbo*)

Fishing Producers (ANACEF)

- Scientific advice conferences/workshops
- Reports of observations on board

Results: numerous meetings and preparation of multiple scientific-technical advisory reports

SCIENTIFIC PRODUCTION

+ 30 Peer-reviewed papers

+ 45 Communication Scientific conferences/Congresses

+ 50 WD or communications to WG/WK

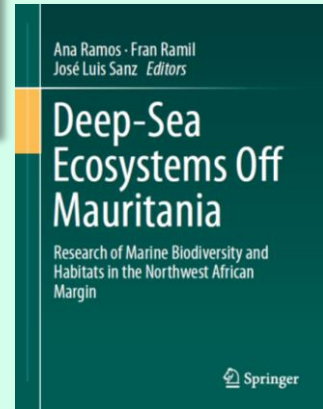
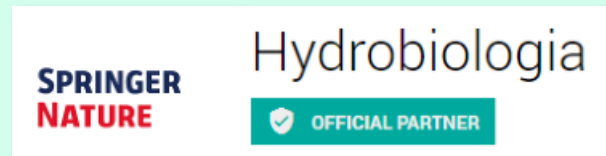
+ 60 Advice reports to Spanish/European administrations

+ 50 Workshops/Working groups, Committees/other meetings

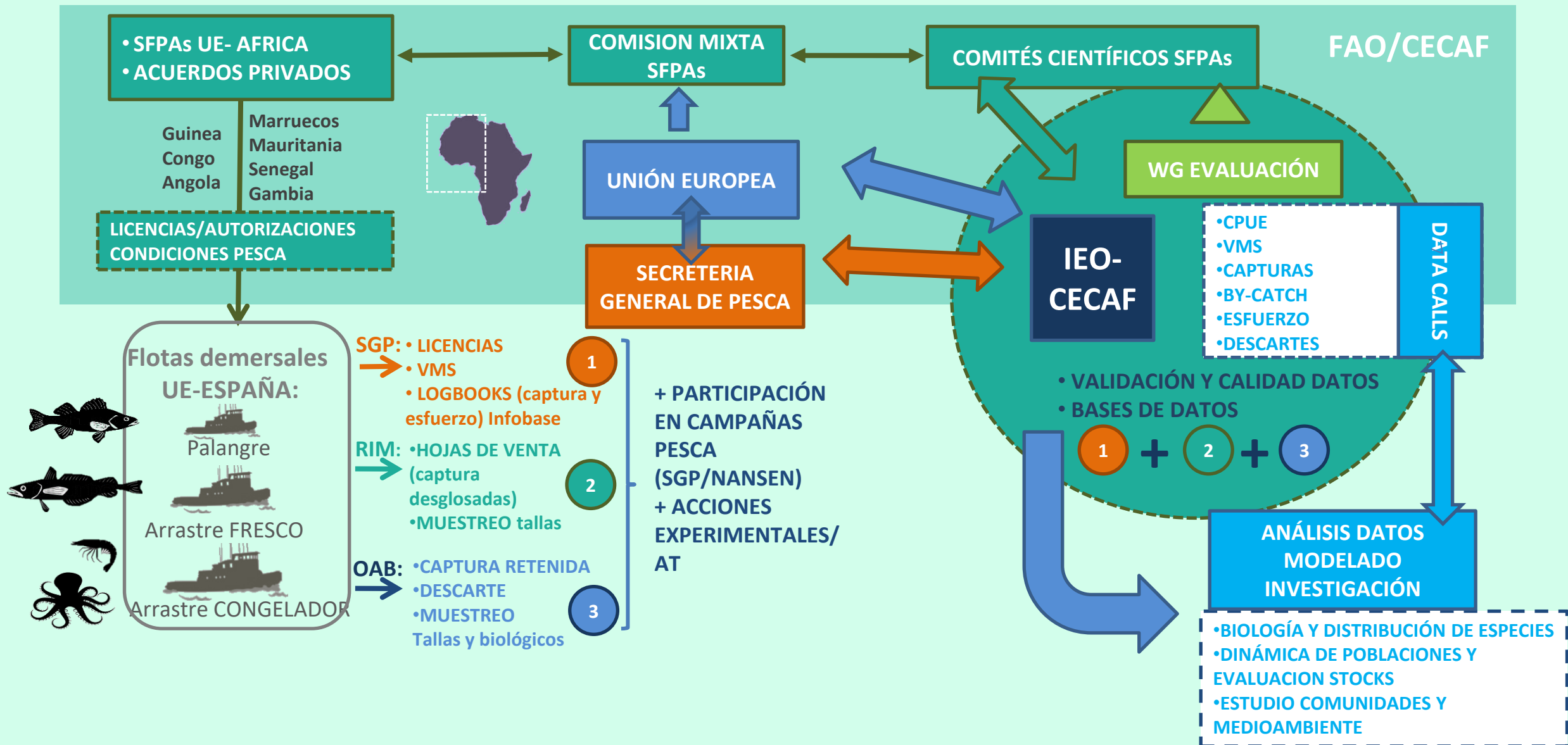
+ 25 project reports

Around 12 Research surveys

Several PhD and Master Thesis in progress



RESEARCH AND ADVICE





Conclusion: Marine Living Resources

- ❑ **Main difficulties/constraints/challenges** in the collection of marine and coastal scientific research information/data:
 1. Improve data collection systems (fisheries and biological data) in different countries
 2. Lack of regular scientific surveys in most countries
 3. Lack of regularity of the scientific observers onboard program (IEO)
 4. IUU fishing

- ❑ **Key Gaps** in marine and coastal scientific knowledge and data:
 1. Fishery and biological information in marine ecosystem, dependent on SFPAs (IEO)
 2. Fishery and biological information, dependent on the observers onboard program (IEO)
 3. Scientific Forums, Workshops and Scientific-Technical Meetings

- ❑ **Perspectives/planning**/preliminary analyses to be carried out:
 1. Stock identification of coastal demersal species (continuation DEMERSTEM)
 2. Estimates of fishing effort for targeted species from VMS data of Spanish trawlers
 3. Spatio-temporal variability of life history traits of species targeted by Spanish fleets
 4. Improve the stocks assessments
 5. Capacity building (AECID grants)



Conclusion: Transversal knowledge

- ❑ **Main difficulties/constraints/challenges** in the collection of marine and coastal scientific research information/data:
 1. Lack of regular multidisciplinary surveys in most countries
 2. Data scarcity and/or quality
 3. Data sharing
 4. Stocks shared, management shared

- ❑ **Key Gaps** in marine and coastal scientific knowledge and data:
 1. Spawning/Nursery/Recruitment areas of key species
 2. Plankton studies
 3. Habitat mapping

- ❑ **Perspectives/planning**/preliminary analyses to be carried out:
 1. Zoom in the Integrated Ecosystem Assessment (IEA) for Senegal-Gambia-G. Bissau (Mission Atlantic)
 2. Compilation/update of environmental information (satellite data, literature).
 3. Capacity building (AECID grants)

Scholarships program AFRICA-MED



2021-2024 (4-10 months each):

- 1) Stock identification (morphometry) -CNSHB Guinea
 - 2) Study of artisanal fisheries. INIPO Guinea-Bissau
 - 3) Effects of climate change on coastal small pelagic resources in Guinea- CNSHB Guinea
 - 4) Stock identification *P. caeruleostictus* (otolith shape)- CNSHB Guinea
 - 5) Fisheries Data Bases- INIPO Guinea-Bissau (2x)
 - 6) Stock identification *E. aeneus* (otolith shape)- IMROP Mauritania
 - 7) Otolith morphometry of demersal species – IRMOP Mauritania
 - 8) Taxonomic study of the fish fauna of Guinea Bissau
 - 9) Methods to study artisanal fisheries- INIPO Guinea Bissau
 - 10) CPUE standardization and stock assessment of *P. longirostris* of Senegal
- and much more...





Merci
Thanks
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