

# IMPROVING INFORMATION OF DATA-POOR STOCKS AND FISHERIES: A NEW SCIENTIFIC OBSERVER PROGRAMME ONBOARD A SHRIMPER FLEET IN ANGOLA (SW AFRICA)



Eva García-Isarch, José Miguel García-Rebollo, Verónica Duque-Nogal, Ivone Czervinski and Marta Quinzan

Instituto Español de Oceanografía (IEO, CSIC). C.O. Cádiz. Puerto Pesquero. Muelle de Levante s/n 11006 Cádiz, Spain. [eva.garcia@ieo.es](mailto:eva.garcia@ieo.es)

## BACKGROUND

### SMEFF REGULATION & DIRECT AUTHORIZATIONS

The EU's Regulation on the Sustainable Management of External Fishing Fleets (SMEFF, 2017) was established within the framework of the External Fisheries dimension of the Common Fisheries Policy (CFP) with the SMEFF, scientific evaluations to demonstrate the sustainability of the fishery must be provided to fish in a third country with direct authorizations (i.e.: Spanish shrimper fishery in Angola).

### THE SHRIMPER SPANISH FLEET IN ANGOLA

Since the 1960s, Angola has been a traditional fishing ground for a Spanish fleet of deep-sea shrimp trawlers. Since 2004, this fishery has been conducted through direct fishing authorizations and currently, in compliance with the SMEFF, scientific evaluations to demonstrate the sustainability of the fishery must be provided to fish in Angola.

### DATA-POOR STOCKS

Only *P. longirostris* has been assessed so far by the Fishery Committee for the Eastern Central Atlantic (CECAF), with great limitations due to the lack of consistent fishery-dependent information and biological data.

### TARGET STOCKS

*Parapenaeus longirostris*    *Aristeus varidens*



## METHOD

### DESIGN OF THE NEW PROGRAMME OF SCIENTIFIC OBSERVERS

IMPLEMENTED SINCE 2018 BY IEO

Observers collect information such as:

- Catch by species and biological data enabling the estimation of volume and length frequency of all catch fractions
- Biological parameters of target stocks
- Information for assessing the fishing impact on the marine ecosystem and
- Detailed data on the activity of the fleet.

Quarter 1			Quarter 2			Quarter 3			Quarter 4		
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Close season	Fishing Trip 1		Fishing Trip 2			Fishing Trip 3			Fishing Trip 4		



- ▶ 1 vessel per fishing trip → 10% fleet coverage.
- ▶ 4 fishing trips/year (1 fishing trip/quarter) → 10 % fishing trips coverage.
- ▶ Rotational scheme (observers and vessels)
- ▶ All months (except close season) are aimed to be covered.



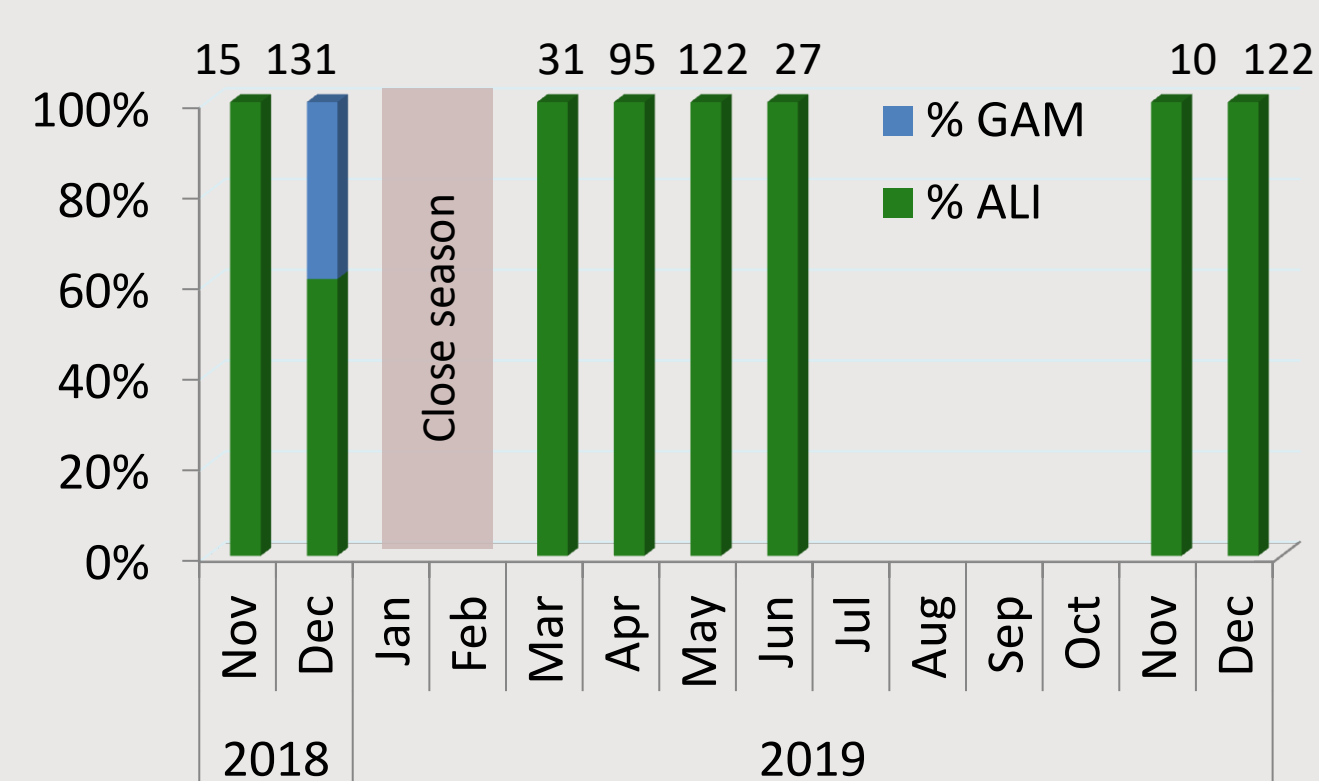
## RESULTS

### OPERATIONAL INFORMATION: FLEET ACTIVITY

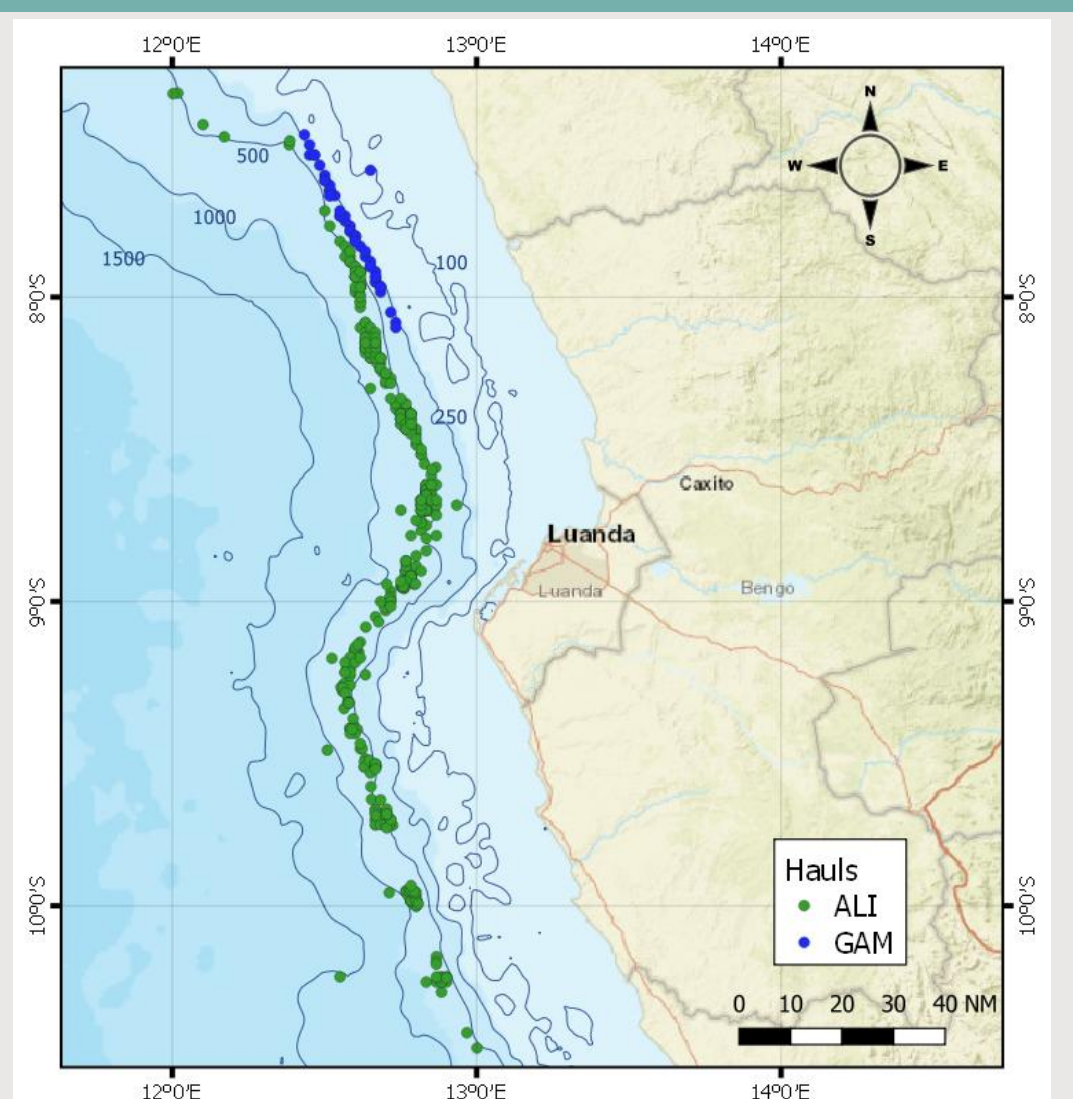
#### OBSERVER COVERAGE

- 137 observed fishing days (3%)
- 3 fishing trips (6%)
- 4 quarters covered (80%)

TRAWL TYPE	TARGET SPECIES	Fishing gear	Depth range (m)	Mean duration (hh:mm)	Day (D) Night (N)	# Hauls (%)
"ALI"	<i>A. varidens</i>	Classic bottom otter trawl	384-649	04:53	D & N	502 (91%)
"GAM"	<i>P. longirostris</i>	Outriggers	219-288	02:49	D	51 (9%)

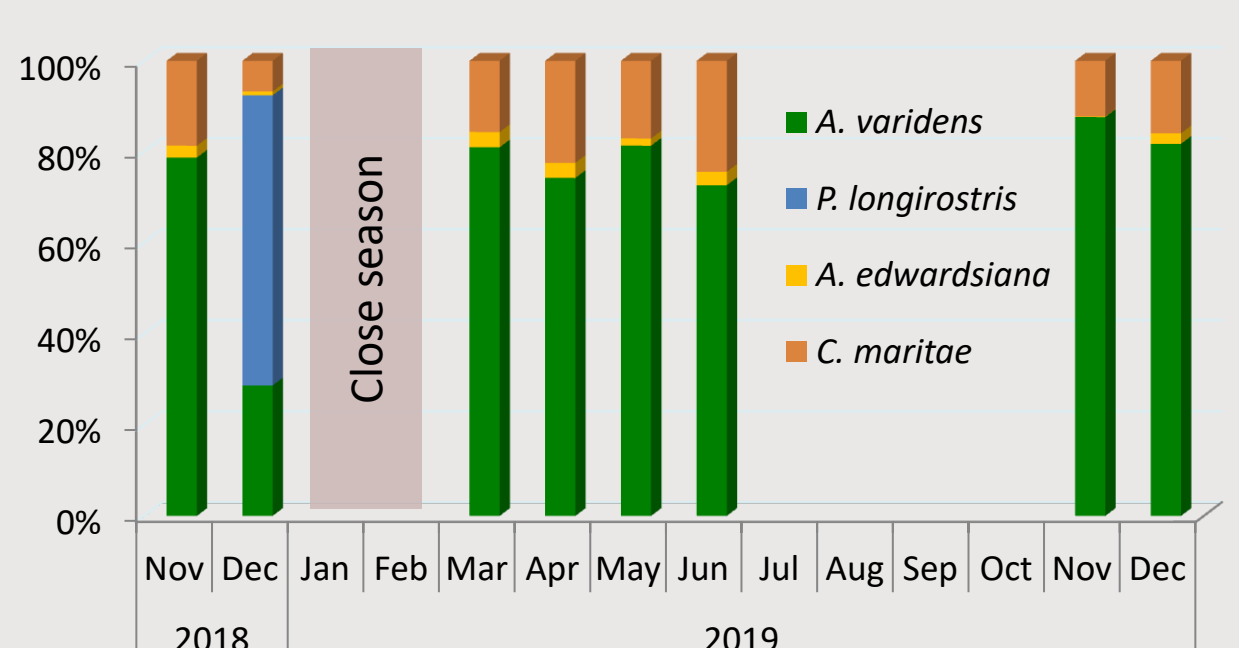


Observed period, number and type (%) of hauls/month



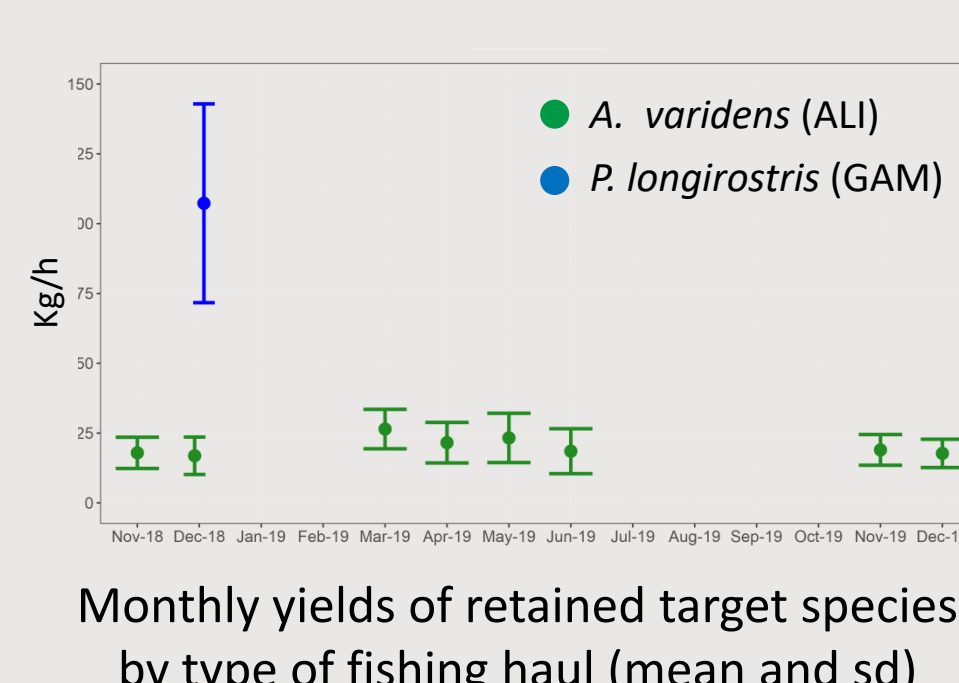
Observed fishing area

### CATCH: RETAINED & DISCARD FRACTIONS



Monthly percentage of species composition in RC

TYPE OF HAUL	"ALI"	"GAM"
Target species yield (kg/h)-mean (sd)	20.3 (7.6)	107.3 (35.5)
% Target species in RC	79	100



Monthly yields of retained target species by type of fishing haul (mean and sd)

Discard indices	Value
Yield (kg/h)	61.8
D1 (D/TC)	0.6
D2 (D/RC)	2.2
D3 (D/CTsp)	3.2

For further info on discards, see García-Rebollo et al. in SIMERPE.

### BIOLOGY OF *A. varidens*

- Length frequency distributions available for all observed months.
- Sex-related differential growth, females reaching larger sizes than males.
- Mature individuals through all the year. No clear spawning peaks.
- Length at First Maturity (LFM) estimated for females.

## CONCLUSIONS

- The new Programme of observers is designed with the aim of obtaining the most reliable fishery and biological information for assessment purposes.
- Main fishery and biological information obtained during the first observed annual cycle will be used as a starting point of a long-term monitoring program that together with other sources (logbooks, VMS) would increase the quantity and quality of the data needed for improving the assessments of these Angolan stocks.