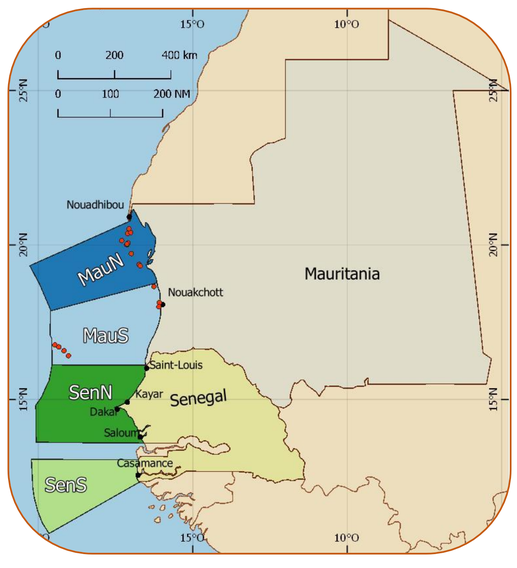
DEMERSTEM : WP1 – STOCK IDENTIFICATION
Epinephelus aeneus – MAURITANIA AND SENEGAL

Jorge Landa [1], Eva García-Isarch [1], Eli Muñoz [1], Blanca Partida [1], Ivone Czerwinski [1], Modou Thiaw [2], Beyah Meissa [3], Javier Rey [1], Séga Ndao [2], Idrissa Cissokho [2], Papa Samba Sow [2], Beyih Mohamed [3], Omar Bocar Mbodj [3], José F. González [1], Jerome Guitton[4]

1 Introduction

The thiof *Epinephelus aeneus* is assumed by CECAF as a single management unit for Mauritania, Senegal and the Gambia.

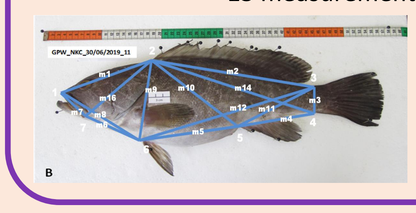
The application of stock identification methods can reveal inconsistencies between the spatial structure of biological populations and the definition of stock units used in assessment and management.



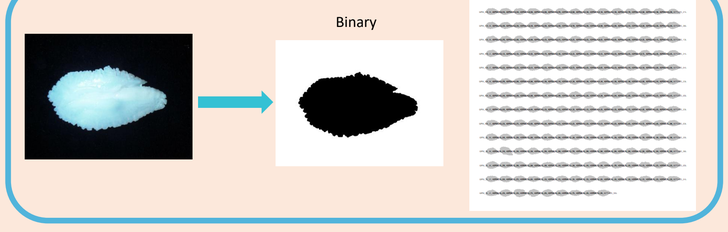
2 Methods

Specimens pictures & otoliths (bi-annual)

GROUP 1: 1 dorsal fin fish
8 landmarks
15 measurements



COUNTRY/ZONE	Photos	Measures
Mauritania_North	70	1050
Mauritania_South	98	1320
Senegal_North	91	1350
Senegal_South	116	1620



Classification and multivariate analysis:
- Principal Component Analysis (PCA)
- Linear Discriminant Analysis (LDA)

Morphometry

Analysis based on morphometric measurements of the species (pictures)→ TRUSS NETWORK

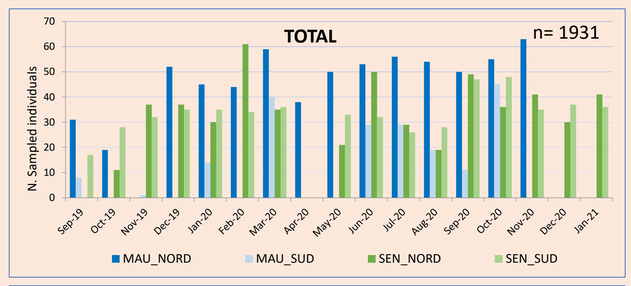
Analysis based on the otolith shape→ FOURIER

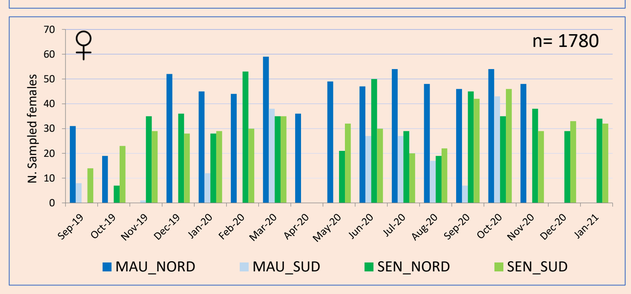
Life History Traits

Weight parameters

Reproduction parameters and features

Biological samplings (monthly)
- Length
- Sex
- Weight
- Gutted weight
- Gonad weight
- Maturity stage (1-5)
- Otoliths





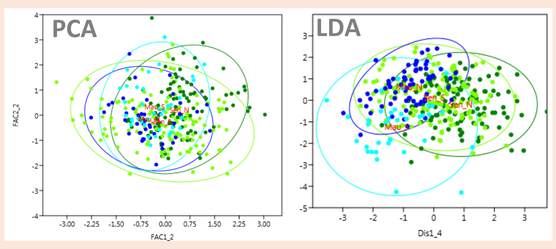
Statistical analysis by country-zone

Parameters comparison by:
- ANCOVA (Kruskall- Wallys)
- ANOVA (Mahn-Whitney)/ (Kruskall- Wallys)

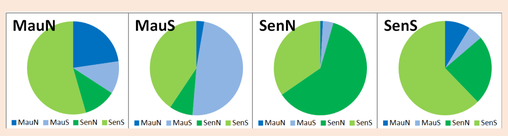
3 Results

Morphometry

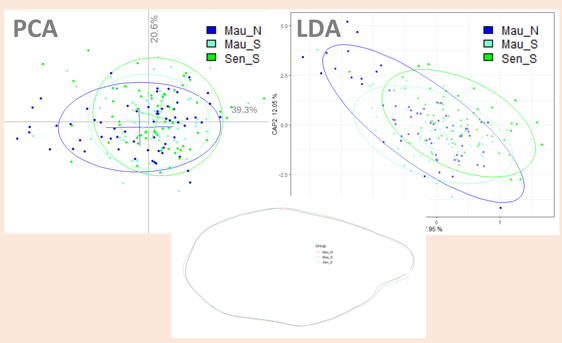
SPECIMEN SHAPE (TRUSS NERWORK)

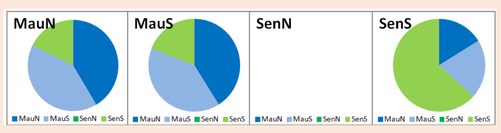


Correct classification from LDA



OTOLITH SHAPE (FOURIER ANALYSIS)

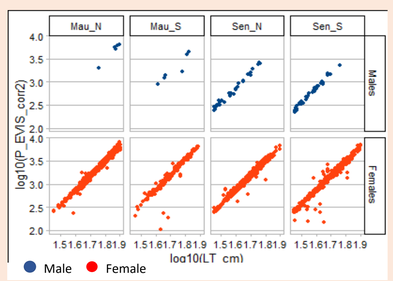




PCA and LDA shows considerable overlap among areas

Life History Traits

WEIGHT PARAMETERS



Length- Gutted weight relationship

Contry-Zone	Length- Gutted weigth relationship		Le Cren's condition factor (k)		
	Slope (b)	SE	median	mean	sd
MAU_N	3.20	0.02	1.00	1.01	0.08
MAU_S	3.21	0.04	1.06	1.07	0.09
SEN_N	3.11	0.02	1.01	1.02	0.10
SEN_S	3.10	0.02	1.00	1.02	0.17

No significant differences are observed in weight parameters among the four zones.

REPRODUCTION

FEMALES	MAU_N	MAU_S	SEN_N	SEN_S
Spawning period	Jun-Dec	March-Oct	All year	All year
Spawning peak	Jul-Aug	Jul-Aug	May-Aug	May-Sep
L50	—	—	48.1	50.5
cv	—	—	0.03	0.03
N	—	—	119	160

Differences were found in the reproductive strategies of the thiof in Mauritania and Senegal. While in Mauritania, the spawning period is concentrated mainly in the warm season with a short spawning peak, in Senegal the species seems to have a more extended spawning period and peak.

4 Conclusions (preliminary)

While data from life history traits do not show conclusive results, the two morphometric techniques (body shape-truss network and otolith shape) show more reliable information for stock identification. Following these techniques, the overlap among zones indicates the greatest mixing compared with other studied species in this project. The consideration of one single stock in the studied area should be confirmed with the results of the genetic analysis.

The extension of this study to longer periods and to northern and southern areas is highly recommended to determining appropriate geographic boundaries, needed to define the structure and distribution of this West African stock.

[1] Instituto Español de Oceanografía (IEO-CSIC). Spain
[2] Centre de Recherches Océanographiques de Dakar-Thiaroye (CRODT). Senegal
[3] Institut Mauritanien de Recherches Océanographiques et de Pêches (IMROP). Mauritania
[4] Institut Agro Rennes-Angers. France

European Union