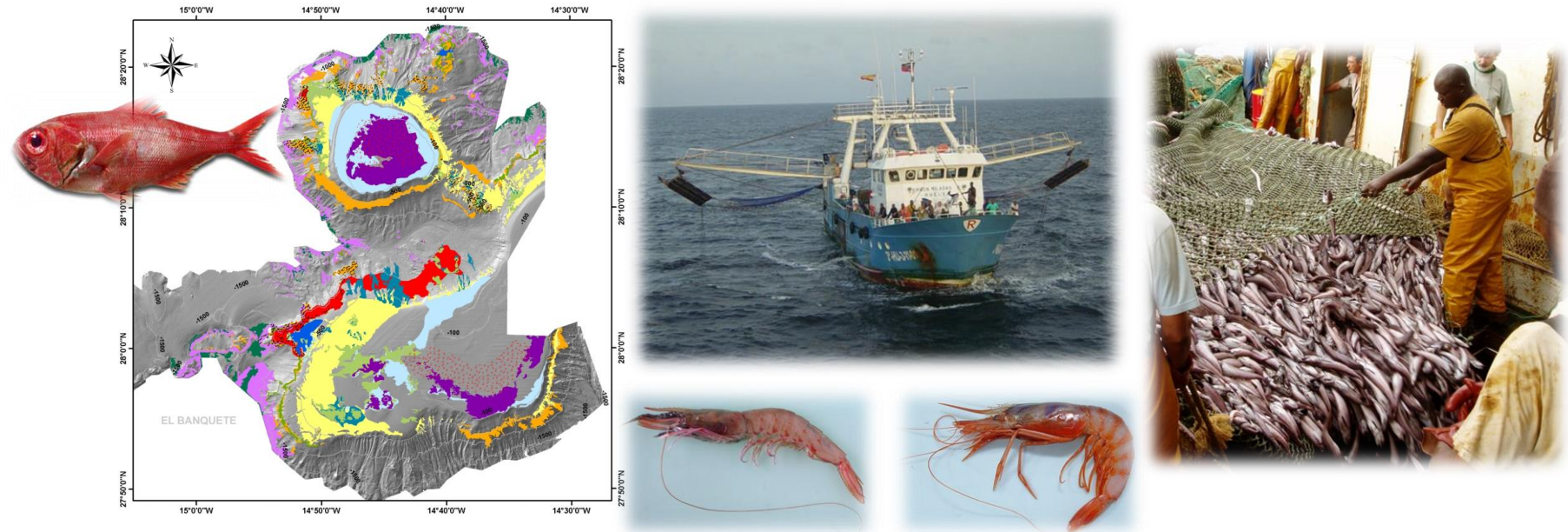




# SPANISH DEEP-SEA FISHERIES IN THE CECAF AREA



Eva García-Isarch, Lourdes Fernández-Peralta and Pablo Martín-Sosa

**FAO/CECAF Technical Workshop on deep-sea fisheries and vulnerable marine ecosystems in the high seas areas of the Eastern Central Atlantic**

**Dakar, Senegal, 8-10 November 2016**



# INTRODUCTION

Deep-sea fisheries take place at great depths (between 200-2000 meters), on continental slopes, oceanic seamounts, ridge systems banks.

These fisheries target demersal/benthic species using a range of gears including bottom and mid-water trawls, pots and longlines.

Deep-sea fisheries take place in both exclusive economic zones (EEZs) and in areas beyond national jurisdiction (ABNJ).

FAO



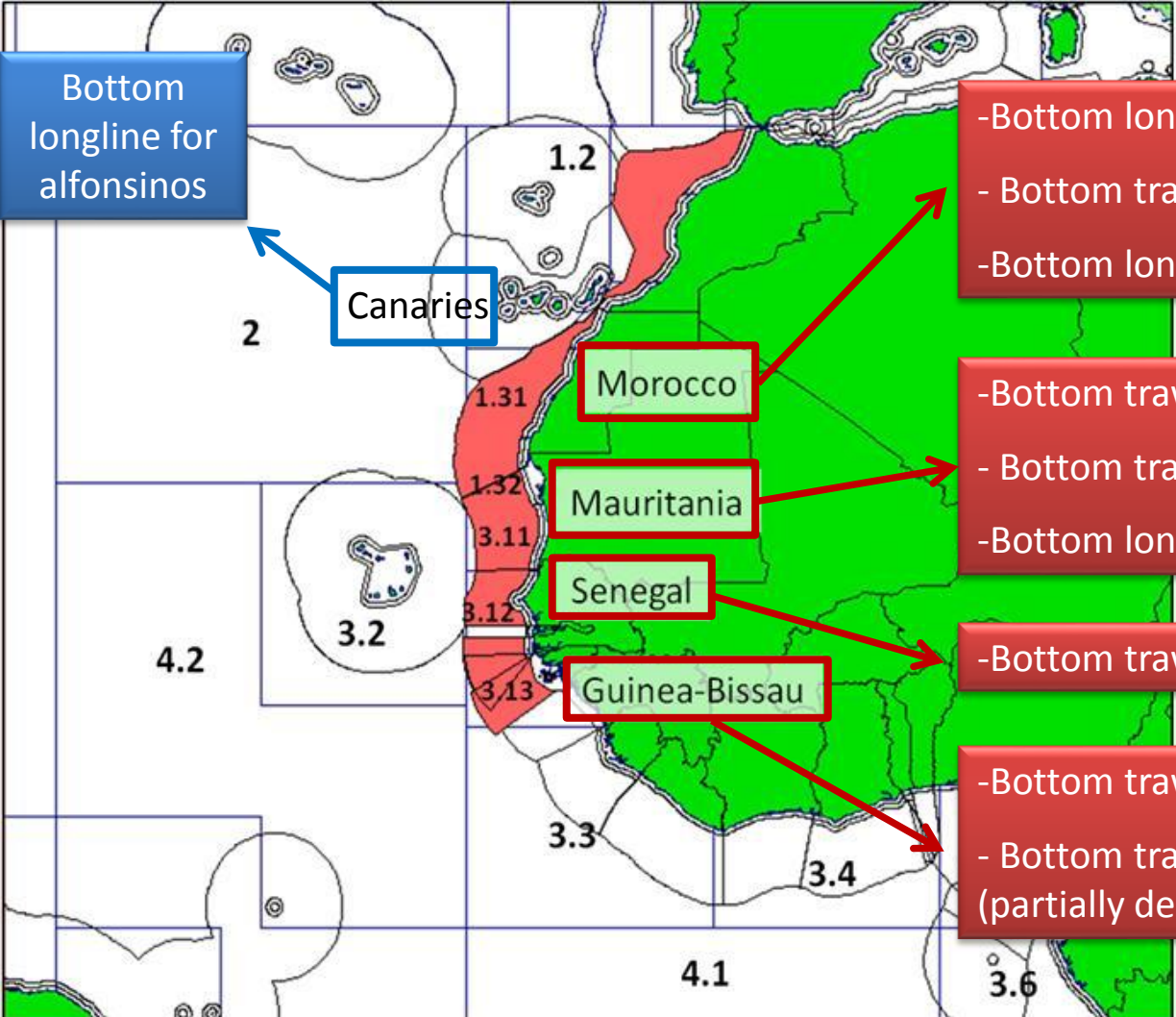
# CURRENT SPANISH DEEP-SEA FISHERIES IN CECAF

Spanish fisheries in CECAF

National fisheries (Canary Islands)

Fisheries in West African coastal States

SFPAs  
EU-coastal  
States



Bottom longline for alfonosinos

Canaries

-Bottom longline for scabbardfish  
- Bottom trawl for black hake  
-Bottom longline forAtlantic pomfret

Morocco

-Bottom trawl for deep-sea shrimp  
- Bottom trawl for black hake  
-Bottom longline forAtlantic pomfret

Mauritania

Senegal

-Bottom trawl for black hake

Guinea-Bissau

-Bottom trawl for deep-sea shrimp  
- Bottom trawl for cephalopods-finish (partially deep-sea fishery).



# CURRENT SPANISH DEEP-SEA FISHERIES IN THE CECAF AREA

EEZ		Fishery	Fishing gear	Target species	Depth range (m)	No. vessels (ref. year)	Effort (f.d)	Landings (t)
Spain	1	Bottom longliners in the Canaries seamounts	Bottom longline	Alfonsino and other deep-sea species	250-900	3 (2015)	313	100
Morocco	3	Artisanal bottom longliners in the North	Bottom longline	Scabbardfish, sparidae and other demersal fish	445-465 (max. 500 m)	28 (2015)	1541	146
		Hake trawlers (south 29°N)	Bottom trawl	Black hake	400-800 (200-1000)	6 (2015)	623	4658
		Bottom longliners (south 29°N)	Bottom longline	Atlantic pomfret	200-400	2 (2015)	475	1220
Mauritania	2	Shrimper trawlers	Bottom trawl	Deep-sea shrimps	130-350/ 600-950	13 (2014) 5 (2015-2016)	3073	1556
		Hake trawlers	Bottom trawl	Black hake	550-800 (100-1000)	2 (2014)	434	2810
		Bottom longliners	Bottom longline	Atlantic pomfret	300-500	3 (2015)	26	85
Senegal		Hake trawlers	Bottom trawl	Black hake	500-800 (max.1000)	2 (2015)	182	1490
Guinea-Bissau		Shrimper trawlers	Bottom trawl	Deep-sea shrimps	200-400/350-800	9 (2015)	2778	1282
		Cephalopod-finfish trawlers	Bottom trawl	Black hake (deep trawls)	400-600	10 (2015)	NA	6251

# 1.- BOTTOM LONGLINE DEEP-SEA FISHERY IN THE CANARY ISLANDS



Photo: A.M. Arias (<http://www.ictieterm.es>)





# 1.- BOTTOM LONGLINE DEEP-SEA FISHERY IN THE CANARY ISLANDS

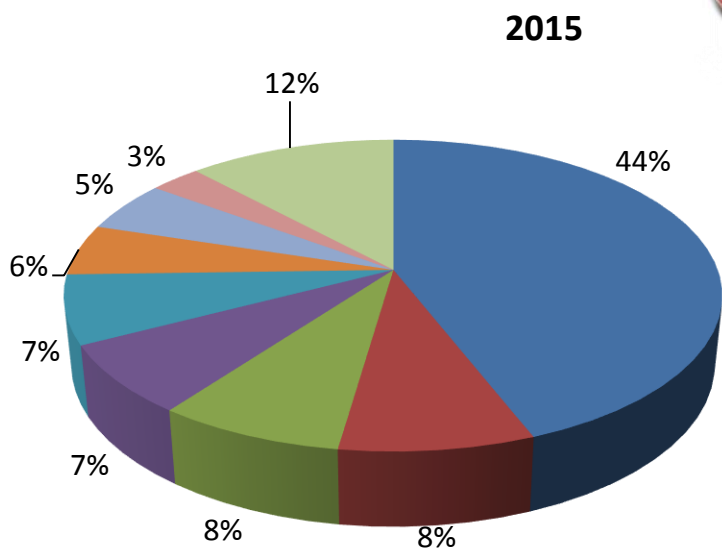
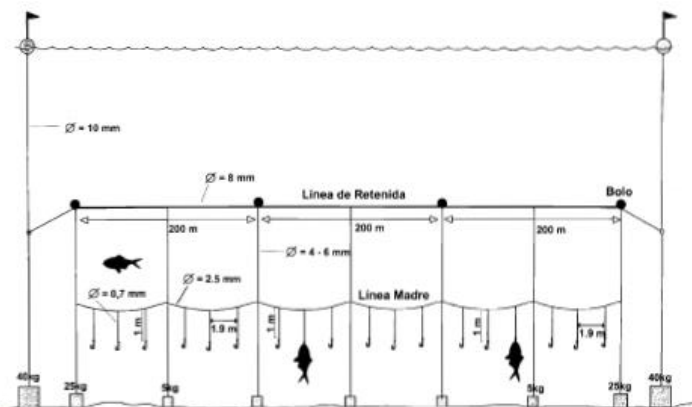
◆ **FISHING AREA:** Seamounts around Canary Islands (FAO 34.1.2)

◆ **TYPE OF BOTTOMS:** hard

◆ **FISHING DEPTHS:** 250-900 m

◆ **FISHING GEAR:** bottom longline (“Spanish type”)

◆ **LANDINGS SPECIES COMPOSITION:**



- *Beryx spp*
- *Conger conger*
- Squalidae
- *Helicolenus dactylopterus*
- *Polyprion americanus*
- Muraenidae
- *Mora moro*
- *Merluccius merluccius*
- Others

Year	No. Vessels	Landings (t)	Effort (f.d)
2015	3	100	313

	GT	GRT	LENGTH (m)	POWER (hp)
V1	128	50	24	408
V2	74	38	20	200
V3	16	15	15	158



# 1.- BOTTOM LONGLINE DEEP-SEA FISHERY IN THE CANARY ISLANDS

INDEMARES



INSTITUTO  
ESPAÑOL DE  
OCEANOGRAFÍA

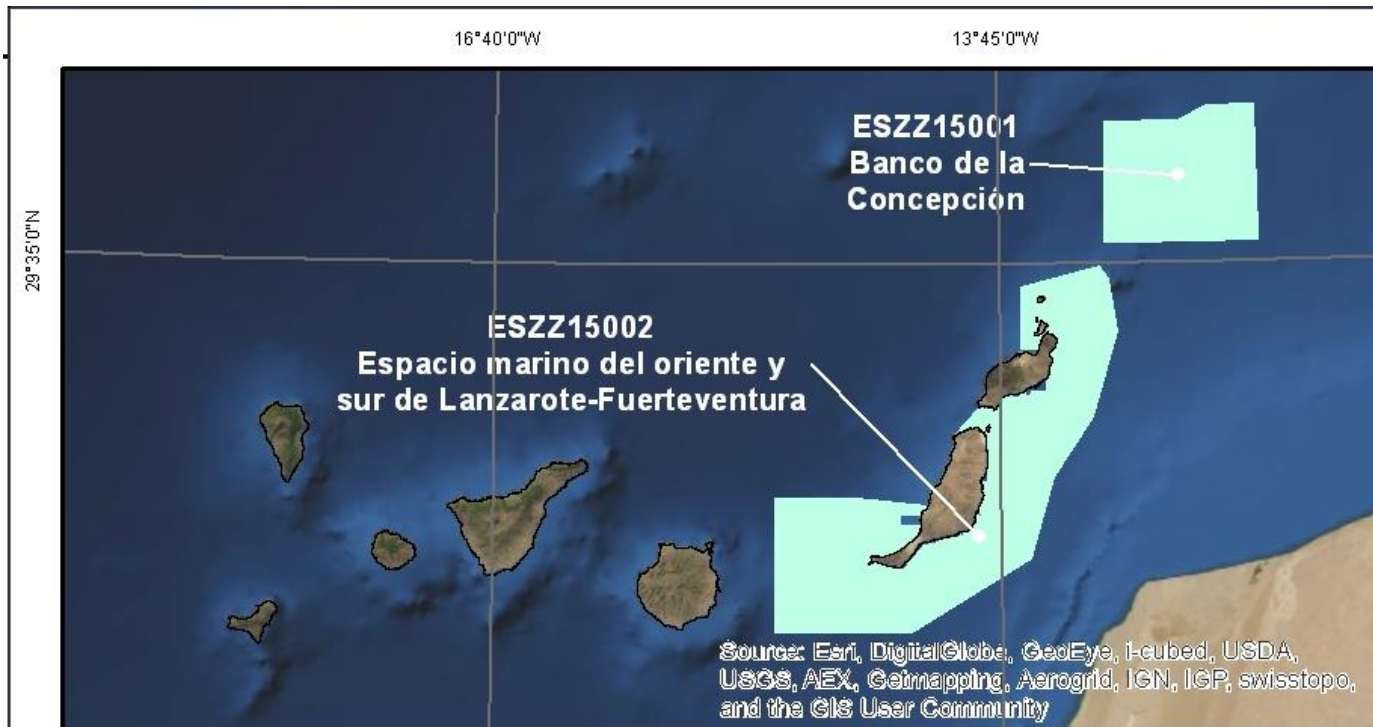


GOBIERNO  
DE ESPAÑA

MINISTERIO  
DE AGRICULTURA, ALIMENTACIÓN  
Y MEDIO AMBIENTE

## SITES OF COMMUNITY INTEREST (SCI)

SCI proposed to the European Commission to be declared Special Areas of Conservation (SAC) →  
2 in the Canary Islands



# 1.- BOTTOM LONGLINE DEEP-SEA FISHERY IN THE CANARY ISLANDS

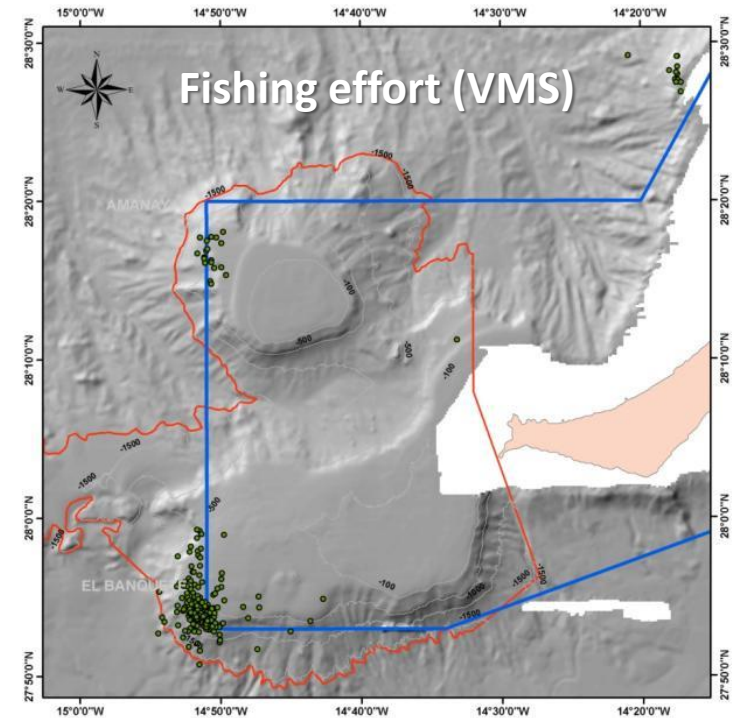
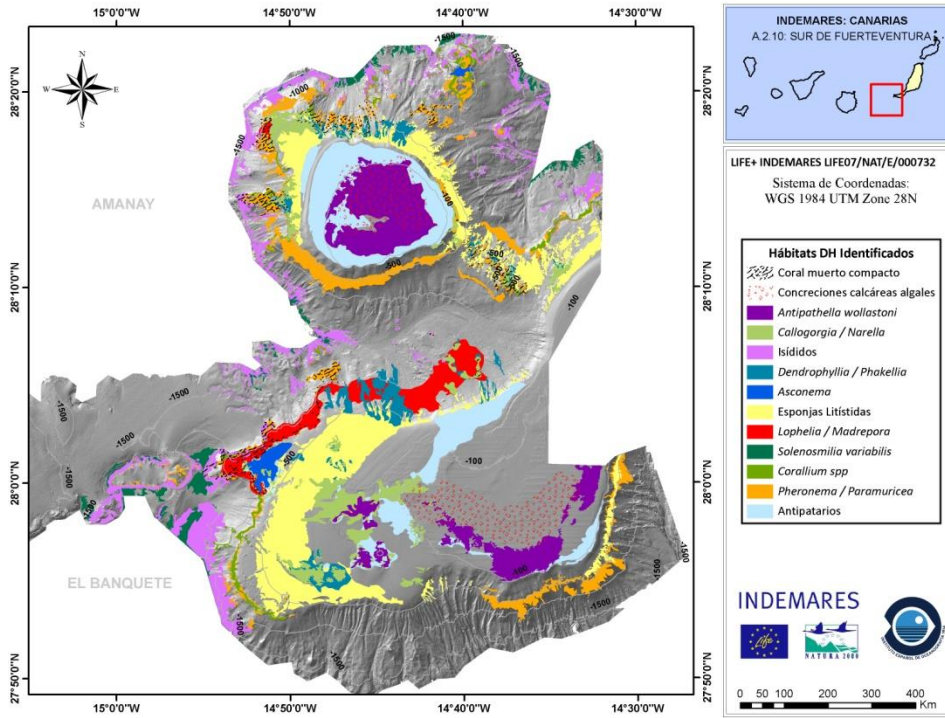


## SCI- South Fuerteventura

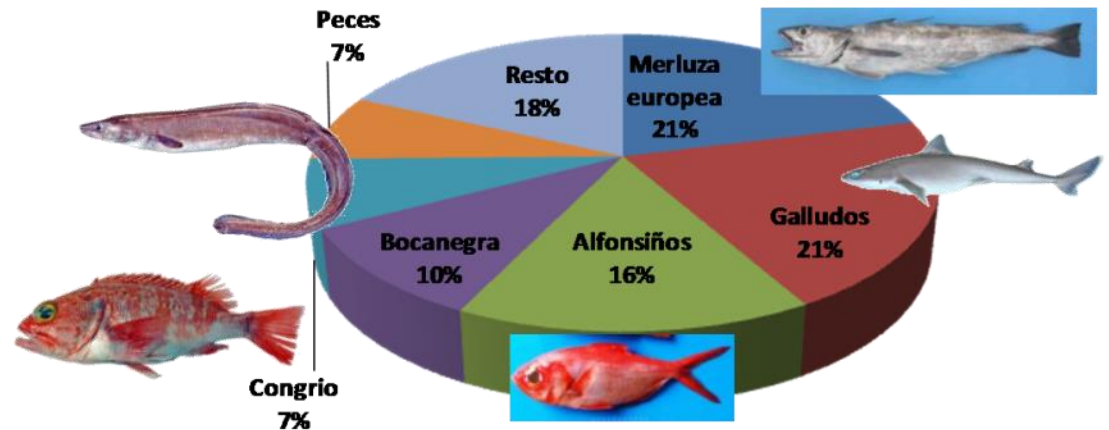
INDEMARES



INSTITUTO ESPAÑOL DE OCEANOGRAFÍA



- ◆ 2 vessels
- ◆ 64 fishing days in 11 years.
- ◆ Fishing depth: 250-900 m





# 1.- BOTTOM LONGLINE DEEP-SEA FISHERY IN THE CANARY ISLANDS

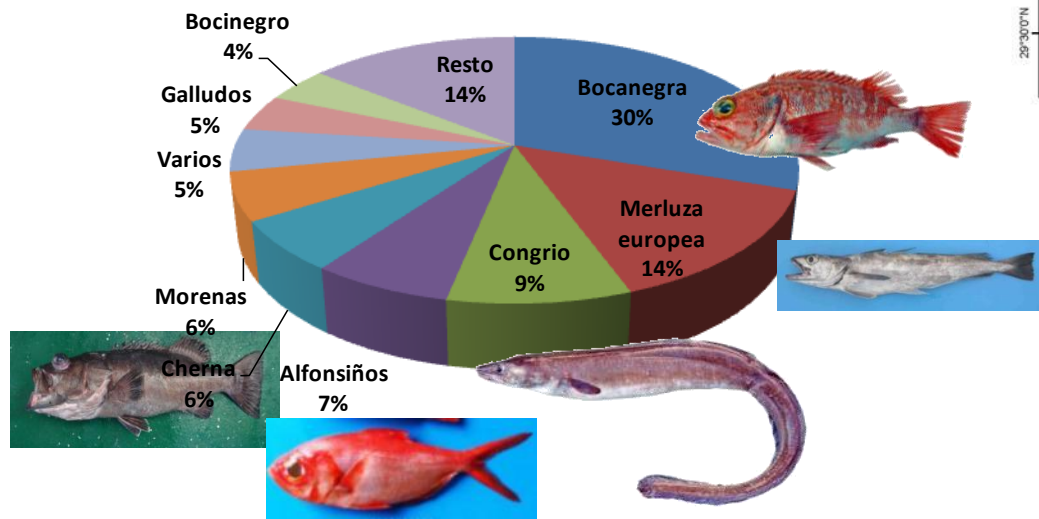
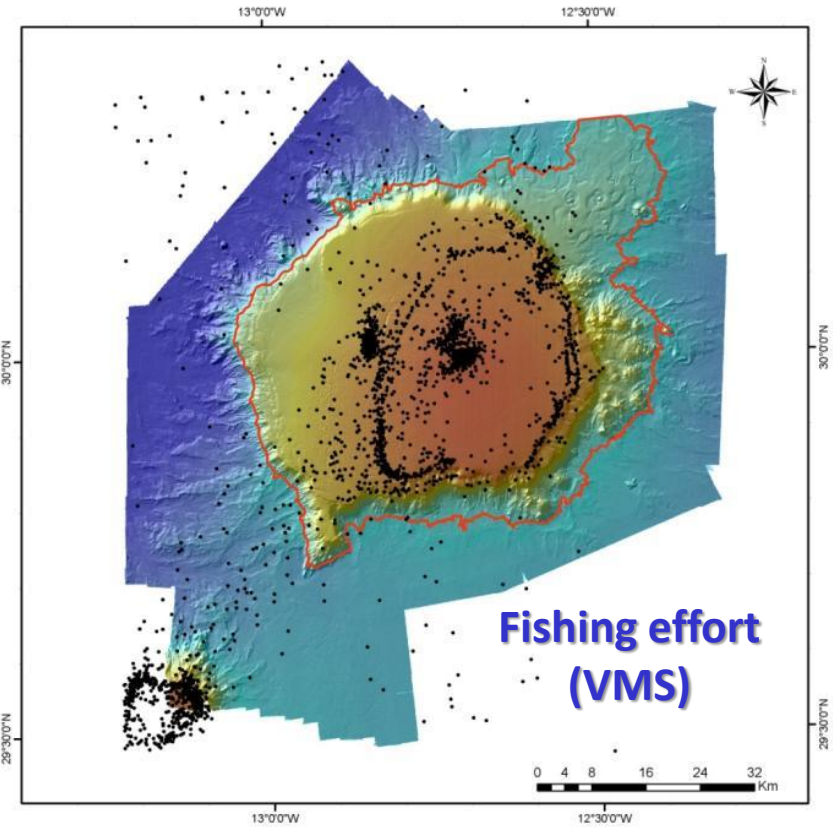
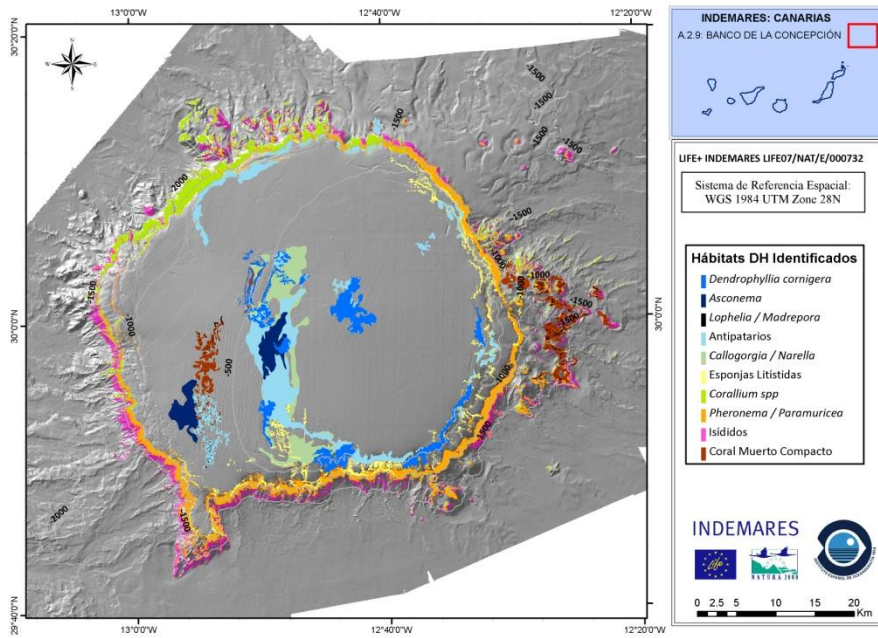


## SCI- La Concepción

INDEMARES



INSTITUTO ESPAÑOL DE OCEANOGRAFÍA



- ◆ 2 vessels
- ◆ 362 fishing days in 11 years.
- ◆ Fishing depth: 250-700 m

## 2.- DEEP-SEA SHRIMP BOTTOM TRAWL FISHERY IN WEST AFRICA

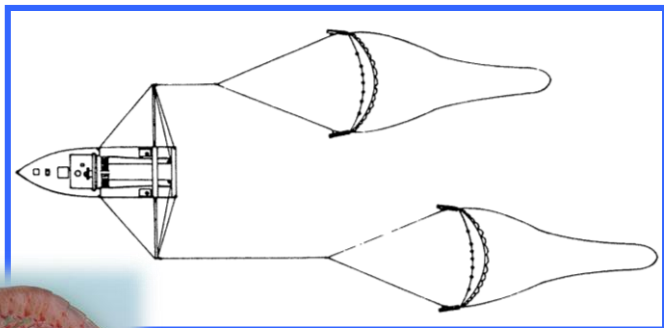




# 2.- DEEP-SEA SHRIMP BOTTOM-TRAWL FISHERY

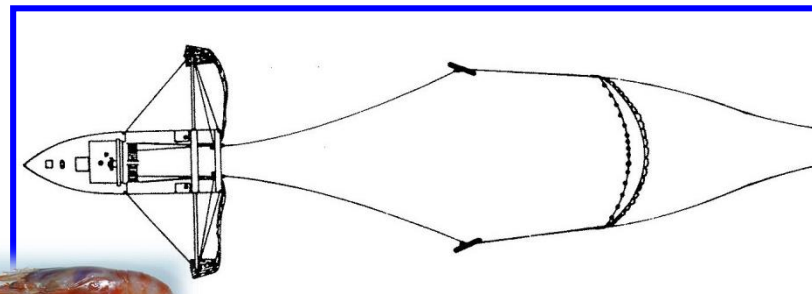
TARGET SPECIES (common names)	TARGET SPECIES (scientific name)	DEPTH RANGE (m)	DURATION aprox.	DAY/NIGHT	FISHING GEAR
Langostino Southern pink shrimp Crevette rose du sud	<i>Farfantepenaeus notialis</i>	14-70	3 h	daytime	outriggers ("tangón")
Gamba Deep water rose Crevette rose du large	<i>Parapenaeus longirostris</i>	150-350	3 h	daytime	outriggers ("tangón")
Alistado Striped red shrimp Gambon rayé	<i>Aristeus varidens</i>	400-800	6 h	nighttime	classic bottom otter trawl with doors ("baka")

## Outriggers "TANGÓN"



*Parapenaeus longirostris*

## Bottom otter trawl "BAKA"



*Aristeus varidens*



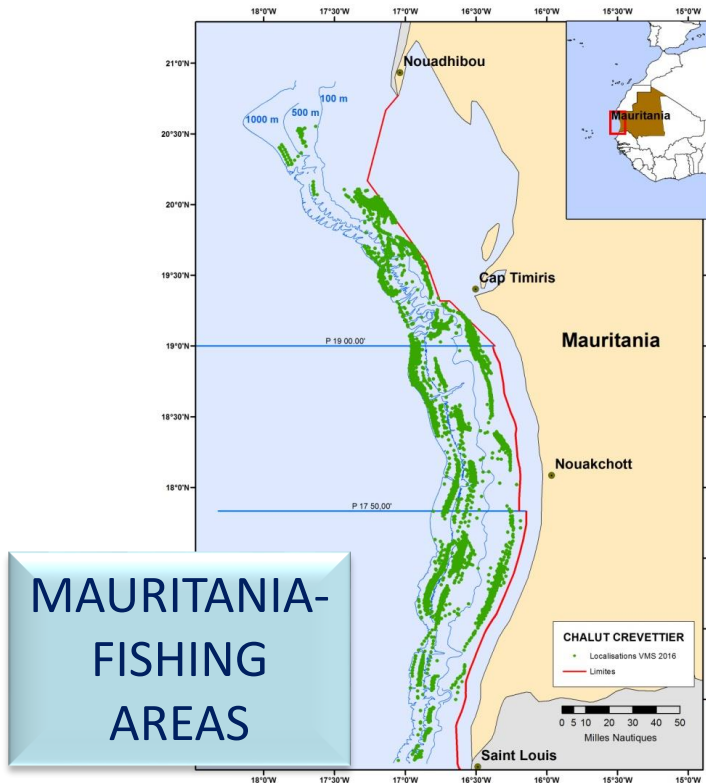


◆ TYPE OF BOTTOMS: sandy-muddy

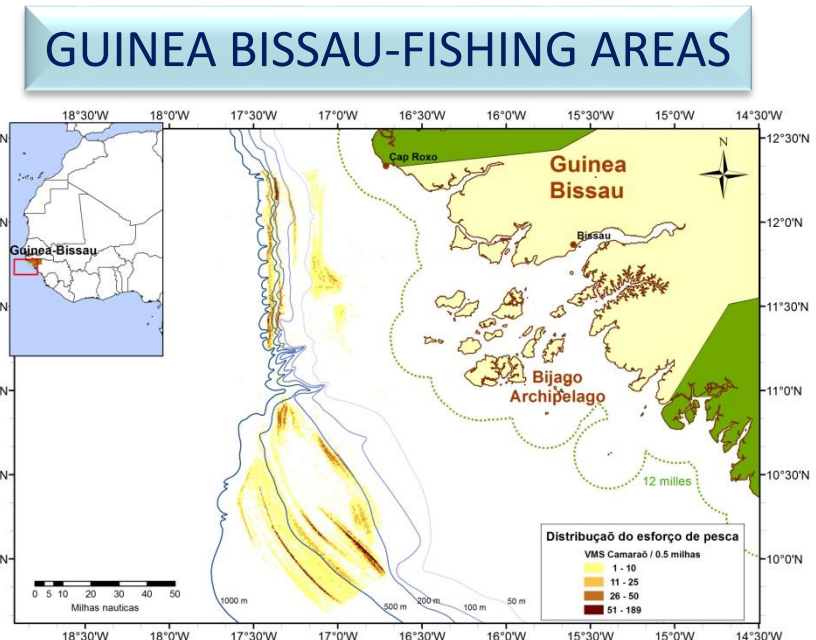
◆ FISHING AREA: EEZs of Mauritania and Guinea-Bissau.

◆ FLEET TECHNICAL CHARACTERISTICS:

	GT	GRT	LENGTH (m)	POWER (hp)
Average 2015	242	131	30	541



*P. longirostris*: 130-350 m    *A. varidens*: 600-950 m



*P. longirostris*: 200-400 m    *A. varidens*: 350-800 m

EEZ	Ref. year	No. Vessels	Landings (t)	Effort (f.d)
Mauritania	2014	13 (2014), 5 (2015)	1556	3073
G. Bissau	2015	9 (2015)	1282	2778

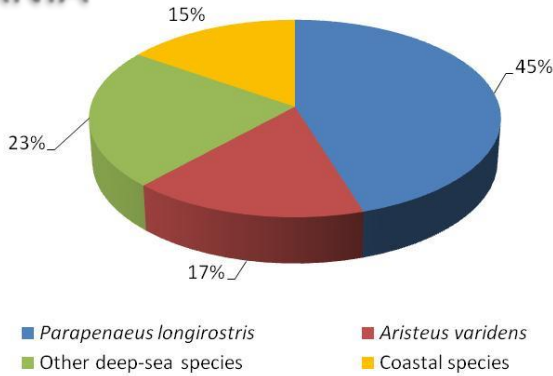


## LANDINGS SPECIES COMPOSITION:

### MAURITANIA

85% landings → deep-sea species

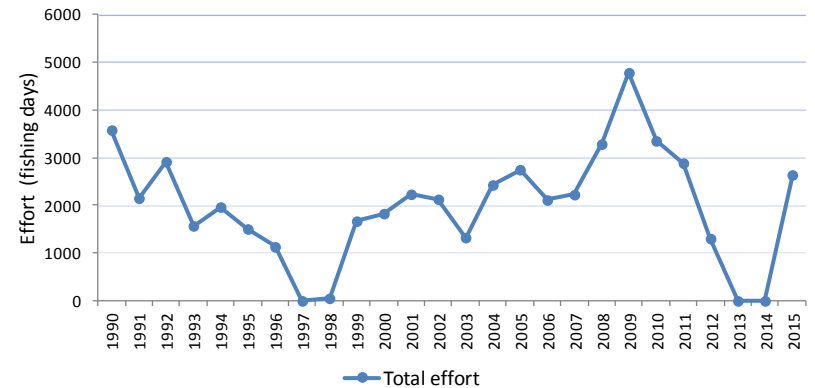
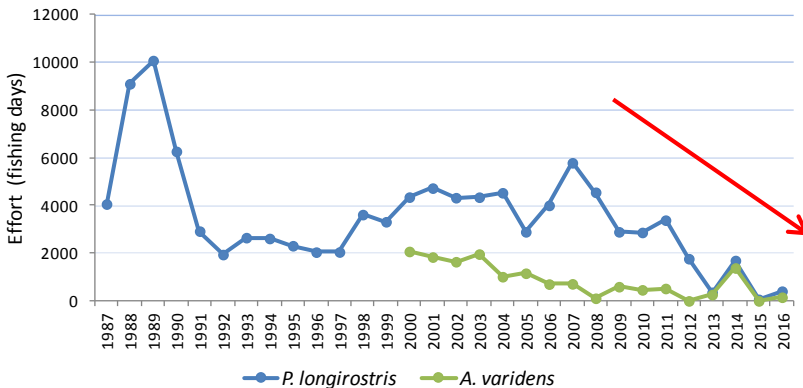
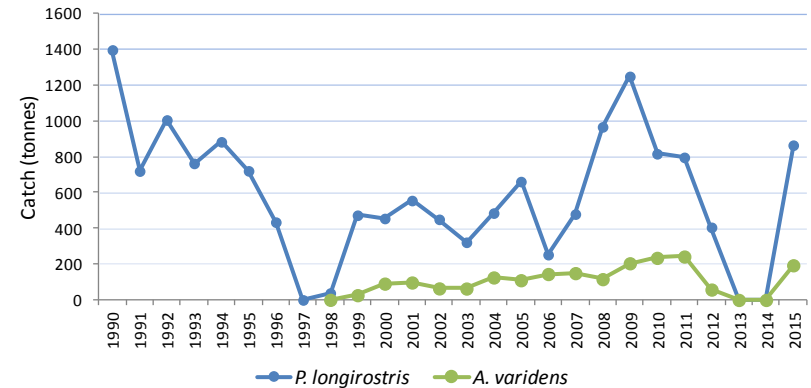
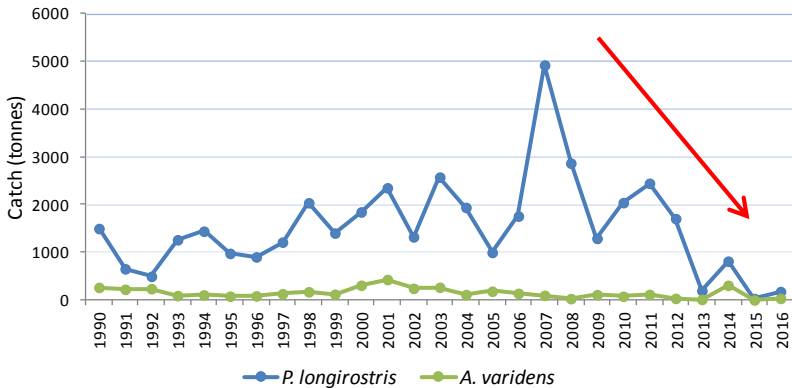
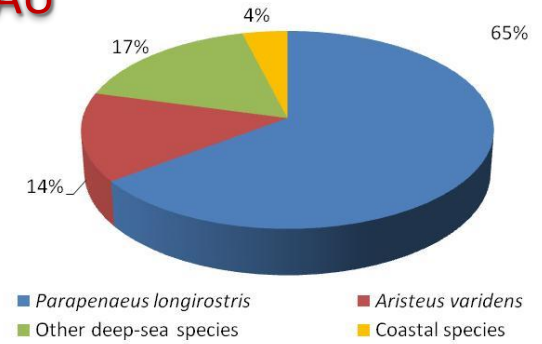
Landings- MAURITANIA 2014



### GUINEA-BISSAU

96% landings → deep-sea species

Landings- GUINEA-BISSAU 2015



### DEEP-SEA SHRIMP BOTTOM TRAWL FISHERY TARGETING *P. longirostris* (GAM)



*Plesionika edwardsii*

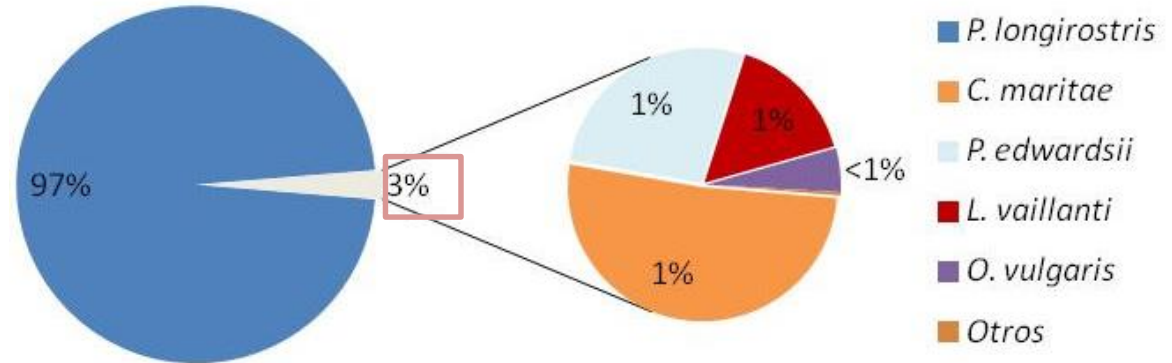


*Lophius vaillanti*



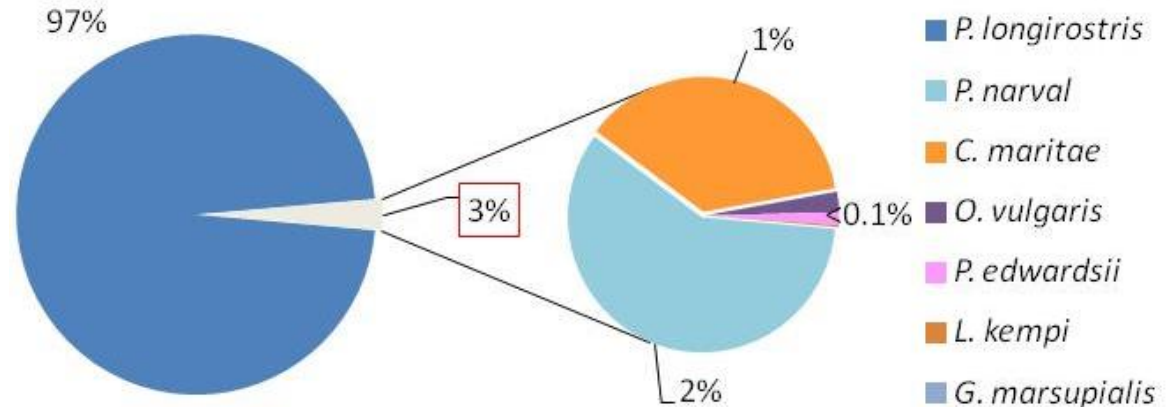
*Lophiodes kempii*

#### Retained catch- GAM fishery-MAURITANIA



Source: IEO-observers onboard-2014 (EU-Data Collection Framework)

#### Retained catch- GAM fishery- GUINEA BISSAU



Source: IEO-observers onboard-2011(EU-Data Collection Framework)

### DEEP-SEA SHRIMP BOTTOM TRAWL FISHERY TARGETING *A. varidens* (ALI)



*Chaceon maritae*

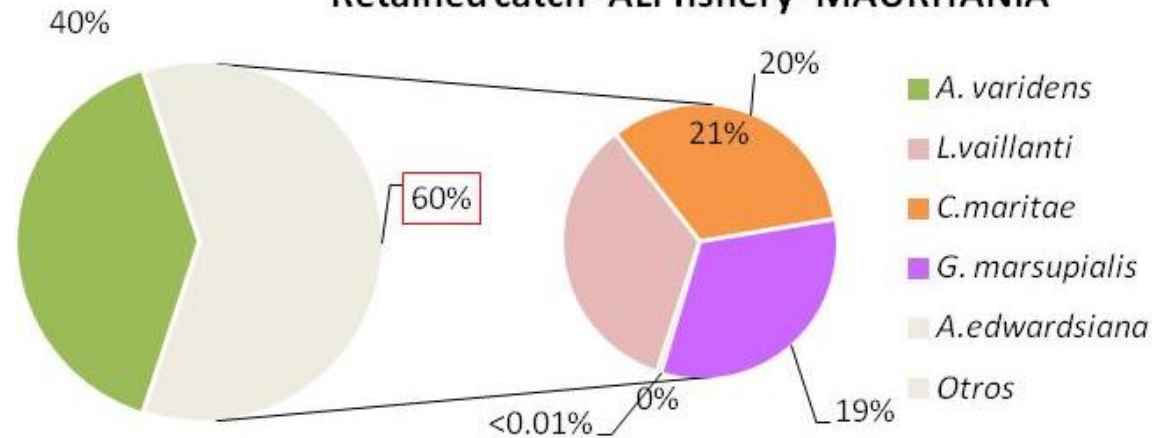


*Glyphus marsupialis*



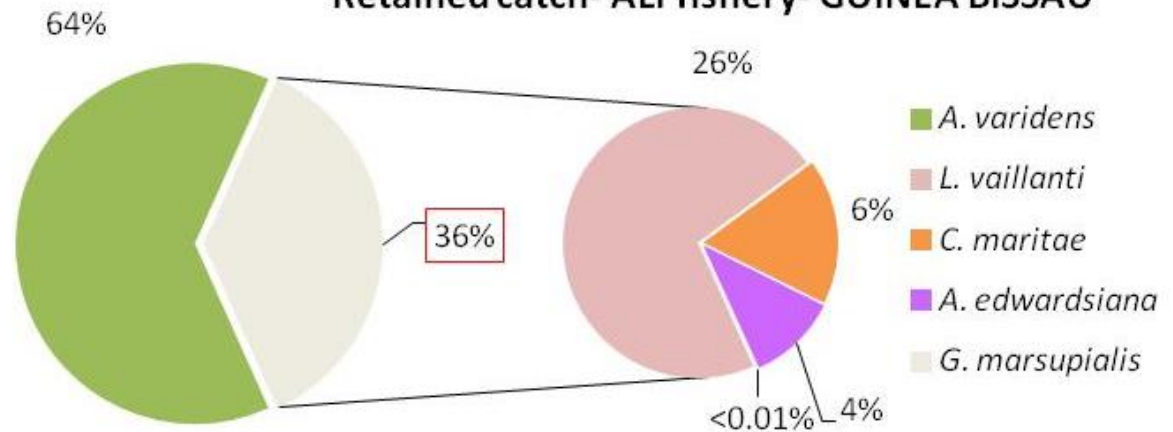
*Aristaeopsis edwardsiana*

#### Retained catch- ALI fishery- MAURITANIA



Source: IEO-observers onboard-2014 (EU-Data Collection Framework)  
Source: IEO-observers onboard-2014 (EU-Data Collection Framework)

#### Retained catch- ALI fishery- GUINEA BISSAU



Source: IEO-observers onboard-2011(EU-Data Collection Framework)  
Source: IEO-observers onboard-2011(EU-Data Collection Framework)



### DISCARDS

DISCARDS (% TOTAL CATCH)	MAURITANIA - 2014	G.BISSAU - 2011
GAM-FISHERY	76.0	67.2
ALI-FISHERY	63.8	69.9



<i>P. longirostris</i> (GAM) fishery		
No. Species	MAURITANIA-2014	GUINEA-BISSAU 2011
FISH	102	112
CRUSTACEANS	33	24
CEPHALOPODS	11	7
OTHER INVERTEBRATES	20	17
<b>TOTAL SPECIES</b>	<b>166</b>	<b>160</b>
No. Sampled trawls	72	90



<i>A. varidens</i> (ALI) fishery		
No. Species	MAURITANIA-2014	GUINEA-BISSAU 2011
FISH	115	105
CRUSTACEANS	28	22
CEPHALOPODS	9	4
OTHER INVERTEBRATES	12	9
<b>TOTAL SPECIES</b>	<b>164</b>	<b>140</b>
No. Sampled trawls	46	36

Source: IEO-observers onboard (EU-Data Collection Framework)





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## 2.- DEEP-SEA SHRIMP BOTTOM TRAWL FISHERY

### DISCARDS SPECIES- *P. longirostris* (GAM) FISHERY



#### % Discards Mauritania-% Discards G. Bissau



*Merluccius polli* (15%-2%)



*Helicolenus dactylopterus* (11%<1%)



*Malacocephalus occidentalis* (7%-1%)



*Chlorophthalmus agassizi* (8%-0)



*Brotula barbata* ( 5%-4%)



*Synagrops microlepis* (2%-9%)



*Chlorophthalmus atlanticus* (3%-25%)



*Bembrops heterurus* (<1%-3%)



*Munida rutilanti*  
(5%-15%)



*Trichiurus lepturus* (<1%-3%)



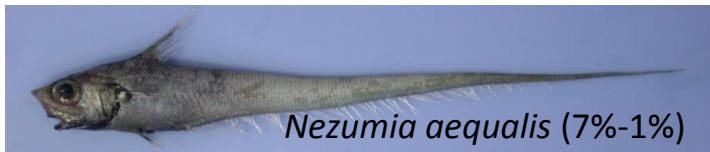
DISCARDS SPECIES- *A. varidens* (ALI) FISHERY



% Discards Mauritania-% Discards G. Bissau



*Yarrella blackfordi* (12%-11%)



*Nezumia aequalis* (7%-1%)



*Hoplostethus cadenati* (5%-1%)



*Laemonema laureysi* (5%-9%)



*Trachyrincus scabrus* (4%-0%)



*Lophius vaillanti* (4%-<1%)



*Merluccius polli* (4%-13%)



*Chaunax pictus* (<1%-5%)



*Lithodes ferox* (1%-3%)



*Nematocarcinus africanus*  
(1%-13%)



*Deania profundorum* (4%-<1%)



DISCARDS-VULNERABLE/PROTECTED SPECIES

MAURITANIA

	SPECIES	FREQUENCY (%)	Discard index kg sp./kg retained catch	
SHARKS	<i>Deania profundorum</i>	17	0.030	
	<i>Deania calcea</i>	13	0.037	
	<i>Galeus melastomus</i>	12	0.007	
	<i>Centrophorus squamosus</i>	12	0.036	
	<i>Centroscymnus crepidater</i>	9	0.008	
	<i>Scyliorhinus stellaris</i>	9	0.062	
	<i>Galeus polli</i>	7	0.004	
	<i>Centrophorus granulosus</i>	5	0.013	
	<i>Centroscymnus owstonii</i>	5	0.005	
	<i>Centrophorus uyato</i>	3	0.003	
	<i>Centroscyllum fabricii</i>	3	0.001	
	<i>Scyliorhinus canicula</i>	2	0.005	
	<i>Somniosidae</i>	2	0.002	
	<i>Zameus squamulosus</i>	2	0.002	
	<i>Centroscymnus sp.</i>	2	0.005	
	<i>Etmopterus spinax</i>	2	0.001	
	<i>Galeus atlanticus</i>	2	0.001	
	<i>Centroscymnus coelolepis</i>	1	0.004	
	SPONGES	Porifera	12	0.0005
	CORALS	Hormathiidae	34	0.007
Epizoanthus sp.		6	0.0004	
Actiniidae		3	0.001	

GUINEA-BISSAU

	SPECIES	FREQUENCY (%)	Discard index kg sp./kg retained catch	
SHARKS	<i>Scyliorhinus stellaris</i>	23	0.004	
	<i>Centrophorus uyato</i>	8	0.003	
	<i>Galeus melastomus</i>	8	0.002	
	<i>Deania profundorum</i>	7	0.001	
	<i>Galeus polli</i>	7	0.001	
	<i>Oxynothus centrina</i>	6	0.001	
	<i>Mustelus mustelus</i>	6	0.014	
	<i>Centrophorus granulosus</i>	5	0.006	
	<i>Centrophorus squamosus</i>	2	0.004	
	<i>Centroscyllum fabricii</i>	1	<0.001	
	<i>Centroscymnus coelolepis</i>	1	<0.001	
	<i>Centroscymnus owstoni</i>	1	<0.001	
	<i>Etmopterus pusillus</i>	1	<0.001	
	<i>Galeus atlanticus</i>	1	<0.001	
	<i>Mitsukurina owstoni</i>	1	0.002	
	<i>Squalus blainvillei</i>	1	<0.001	
	<i>Squalus megalops</i>	1	<0.001	
	SPONGES	Porifera	14	0.001
	CORALS	Hormathiidae	32	0.021
		Epizoanthus sp.	25	0.001
Actiniidae		8	0.000	

Source: IEO-observers onboard (EU-Data Collection Framework)



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## 2.- DEEP-SEA SHRIMP BOTTOM TRAWL FISHERY

### DISCARDS-VULNERABLE/PROTECTED SPECIES-SHARKS



*Centrophorus crepidater*



*Centrophorus squamosus*



*Centrophorus granulosus*



*Deania profundorum*



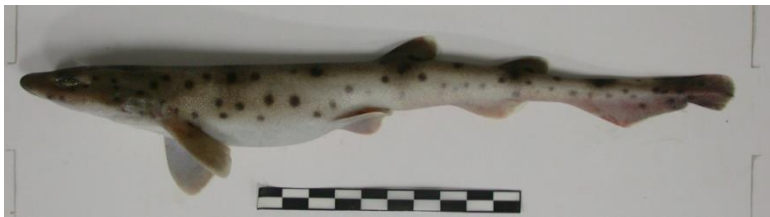
*Deania calcea*



*Galeus melastomus*



*Galeus polli*



*Scyliorhinus stellaris*



*Scyliorhinus canicula*



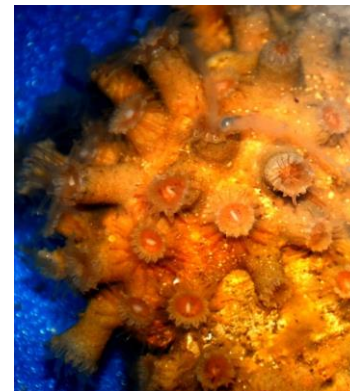
*Oxynotus centrina*

## DISCARDS-VULNERABLE/PROTECTED SPECIES- SPONGES AND CORALS

### SPONGES



### CORALS



# 3.-BLACK HAKE BOTTOM TRAWL FISHERY IN WEST AFRICA



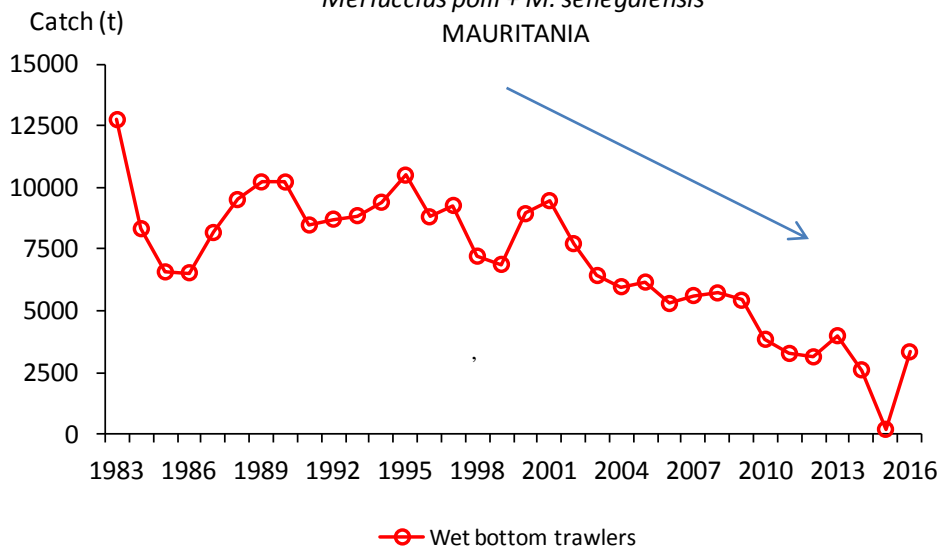


# 3.- BLACK HAKE BOTTOM TRAWL FISHERY IN WEST AFRICA

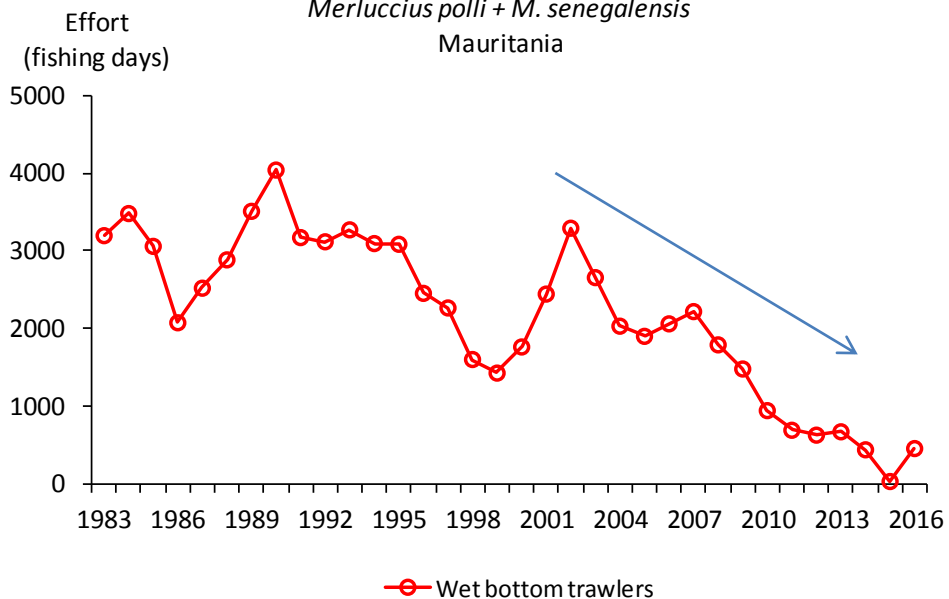
- ◆ **FISHING AREA:** EEZs of Morocco, Mauritania and Senegal
- ◆ **TYPE OF BOTTOMS:** sand
- ◆ **FISHING DEPTHS:** 400-800 m (100-1000m)
- ◆ **FISHING GEAR:** bottom trawl

EEZ	Ref. year	No. Vessels	Landings (t)	Effort (f.d)
Morocco	2015	6	4658	623
Mauritania	2014	2	2810	434
Senegal	2015	3	1490	182

*Merluccius polli + M. senegalensis*  
MAURITANIA



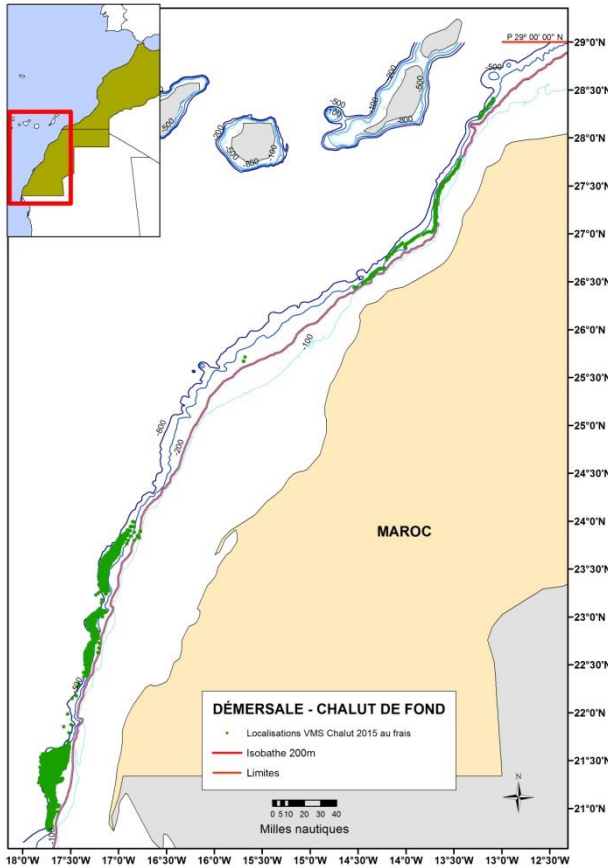
*Merluccius polli + M. senegalensis*  
Mauritania





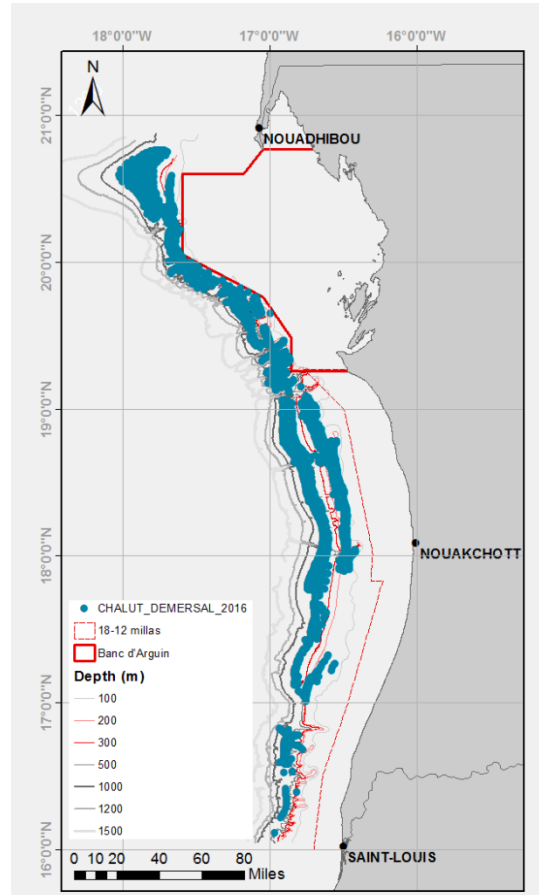
## FISHING AREAS:

### MOROCCO



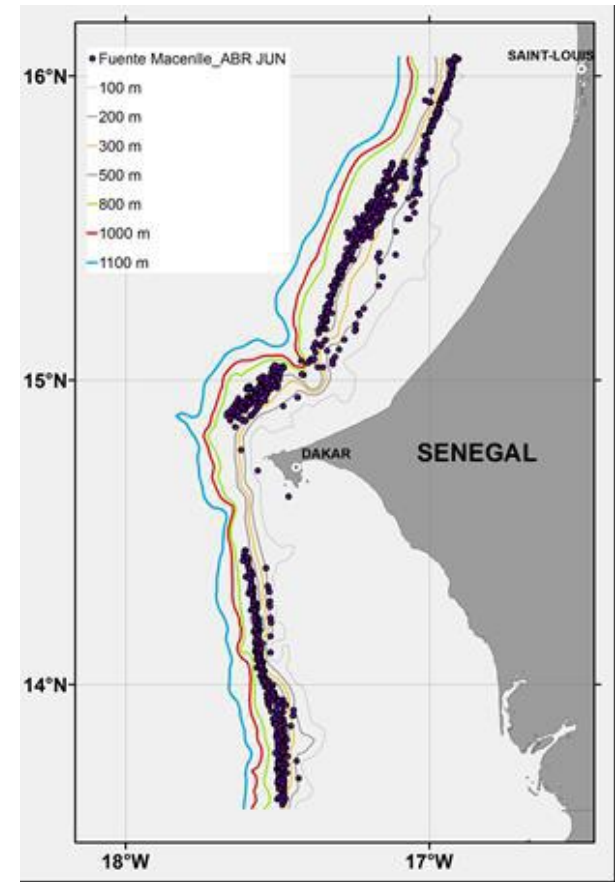
400-800 m (200-1000 m)

### MAURITANIA



550-800 m (100-1000 m)

### SENEGAL



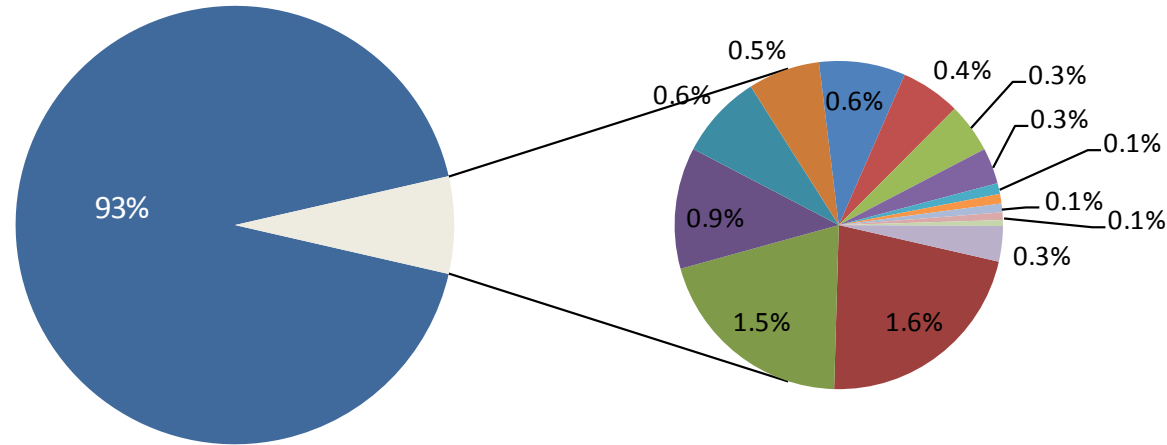
500-800 m (max. 1000 m)





## ◆ LANDINGS SPECIES COMPOSITION

### LANDINGS-MAURITANIA 2014



■ *Merluccius spp*

■ *Schedophilus ovalis*

■ *Pagellus spp*

■ Rajidae

■ *Brotula barbata*

■ Others

■ *Zenopsis conchifer*

■ *Gephyroberyx darwinii*

■ *Zeus faber*

■ *Branchiostegus semifasciatus*

■ *Plectorhinchus mediterraneus*

■ *Lophius spp.*

■ *Helicolenus dactylopterus*

■ *Squaliformes*

■ *Dentex macrophthalmus*

■ *Umbrina canariensis*

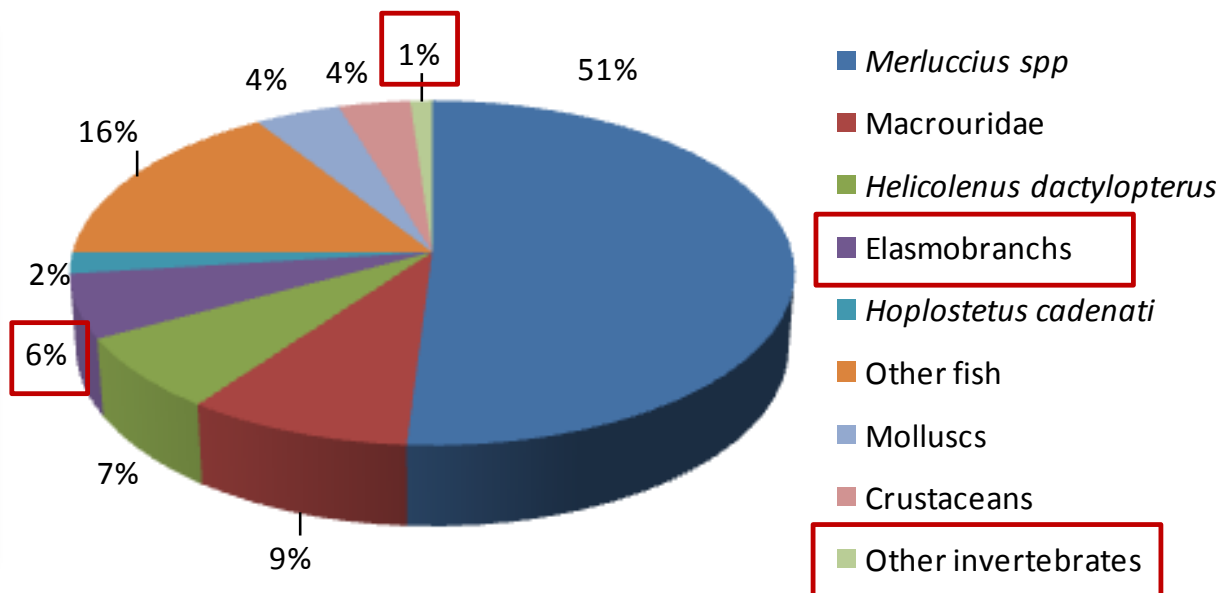


#### ◆ DISCARD ESTIMATION

CATCH	RANGE	AVERAGE %
HAKE RETAINED CATCH	55%-83%	66%
OTHER RETAINED SPECIES	4%-28%	9%
DISCARDS		24%

403 fishing trawls

#### ◆ DISCARDS COMPOSITION



Source: IEO-observers onboard. Mauritania 2007-2011  
(EU Data Collection Framework)



# **CONCLUSIONS ON THE IMPACT OF THE SPANISH DEEP-SEA FISHERIES IN THE CECAF AREA**

# Types of fishing gears

## Bottom longline

## Bottom trawl

### West Africa

### Canaries

### West Africa

BL for scabbarfish

BL for Atlantic pomfret

BL for alfonsino

Deep-sea shrimps

Black hake

Cephalopod-finish (black hake)

- NA information.
- Artisanal fisheries
- High selectivity
- Low interaction with the bottom

- Artisanal fishery
- Low effort
- Concentrated on seamounts habitats
- Potential impact on sensitive habitats

- Gear impact on the seabed habitat
- High discards rates and diversity
- Impact (low) on vulnerable/shark spp.
- Decreasing effort

- Gear impact on the seabed habitat
- Low discards rates
- Impact on sharks
- Decreasing effort

**Thanks for your attention!!!!**

