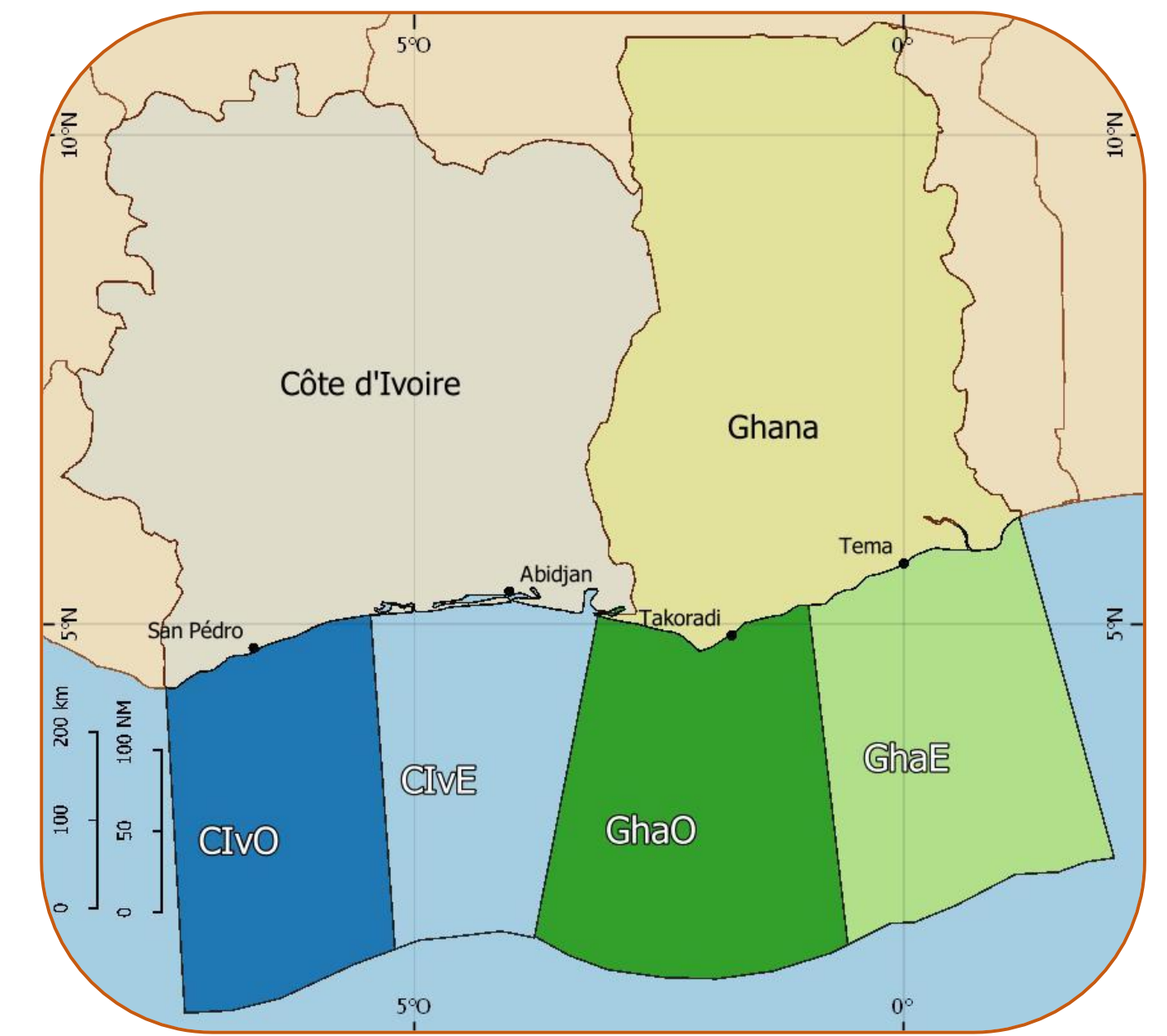


1 Introduction

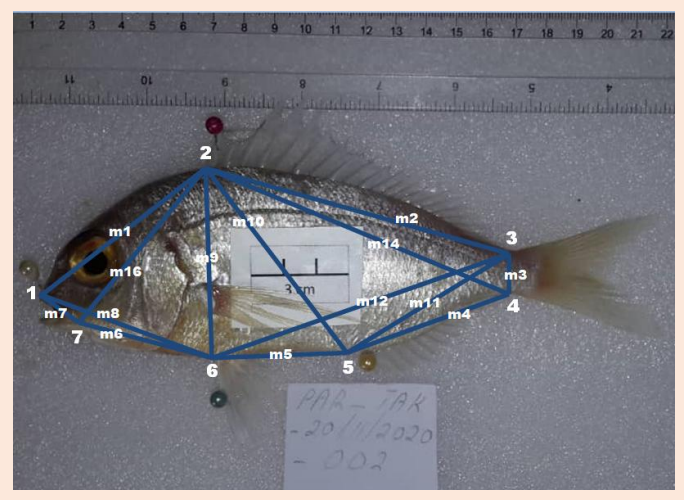
The red pandora *P. bellottii* is considered by CECAF as one single stock for Côte d'Ivoire, Ghana, Togo and Benin, for assessment purposes. The assumption of one single stock for these 4 countries follows practical reasons and has no any biological basis.



2 Methods

Specimens pictures & otoliths (bi-annual)

PAR (GROUP 1: 1 dorsal fin fish)
8 landmarks- 15 mesurements



COUNTRY/ ZONE	Photos	Measures
C.Ivoire_O	50	540
C.Ivoire_E	98	1110
Ghana_O	103	1005
Ghana_E	117	1080

Morphometry

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

Analysis based on the otolith shape → FOURIER

Statistical analysis by country-zone

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

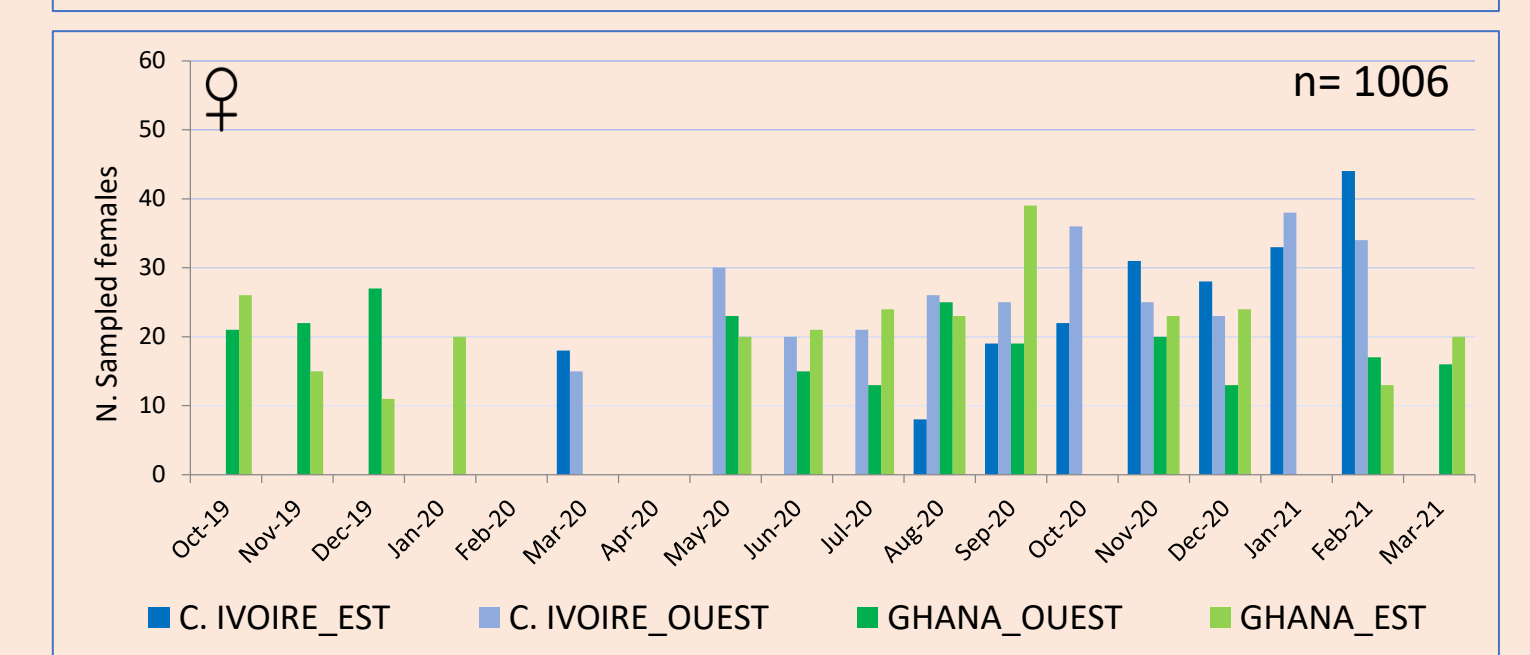
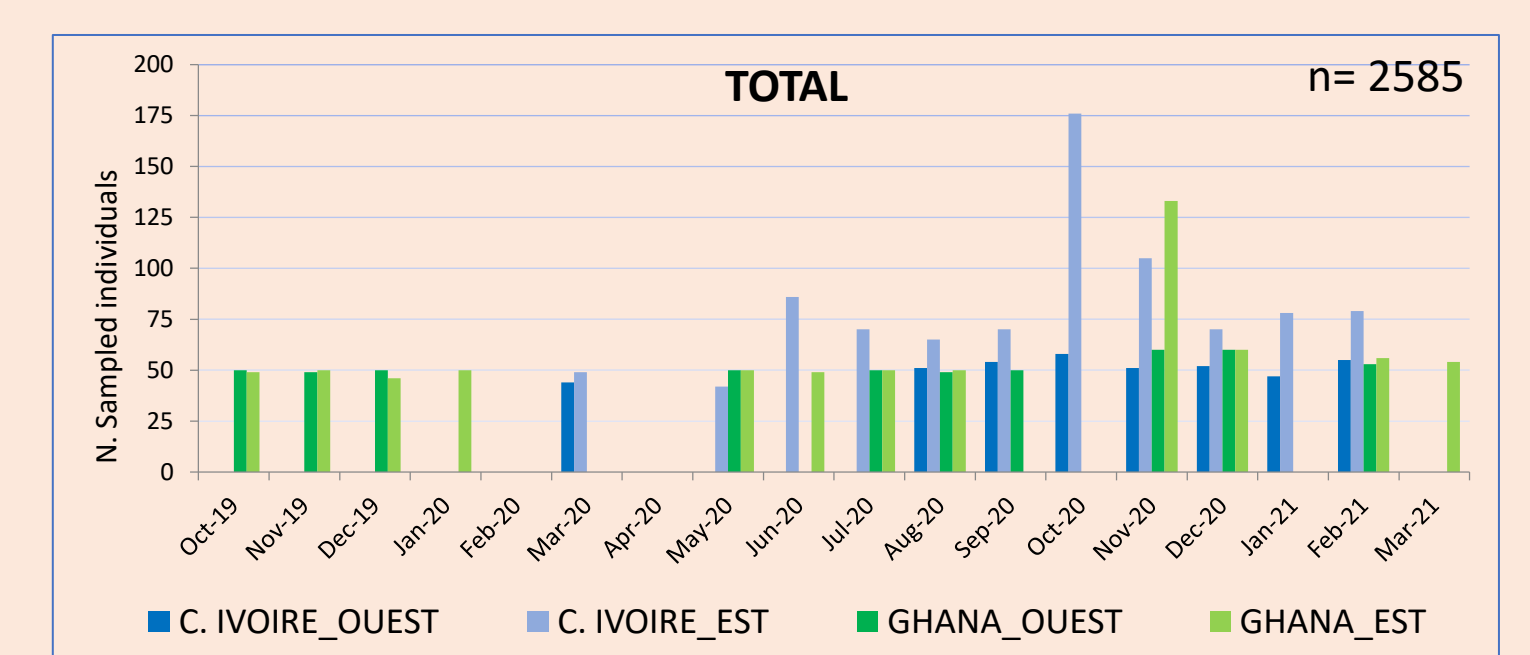
Life History Traits

Weight parameters

Reproduction parameters and features

Biological samplings (monthly)

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



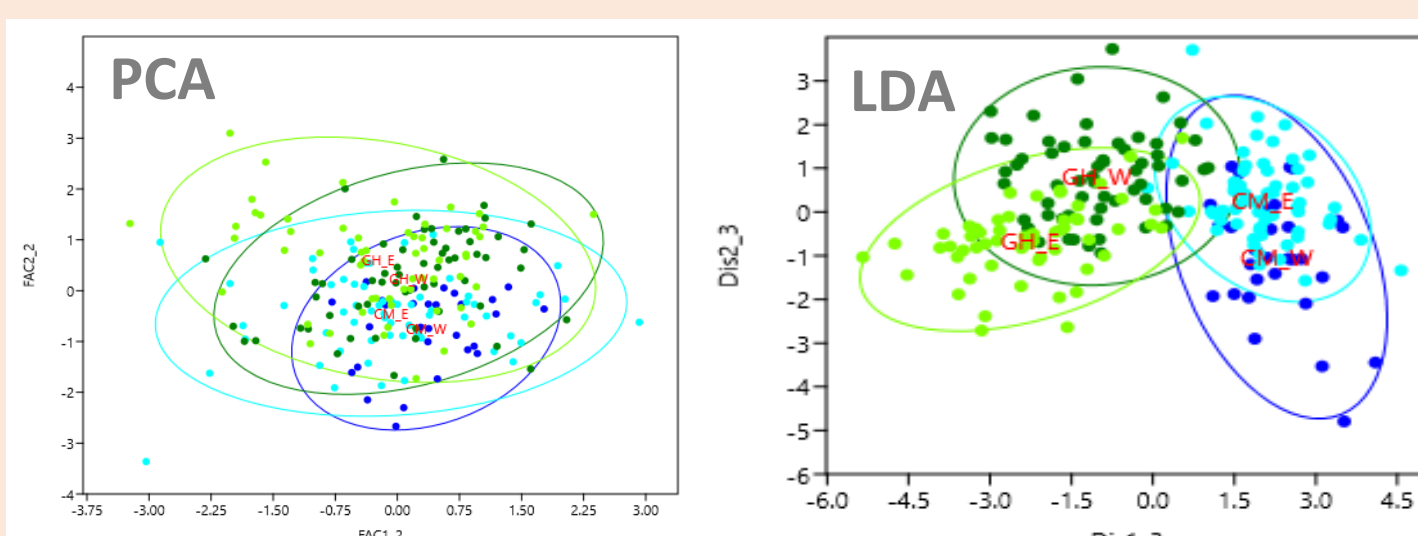
Parameters comparison by:

- ANCOVA (Kruskall- Wallis)
- ANOVA (Mahn-Whitney)/ (Kruskall- Wallis)

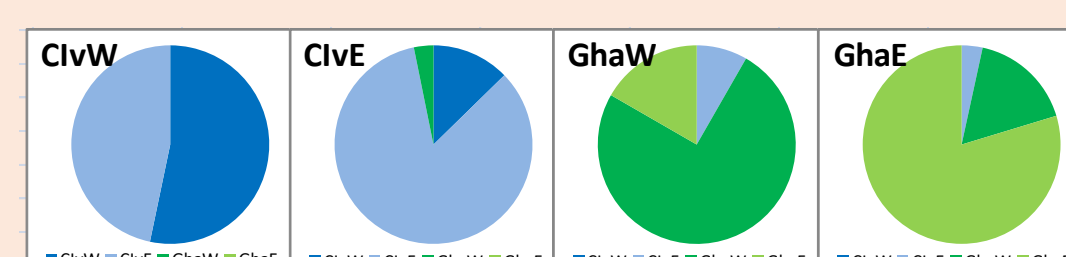
3 Results

Morphometry

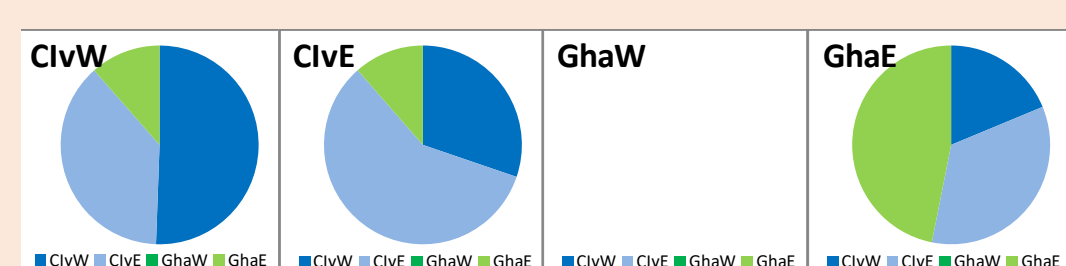
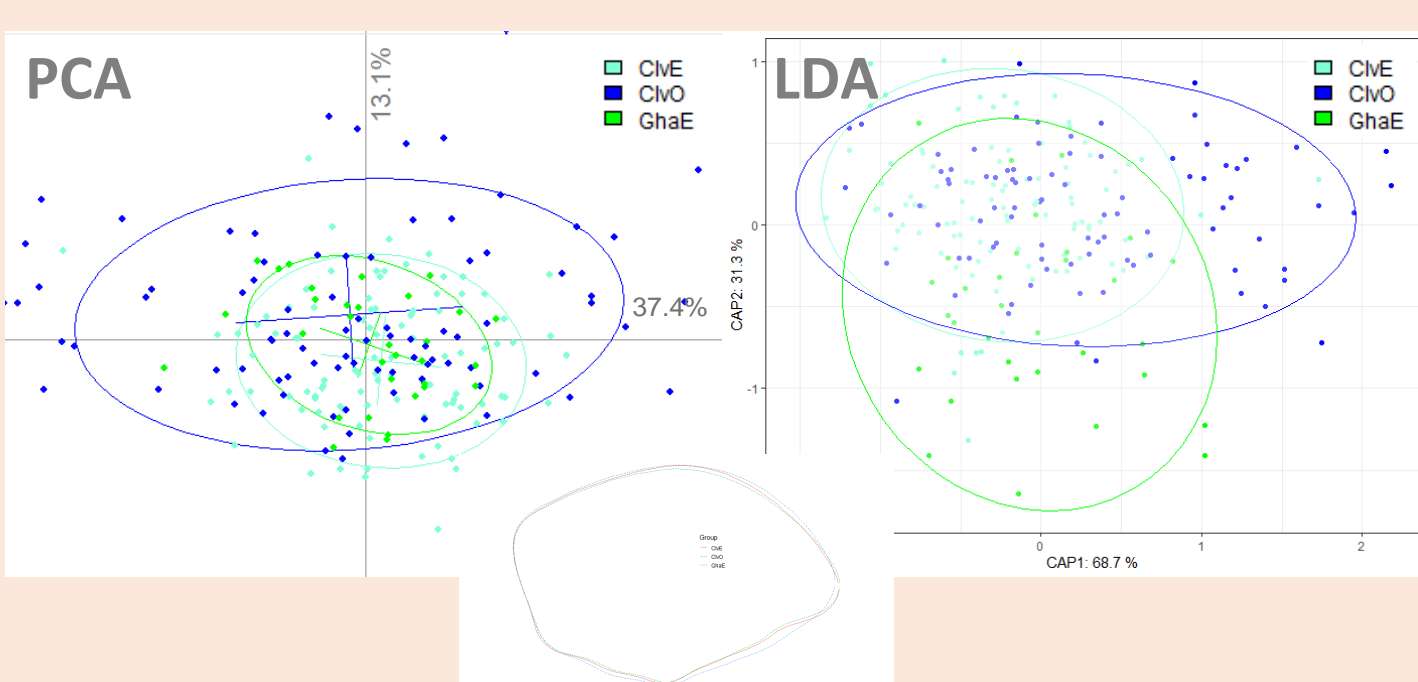
SPECIMEN SHAPE (TRUSS NETWORK)



Correct classification from LDA



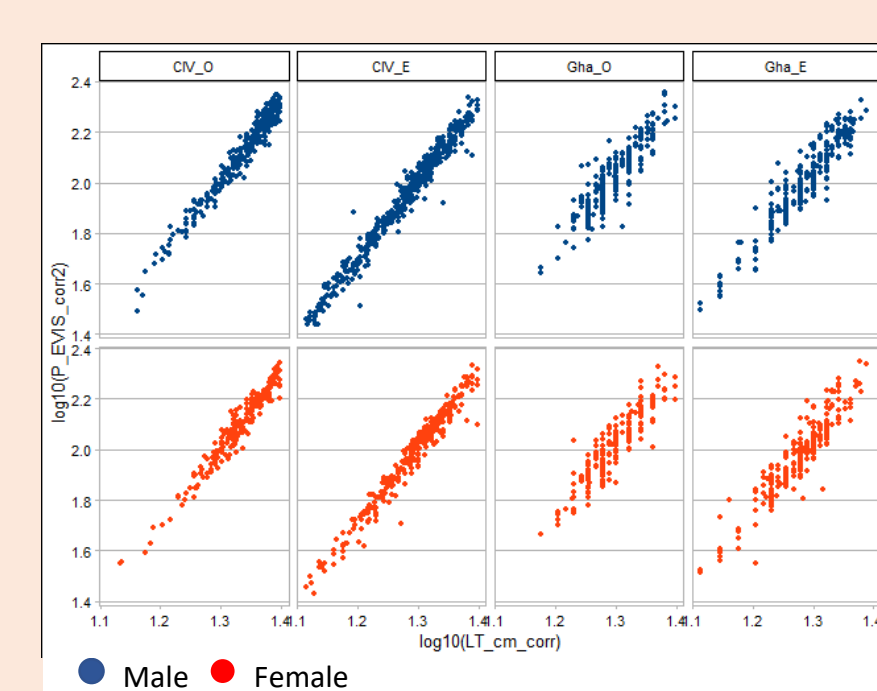
OTOLITH SHAPE (FOURIER ANALYSIS)



The correct classification of individuals using specimen shapes shows that individuals from Côte d'Ivoire could be clearly differentiated from those from Ghana.

Life History Traits

WEIGHT PARAMETERS



Length- Gutted weight relationship

Contry-Zone	Length- Gutted weight relationship		Le Cren's condition factor (k)		
	Slope (b)	SE	median	mean	sd
C.IVOIRE_O	2.95	0.12	0.98	0.98	0.08
C.IVOIRE_E	3.06	0.09	0.97	0.96	0.08
GHANA_O	2.95	0.08	1.02	1.04	0.16
GHANA_E	3.10	0.08	1.03	1.06	0.14

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

REPRODUCTION

FEMALES	C.IVOIRE_O	C.IVOIRE_E	GHANA_O	GHANA_E
Spawning period	All sampled months (8)	All year	All year	All year
Spawning peaks	Aug-Sep/Dec + Mar	May-Sep/Jan-Mar	May-Sep / Nov-Dec	May-Ago
L50	19.2	15.7	19.2	15.7
cv	0.05	0.02	0.03	0.13
N	73	208	128	88

Spatial and temporal sampling limitations hamper the interpretation of conclusive results on the species reproduction. In general, the species seems to spawn in two main periods, linked to the two main upwelling seasons in the area. The length at first maturity (L50) of females showed differences between the eastern and western zones of each country.

4 Conclusions (preliminary)

While data from life history traits do not show conclusive results, morphometric analysis (especially body shape-truss network) show more reliable information for stock identification. Following this technique, two independent stocks of *Pagellus bellottii* can be distinguished for Côte d'Ivoire and Ghana. A more in-depth analysis of this information is being carried out and the results may be useful for fisheries assessment and management of this species.

The extension of this study to longer periods and areas, especially to those that are considered by CECAF as sharing the same stock that C.Ivoire-Ghana by CECAF (Togo and Benin) is highly recommended.

