Workshop On Stock Assessment Of Selected Species Of Elasmobranchs
In The GFCM Area
Brussels, Belgium, 12-16 December 2011

Defining the stocks: preliminary data about the presence of *Squalus megalops* (Macleay, 1881) in the central-western Mediterranean sea

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The taxonomic uncertainty that characterizes many genera of Elasmobranchs makes difficult to assess properly their exploitation status and, consequently, to define effective management measures. Particularly, the genus *Squalus* is involved in a redefinition.

The presence of *Squalus megalops* in the Mediterranean sea is matter of discussion

Small shark of the "megalops – cubensis group", widespread in Australian waters, recorded in southern Africa, eastern Atlantic, northwestern Pacific, Mediterranean

Verify the presence of *S. megalops* in the seas surrounding Sardinia

Distinguish *S. megalops* from *S. blainvillei*

118 specimens
2010 - 2011
100 – 300 m

MEDiterranean International Trawl Survey

Commercial Landings

Each specimen was photographed with a unity of measurement

The main biometrics, sex and maturity stage were registered

Samples of skin (right flank), teeth (upper and lower jaw) and muscle were taken

Vertebrae were counted and a sample preserved

Chondrocrania were examined and photographed with a unity of measurement

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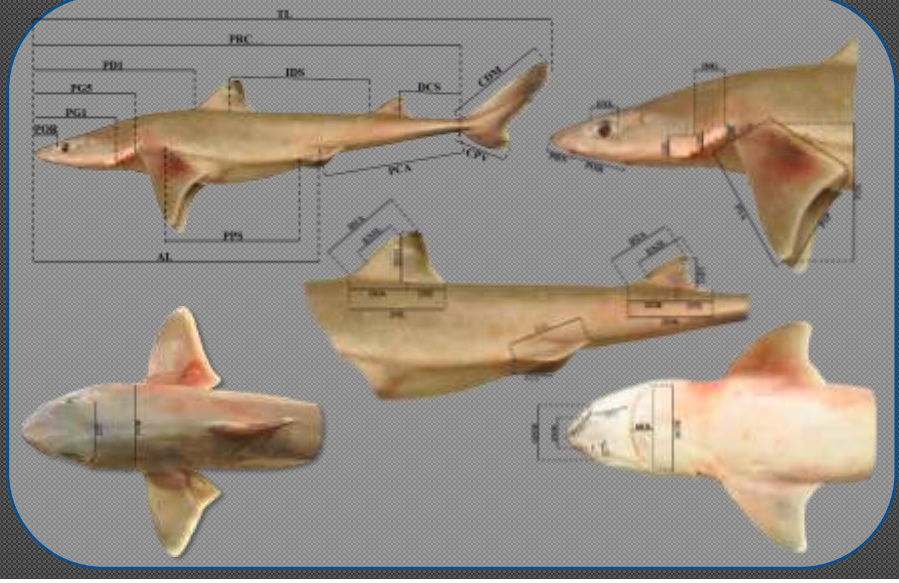
2 groups following Muñoz-Chàpuli & Ramos (1989)

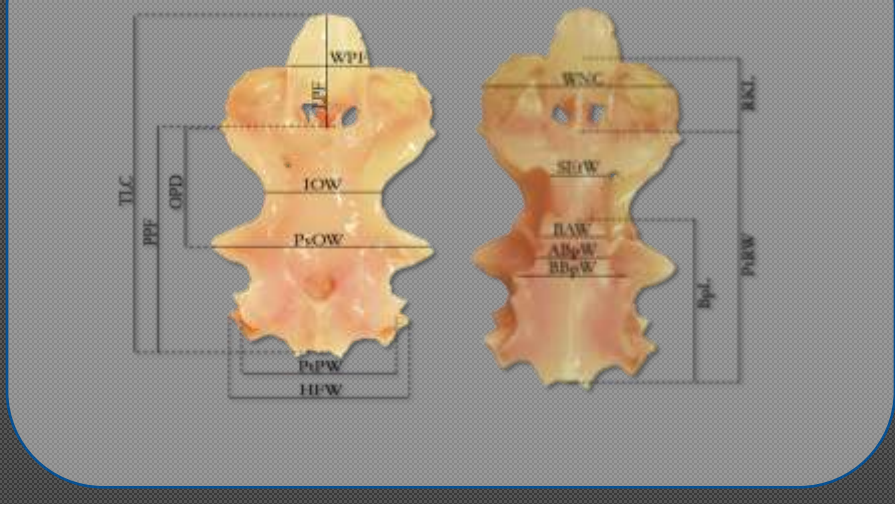
Group 1
1 chondrocranial process
16 specimens
12 M – 4 F
Size range (mm TL): 318 – 792
S. blainvillei for Muñoz-Chàpuli & Ramos (1989)

Group 2
2 chondrocranial processes
102 specimens
67 M – 49 F
Size range (mm TL): 207 – 834
S. megalops for Muñoz-Chàpuli & Ramos (1989)

45 measures for the body
following Compagno (1984), Muñoz-Chàpuli & Ramos (1989), Last *et al.* (2007)



16 measures for the chondrocranium
following Muñoz-Chàpuli & Ramos (1989)

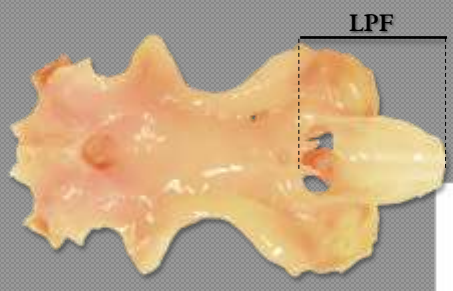


Comparison between the average values and standard deviations (t-test and f-test, respectively) and medians (Mann-Whitney test) of body and chondrocranium measures of the 2 groups: no statistical differences (p-value > 0.05)

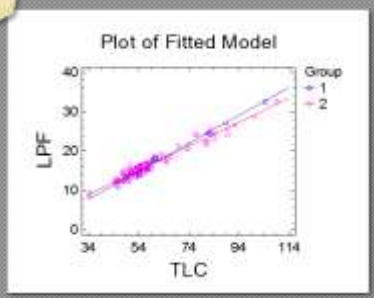
Regression lines between each measured parameter and Chondrocranium Total Length (TLC) and Body Length (TL), respectively

Comparison between regression lines (ANOVA)

Chondrocranium

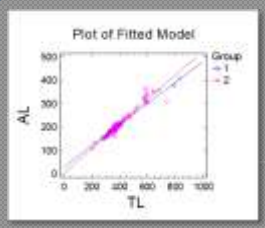


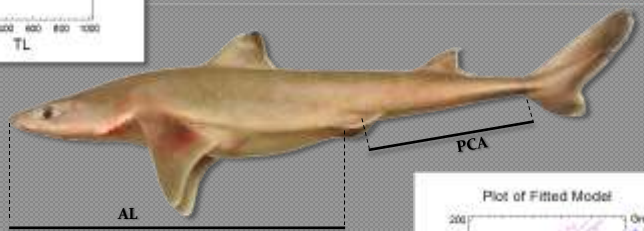
p-value < 0.01

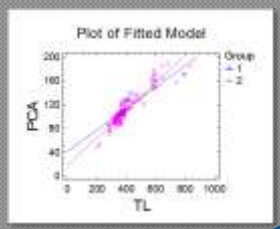


Body

statistical differences among 18 measures (0.01 ≤ p-value ≤ 0.05)







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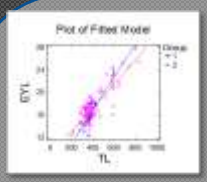
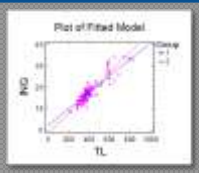
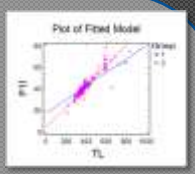
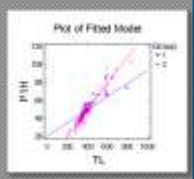
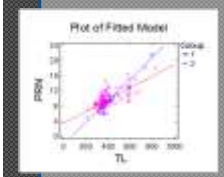
Body

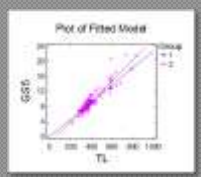


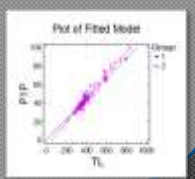




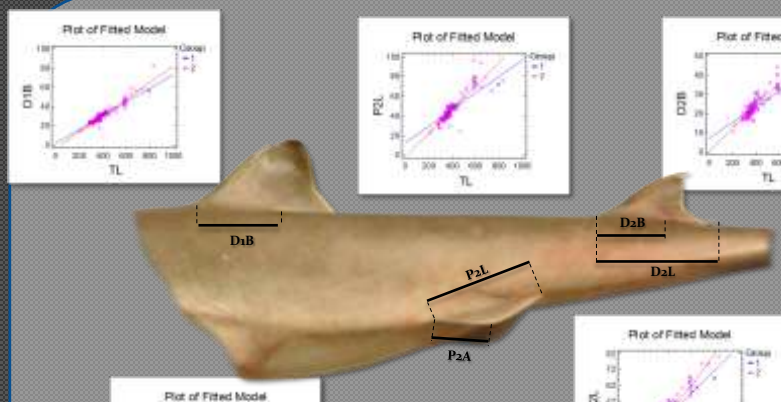




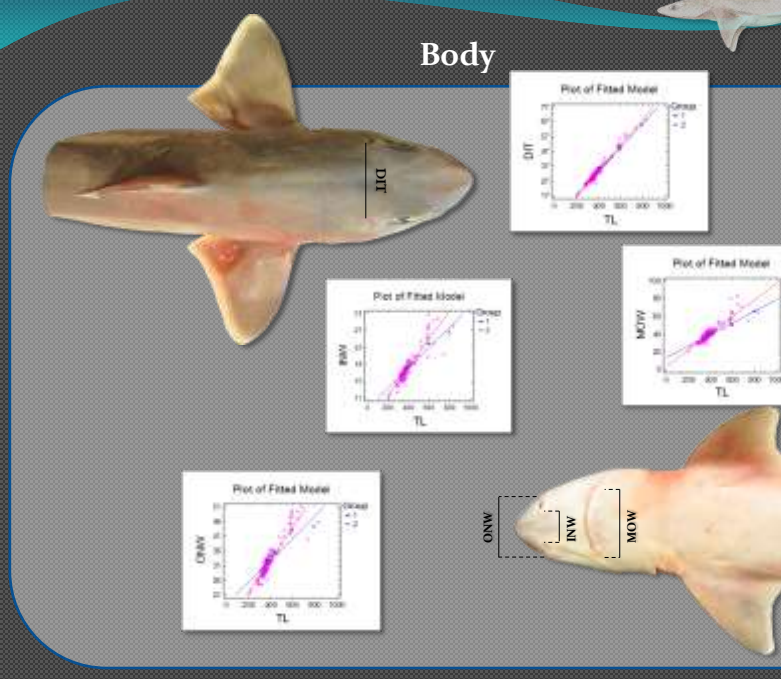


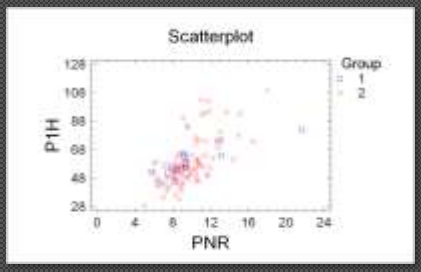


Body


Plot of Fitted Model
D1B
TL
Plot of Fitted Model
P2L
TL
Plot of Fitted Model
D2B
TL
D1B
D2B
D2L
P2L
P2A
Plot of Fitted Model
D2L
TL
Plot of Fitted Model
P2A
TL

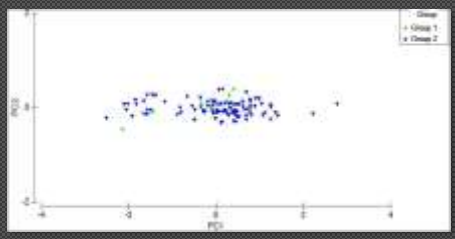
Body


DIT
Plot of Fitted Model
DIT
TL
Plot of Fitted Model
MOW
TL
Plot of Fitted Model
MW
TL
Plot of Fitted Model
DMW
TL
MNO
MW
MOW



Discriminant Analysis

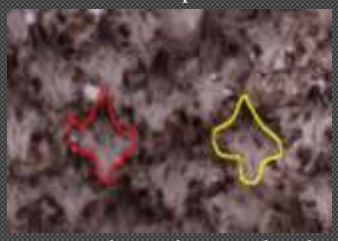
No parameter useful to separate the two groups both by Discriminant Analysis and PCA



PCA

Flank denticles and teeth comparison

Group 1



both monocuspidate and tricuspidate denticles

Group 2

monocuspidate denticles

Upper jaw: back smoothed (acute in some individuals)

Upper jaw: back acute

	Compagno (1984)		Present work	
	S. blainvillei	*S. megalops*	Group 1	Group 2
POR/MOW	1 - 1.3	1.3 - 1.4	0.8	0.8
POB/EYL	<2	<2	1	1
ES2L/LT	>0.06	<0.06	0.06	0.06
D1H/D1L	0.75	0.5	0.6	0.6
D2H/LT	<0.06	<0.06	0.04	0.04

	Last *et al.* (2007)	Present work	
	S. megalops	Group 1	Group 2
MOW/PRN	2.6 - 3.4	4.2	4.3
POR/PRN	2.9 - 3.8	3.5	3.6
D1H/D1I	1.0 - 1.3	1.4	1.4
D2H/D2I	0.7 - 1	0.9	0.9
P1A/P1I	1.4 - 1.9	1.2	1.2
Vertebrae	102 - 110 (105 - 106)	104 - 112	102 - 115

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Conclusions

The division of the samples into two groups on the basis of the chondrocranium structure is not reflected on their body morphology

The statistically different measures were not useful to distinguish the two groups

Using the keys provided by Compagno (1984) for the classification of the genus *Squalus*, we have obtained similar results for both groups, which were more similar to *S. blainvillei*. Sardinian specimens correspond only in part with the description of *S. megalops* reported by Last *et al.* (2007), and diverge for some features.

These results do not allow us to confirm the presence of *S. megalops* in the Sardinian seas

We are currently providing the first molecular analysis, that could confirm this hypotesis