SAC GFCM
Sub-Committee on Stock Assessment

Date*	**16**	**October**	**2010**	**Code***	**MUT0910Abe**

Authors*: Abella A., Sartor P., Colloca F, Mannini A.

Affiliation*: ARPAT, Livorno; CIBM Livorno; Univ. Roma; Univ. Genova

Species Scientific name*

1

Source: GFCM Priority Species

2

Source: -

3

Source: -

Geographical area*: Ligurian and Tyrrhenian Seas

Geographical Sub-Area (GSA)*: 09 - Ligurian and North Tirrenian Sea

Combination of GSAs
1
2
3

SAC GFCM - Sub-Committee on Stock Assessment (SCSA)

Assessment form

Sheet #0
Basic data on the assessment

Code: MUT0910Abe

Date*	16	Oct	2010	Authors*	Abella A., Sartor P., Colloca F, Mannini A.

Species Scientific name*	Mullus barbatus - MUT , ,	Species common name*	

Data Source

GSA*	09 - Ligurian and North Tirrenian Sea	Period of time*	1994-2009

Description of the analysis

Type of data*	catch, effort, abundance indexes, biological parameters	Data source*	catch assessment survey, trawl surveys
Method of assessment*	Non-equilibrium Production Model. Yield per recruit	Software used*	ASPIC 5.3; YIELD

Sheets filled out

B	P1	P2a	P2b	G	A1	A2	A3	Y	Other	D	Z	C
1	1	1	1	1	---	---	---	1	---	1	1	---

Comments, bibliography, etc.

Comments, bibliography, etc.

SAC GFCM - Sub-Committee on Stock Assessment (SCSA)	
Assessment form	**Sheet B** **Biology of the species**

Code: MUT0910Abe

Biology

Somatic magnitude measured (LH, LC, etc)*			5		Units*	1
Sex	Fem	Mal	Both	Unsexed		
Maximum size observed	29	22			Reproduction season	may-june
Size at first maturity	14	11			Reproduction areas	yes
Recruitment size	8	8			Nursery areas	yes

Parameters used (state units and information sources)

Sex	both							
Growth model	onBertalanffy							
Data source	rawl surveys							
L∞ (growth)	29							
K (growth)	0.6							
t0 (growth)	-0.1							
length-weight relationship								
a (length-weight)	0.00053							
b (length-weight)	3.12							
sex ratio	01:01							
M	vector	age1=1.3	age2=0.79	age3=0.62	age4=0.54	age>4=0.5		

Comments

Comments

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Assessment form	**Sheet P1** **General information about the fishery**

Code: MUT0910Abe

Data source*	commercial catch+trawl surveys	Year (s)*	1994-2009
Data aggregation (by year, average figures between years, etc.)*	year		

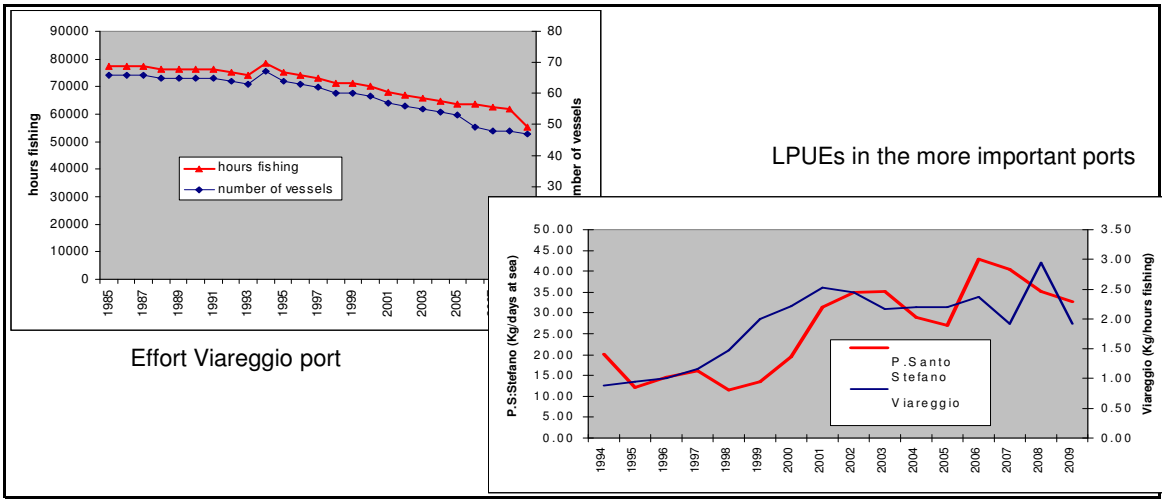
Fleet and catches (please state units)

	Country	GSA	Fleet Segment	Fishing Gear Class	Group of Target Species	Species
Operational Unit 1*	ITA	09	D - Trawl (6-12 metres)	03 - Trawls	33 - Demersal shelf species	MUT
Operational Unit 2	ITA	09	E - Trawl (12-24 metres)	03 - Trawls	33 - Demersal shelf species	MUT
Operational Unit 3	ITA	09	B - Minor gear with engine (<6 metres)	9 - Gillnets and Entangling Nets	33 - Demersal shelf species	MUT
Operational Unit 4						
Operational Unit 5						

Operational Units*	Fleet (n° of boats)*	Kilos or Tons	Catch (species assessed)	Other species caught	Discards (species assessed)	Discards (other species caught)	Effort units
ITA 09 D 03 33 - MUT	250	Kg					
ITA 09 E 03 33 - MUT	101	Kg	716.3				
ITA 09 B 9 33 - MUT	50	Kg	11.2				
Total	401		727.5				

Legal minimum size	10

Comments



Comments

Data source*	Official data	OpUnit 1*	ITA 09 D 03 33 - MUT

Time series

Year*	2004	2005	2006	2007	2008	
Catch	521.1	684	1033	1087	716.3	
Minimum size	10	10	10	10	10	
Average size Lc						
Maximum size						
Fleet						

Year						
Catch						
Minimum size						
Average size Lc						
Maximum size						
Fleet						

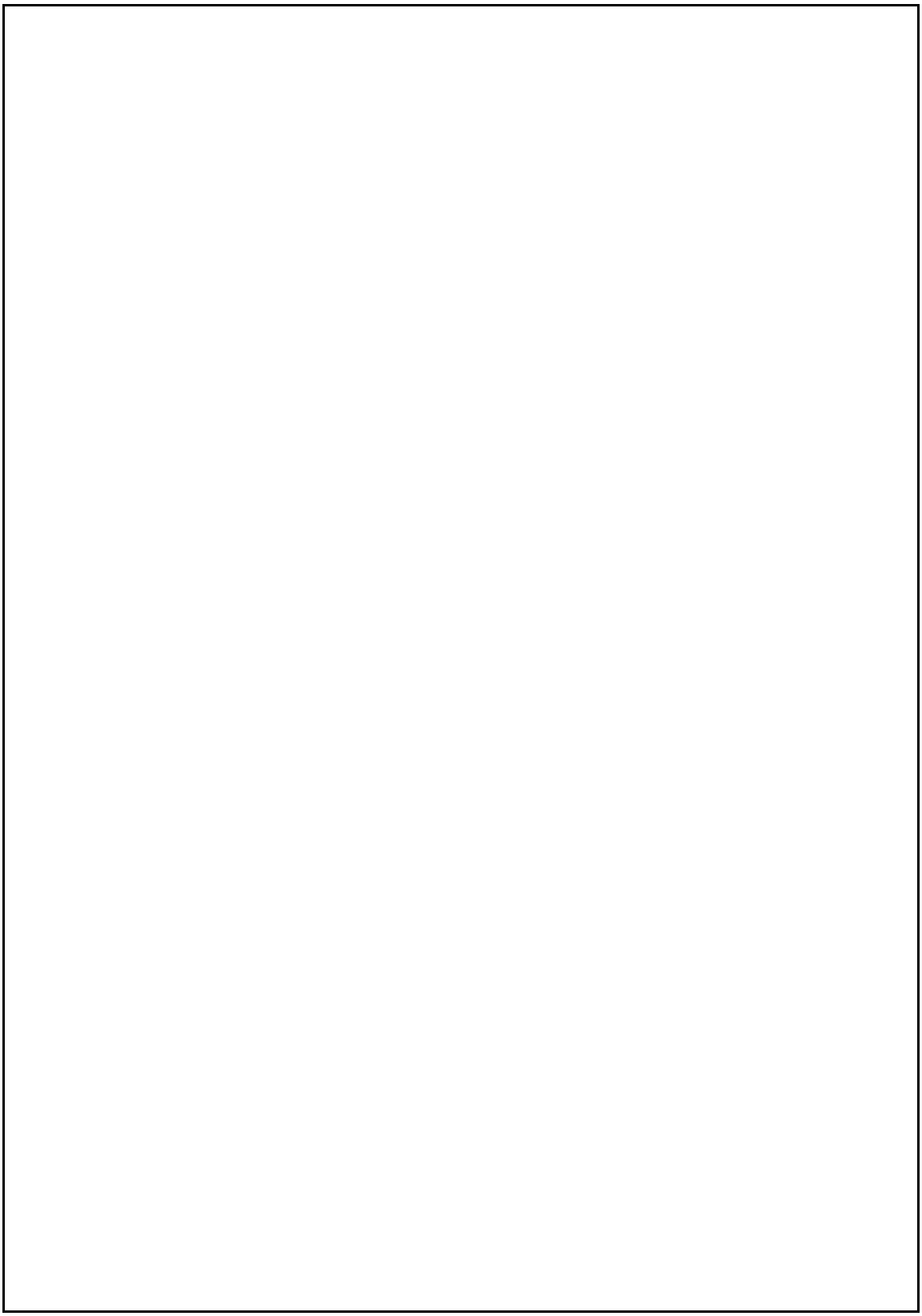
Selectivity

L25	6
L50	7.4
L75	9
Selection factor	

Remarks

Structure by size or age

Structure by size or age



Data source*		OpUnit 2*	ITA 09 E 03 33 - MUT

Time series

Year*						
Catch						
Minimum size						
Average size Lc						
Maximum size						
Fleet						

Year						
Catch						
Minimum size						
Average size Lc						
Maximum size						
Fleet						

Selectivity **Remarks**

L25		
L50		
L75		
Selection factor		

Structure by size or age

Structure by size or age

Data source*		OpUnit 3*	ITA 09 B 9 33 - MUT

Time series

Year*						
Catch						
Minimum size						
Average size Lc						
Maximum size						
Fleet						

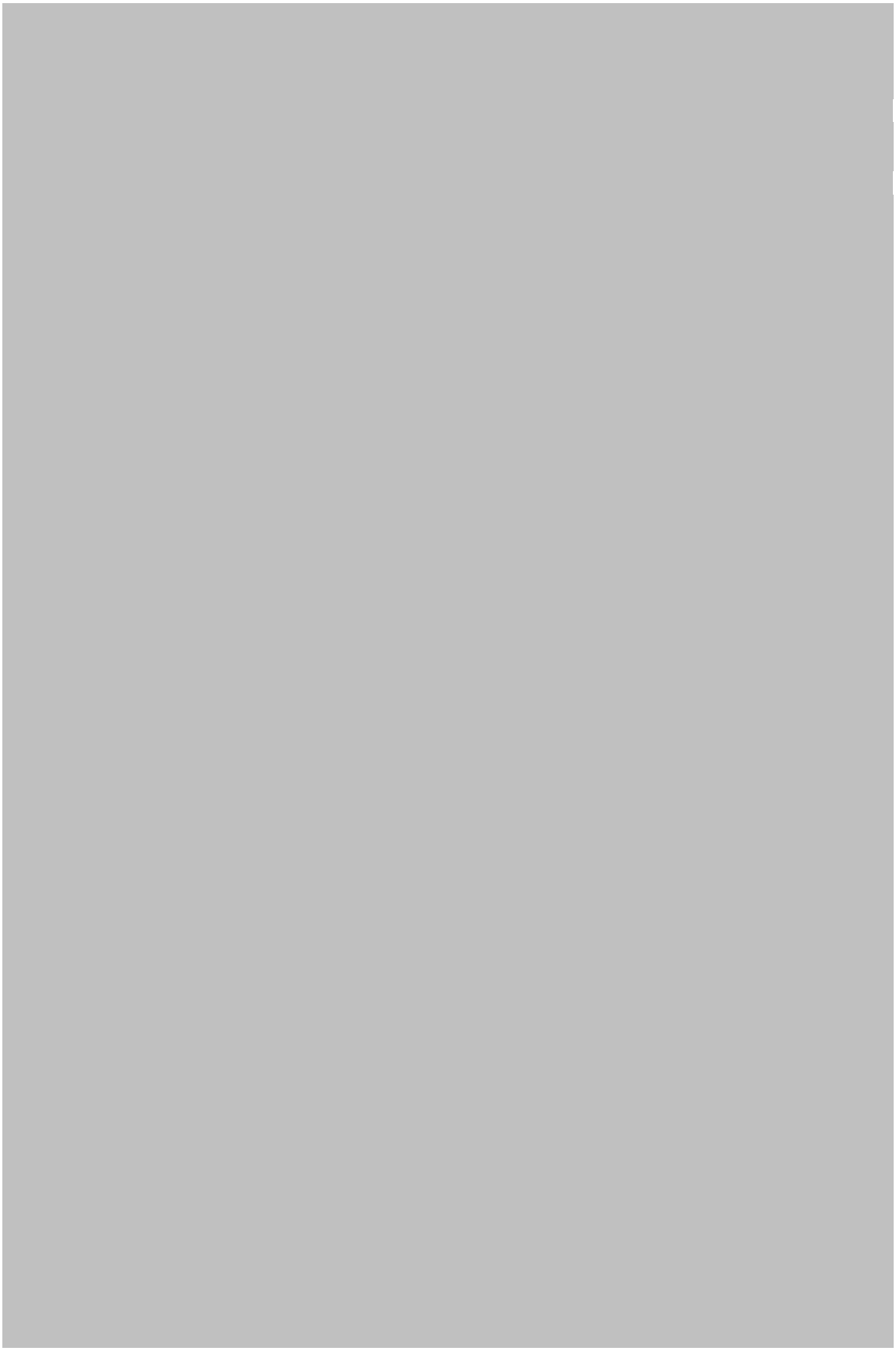
Year						
Catch						
Minimum size						
Average size Lc						
Maximum size						
Fleet						

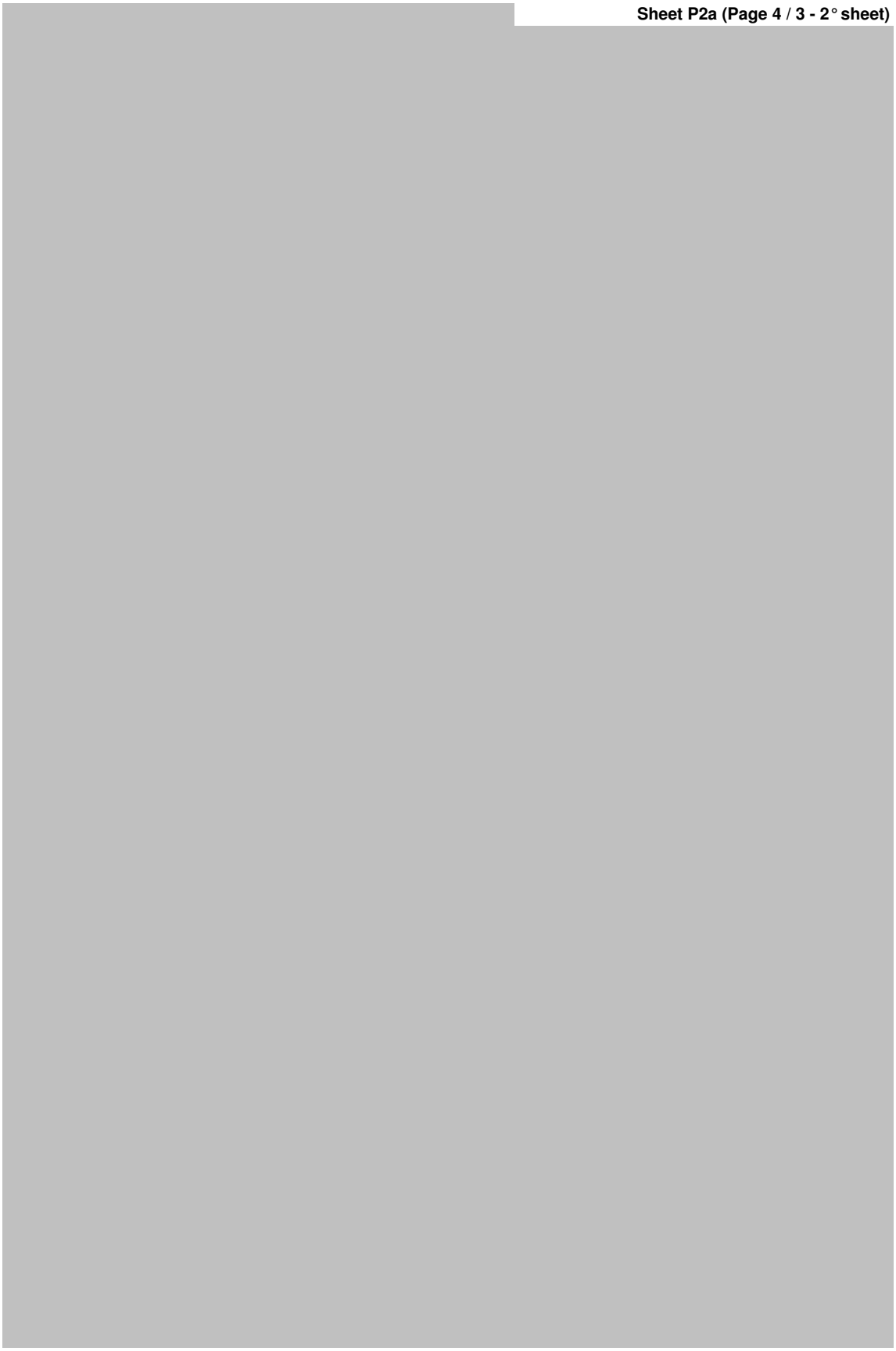
Selectivity **Remarks**

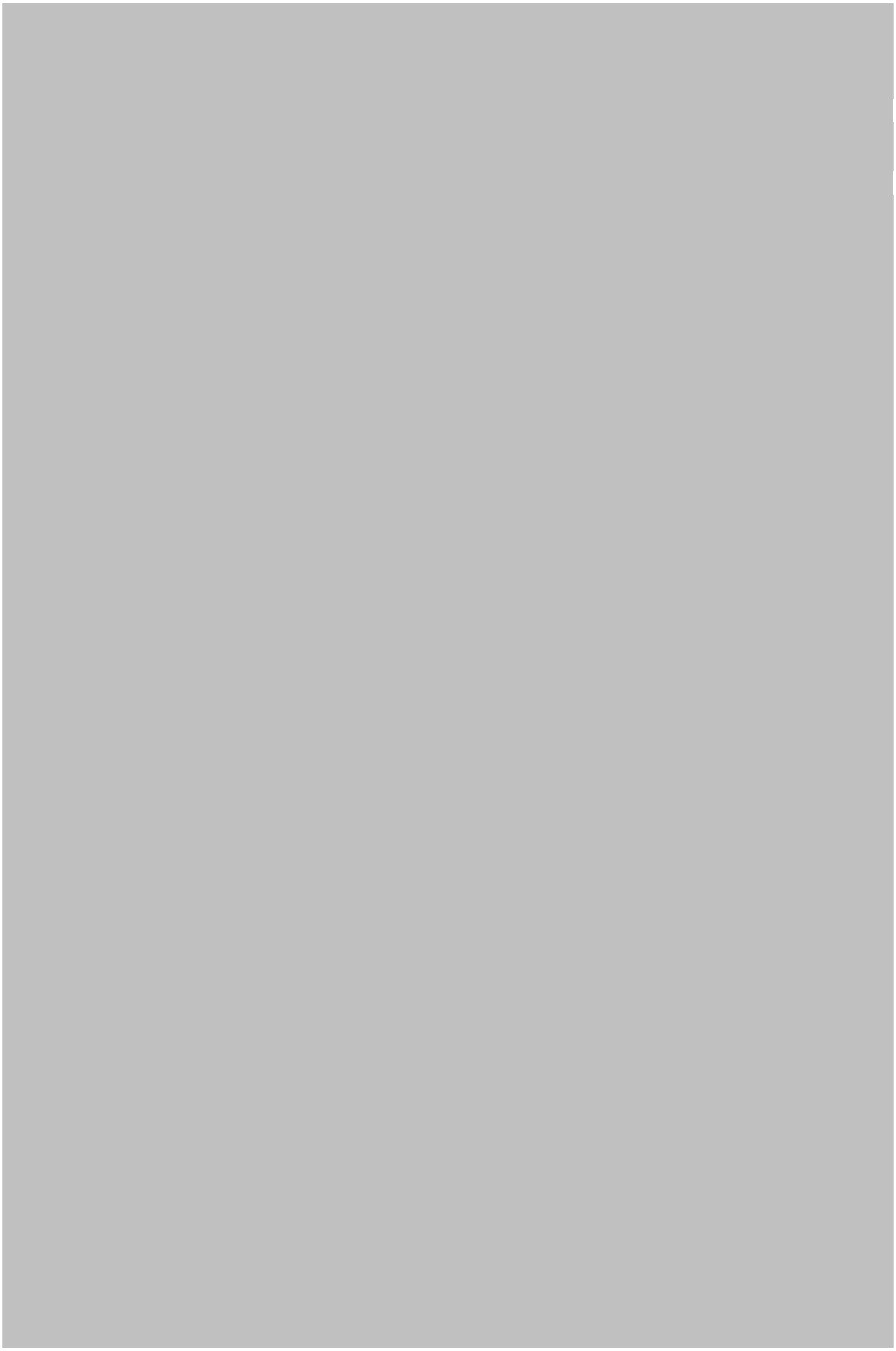
L25		
L50		
L75		
Selection factor		

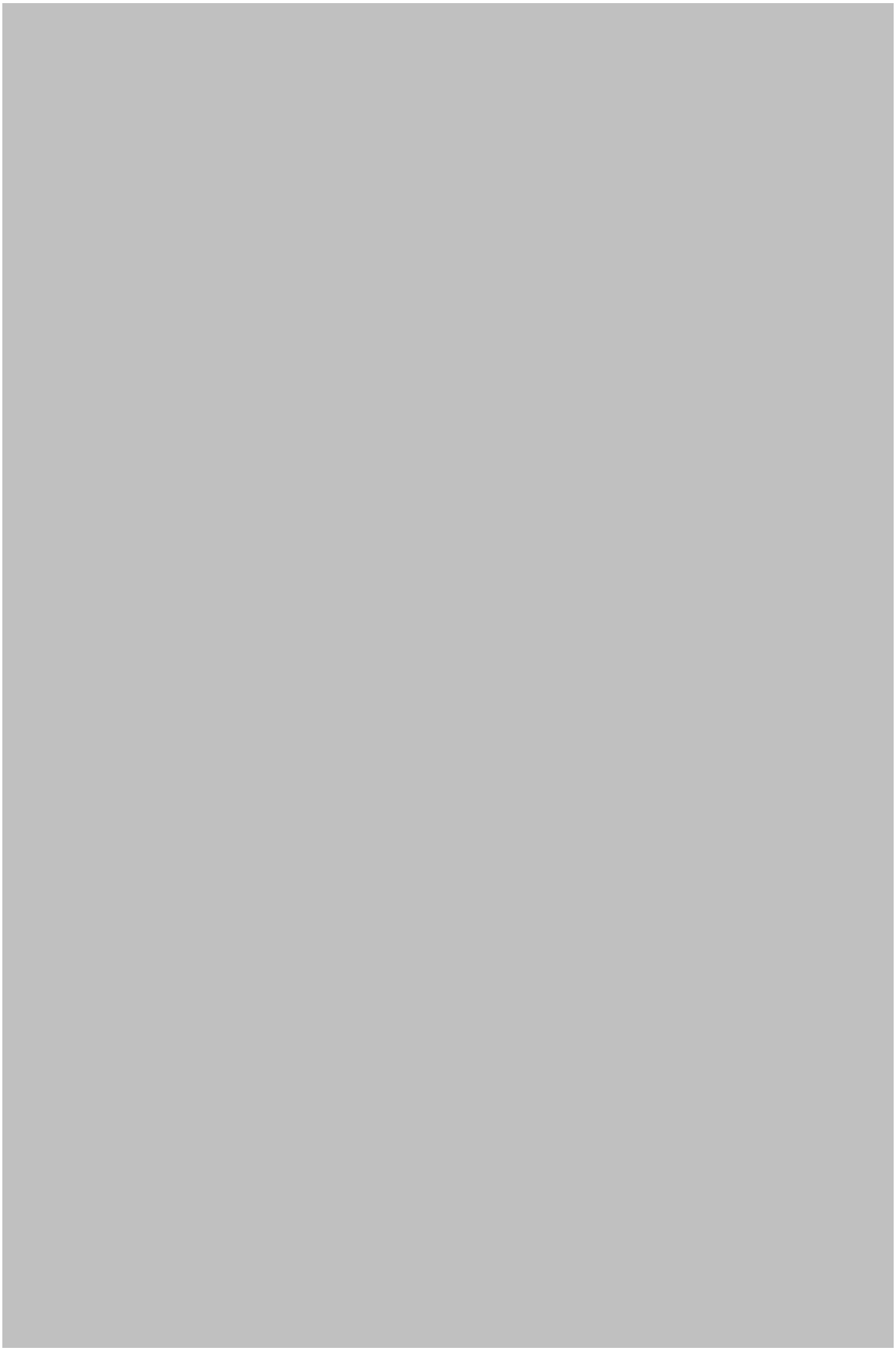
Structure by size or age

Structure by size or age







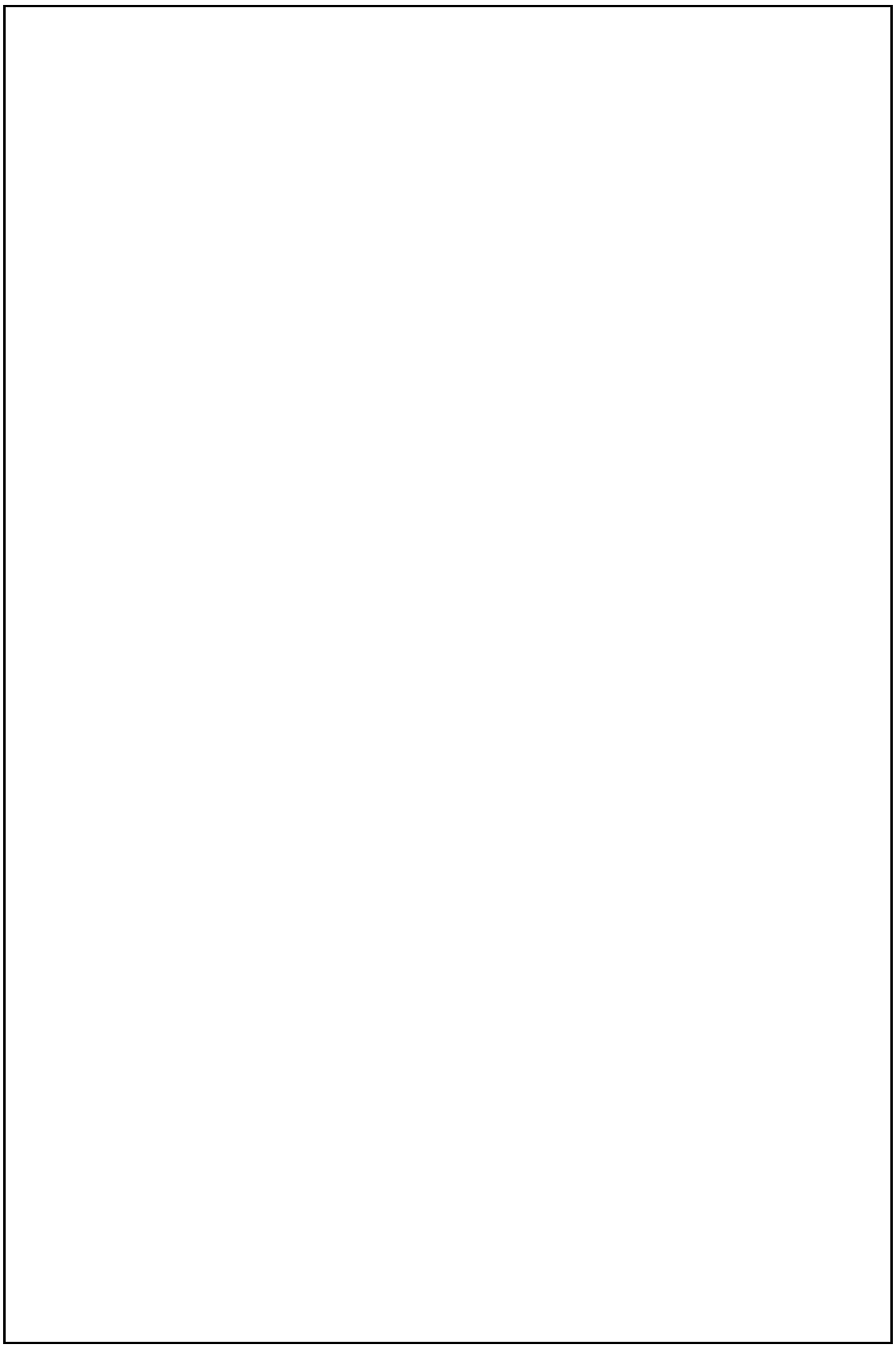


Data source*	Official data	OpUnit 1*	ITA 09 D 03 33 - MUT

Regulations in force and degree of observance of regulations

•Fishing closure for trawling: 45 days in late summer
•12 cm TL as minimum legal landed size
•Legal cod end mesh size 40mm stretched up to June 2010, 40 mm square mesh ir
•Trawling not allowed within three nautical miles from the coast or at depths less tha

Accompanying species



Data source*		OpUnit 2*	ITA 09 E 03 33 - MUT

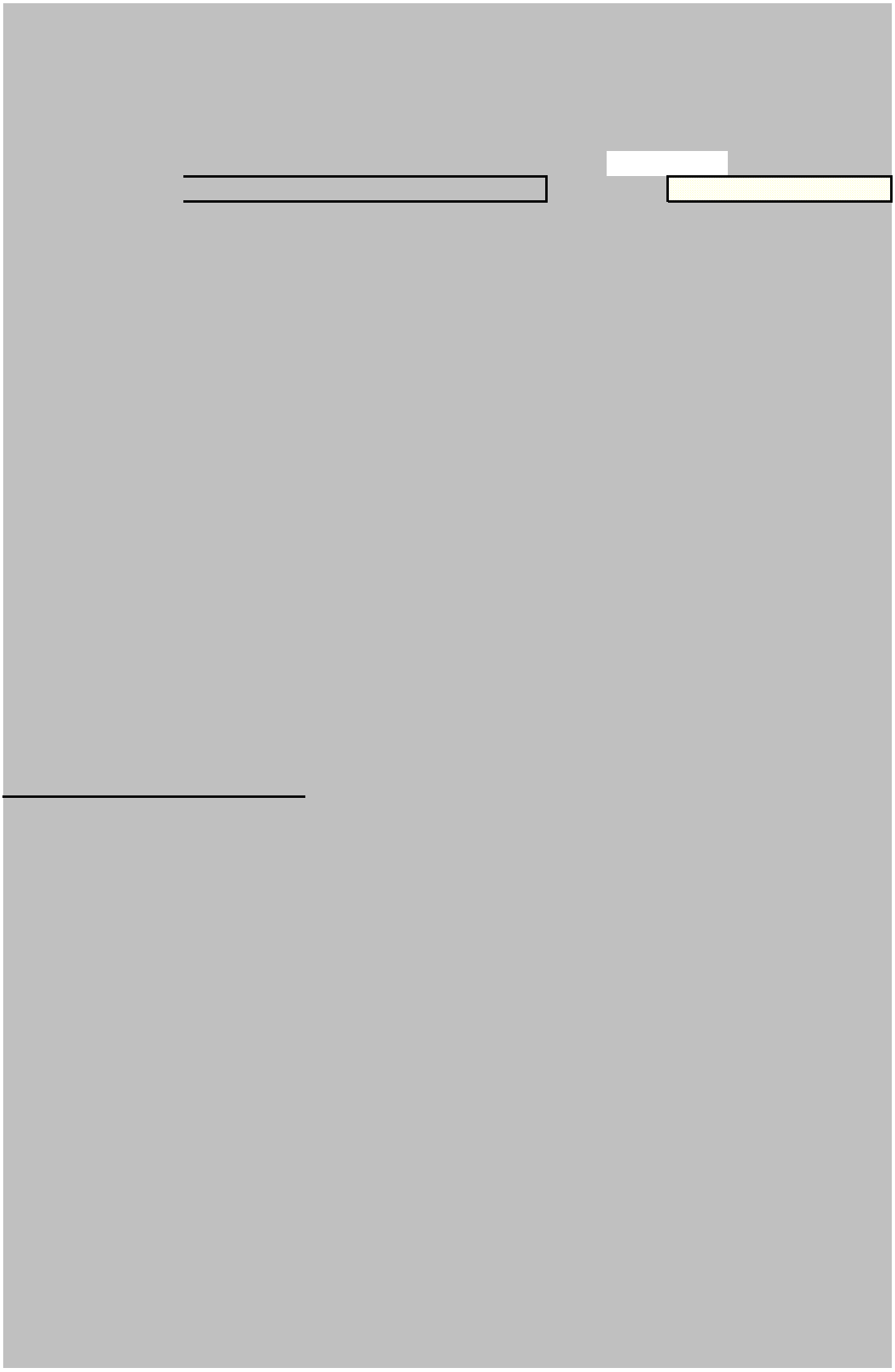
Regulations in force and degree of observance of regulations

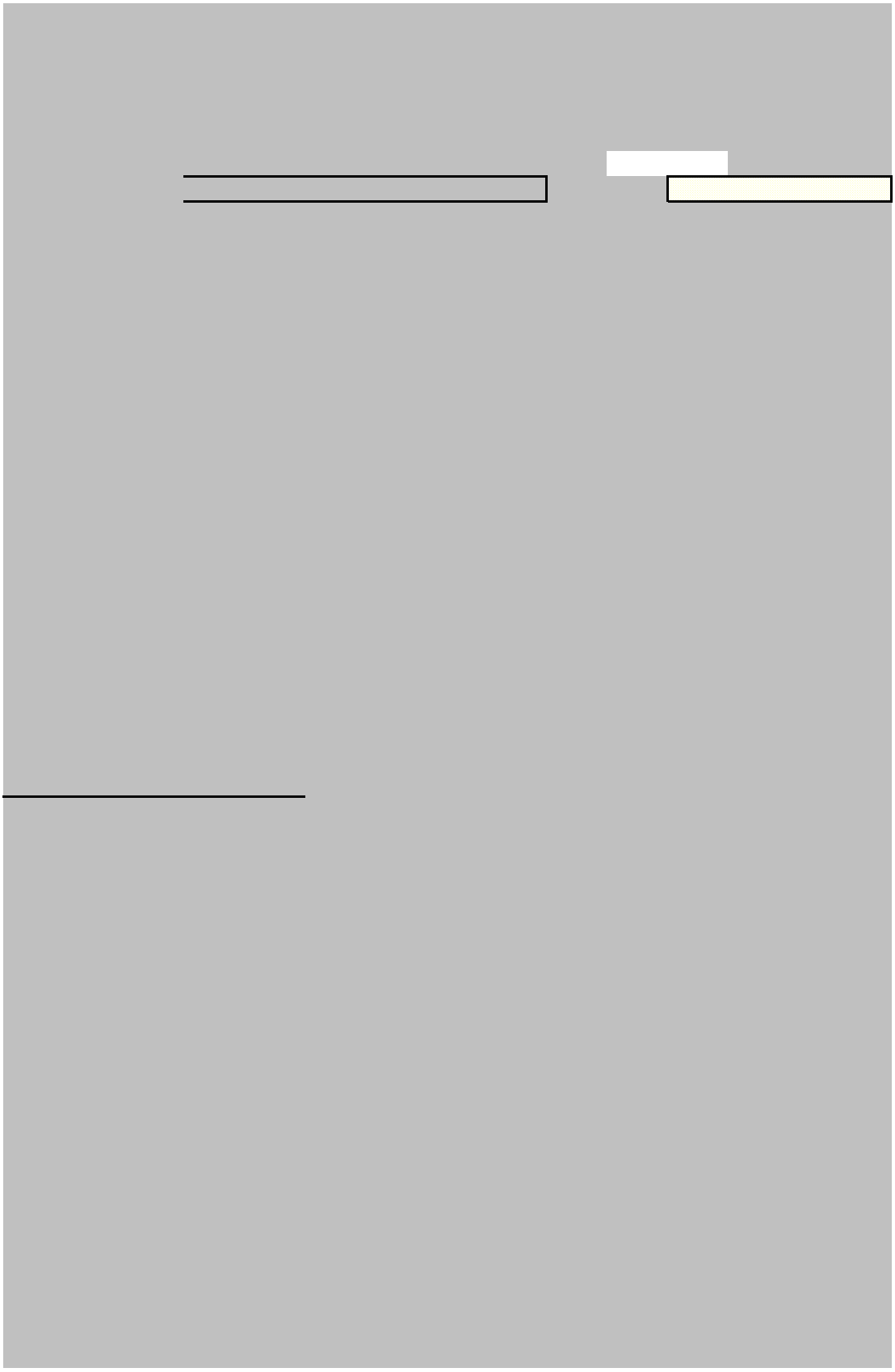
Accompanying species

Data source*		OpUnit 3*	ITA 09 B 9 33 - MUT

Regulations in force and degree of observance of regulations

Accompanying species





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Assessment form

Sheet G
Indirect methods. Global model

Code: MUT0910Abe

Analysis #*	1

Data source*	catch assessment surveys	Gear*	bottom trawl net

Model characteristic

Type of model*	Non-equilibrium Surplus Production Model	Fitting criterion	least squares procedure+ a robust objective function (least absolute
Software	ASPIC 5.3	Bibliographical source	Prager, 2005. ASPIC Manual, NOAA

Data

Year	see comments						
Catch							
Effort							
CPUE							

Year							
Catch							
Effort							
CPUE							

Adjustment

RMS	

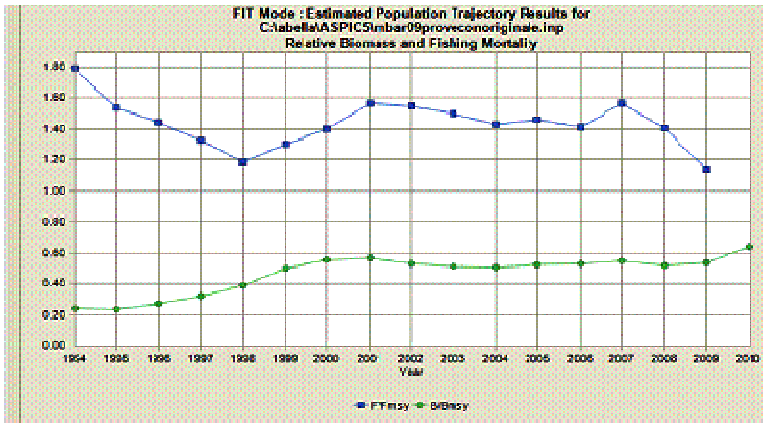
Results

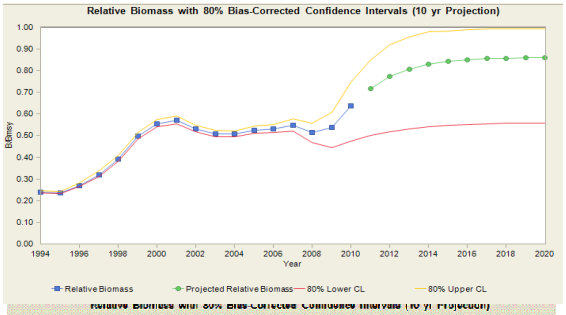
Carryng capacity	796000	a	
Growth rate	1.28	b	
Catchability	0.00009959		
MSY	255300		
EMSY	Fmsy=0.64	TACMSY	
E0.1		TAC0.1	
Ecurrent	Fcurr=0.73		

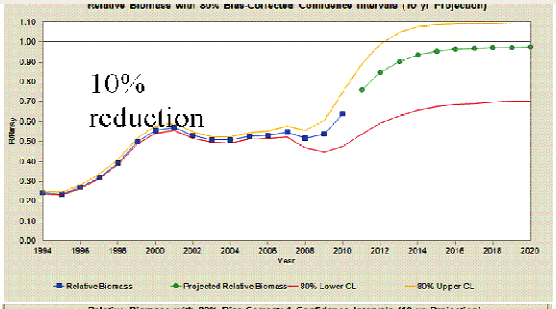
Comments

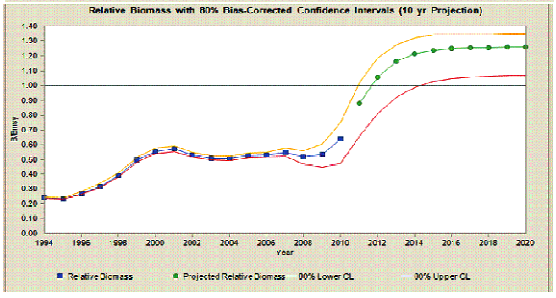
Series 1" Porto Santo Stefano
Catch and Effort
1994 1.92800d03 3.90290d04
1995 2.25000d03 2.73570d04
1996 2.32000d03 3.36430d04
1997 2.13700d03 3.47150d04

Comments









The assessment of the status of the stock derived from the Non-equilibrium Production Model ASPIC suggest that the stock is currently overexploited
(Bcurr/Bmsy Ratio: B (2009-2010) /Bmsy = 0.64)
Fcurr/FMSY is 1.14, suggesting that a reduction of F is occurring for this stock. In the case F is kept constant at current level in a short term is expected Biomass to reach about 90% of BMSY. A reduction of about 10% of F should drive B to BMSY and a reduction of about 20% will drive B/BMSY at 1.2

SAC GFCM - Sub-Committee on Stock Assessment (SCSA)	
Assessment form	**Sheet G** **Indirect methods. Global model**

Code: MUT0910Abe

Analysis #*	

Data source*		Gear*	

Model characteristic

Type of model*		Fitting criterion	
Software		Bibliographical source	

Data

Year							
Catch							
Effort							
CPUE							

Year							
Catch							
Effort							
CPUE							

Adjustment

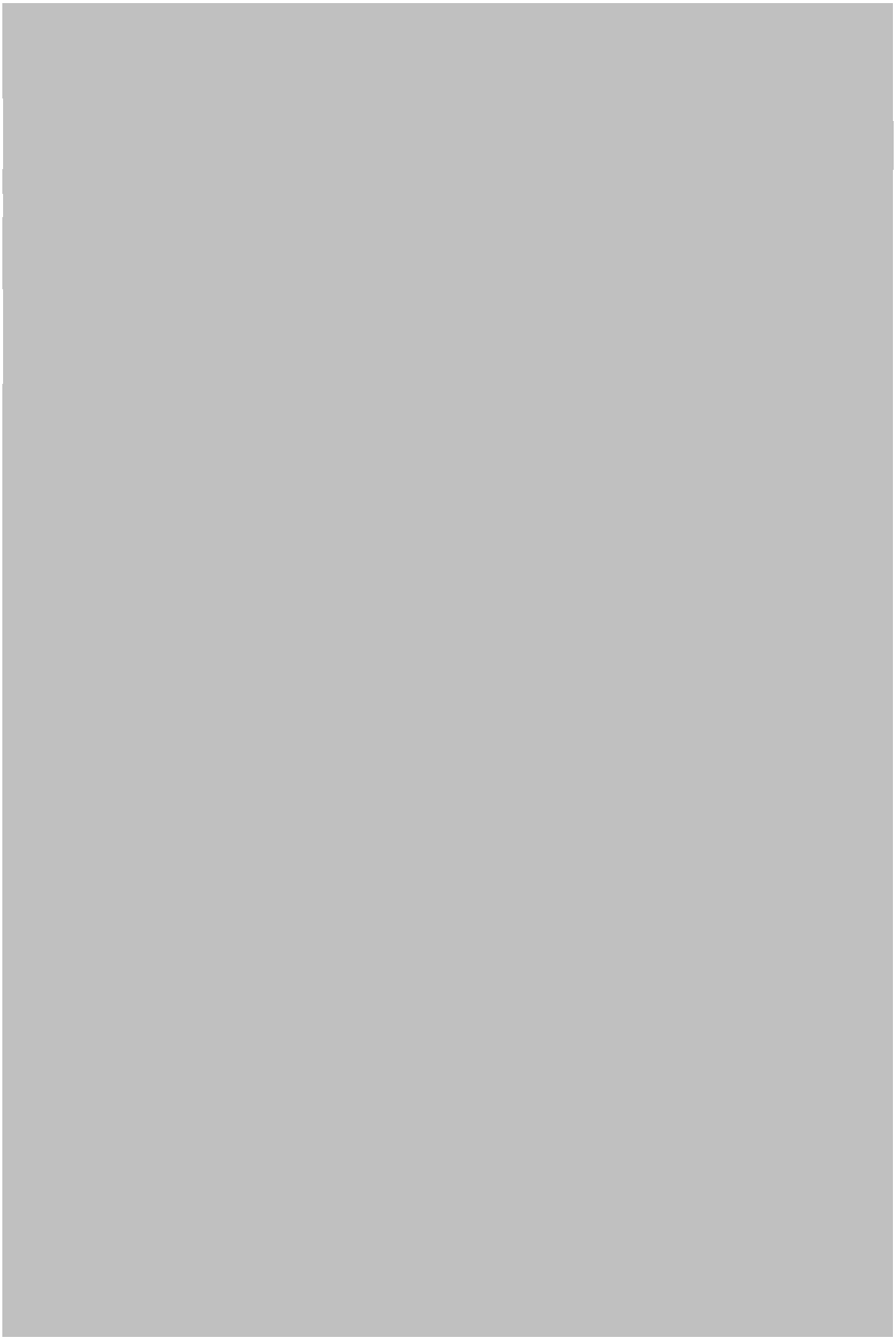
RMS	

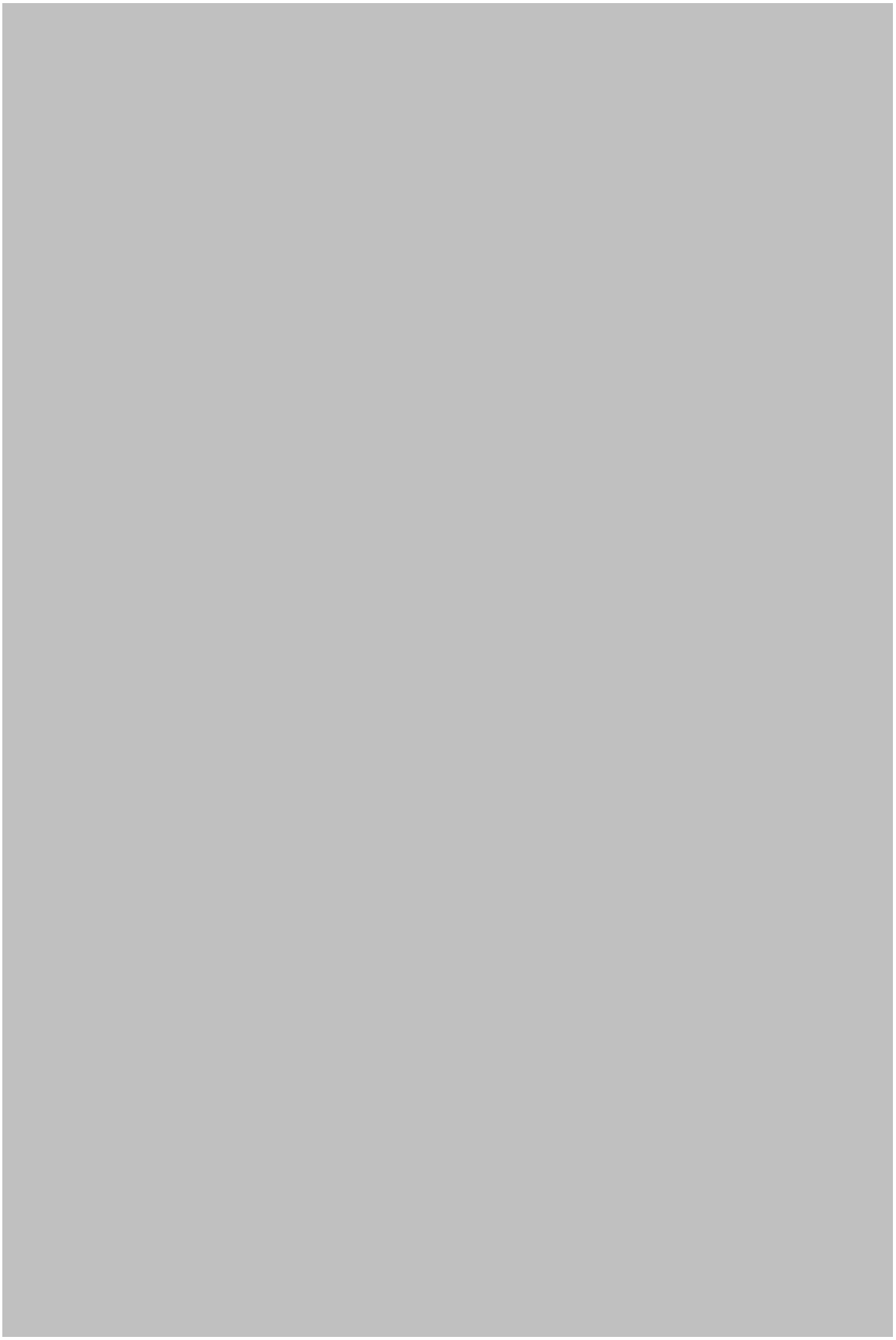
Results

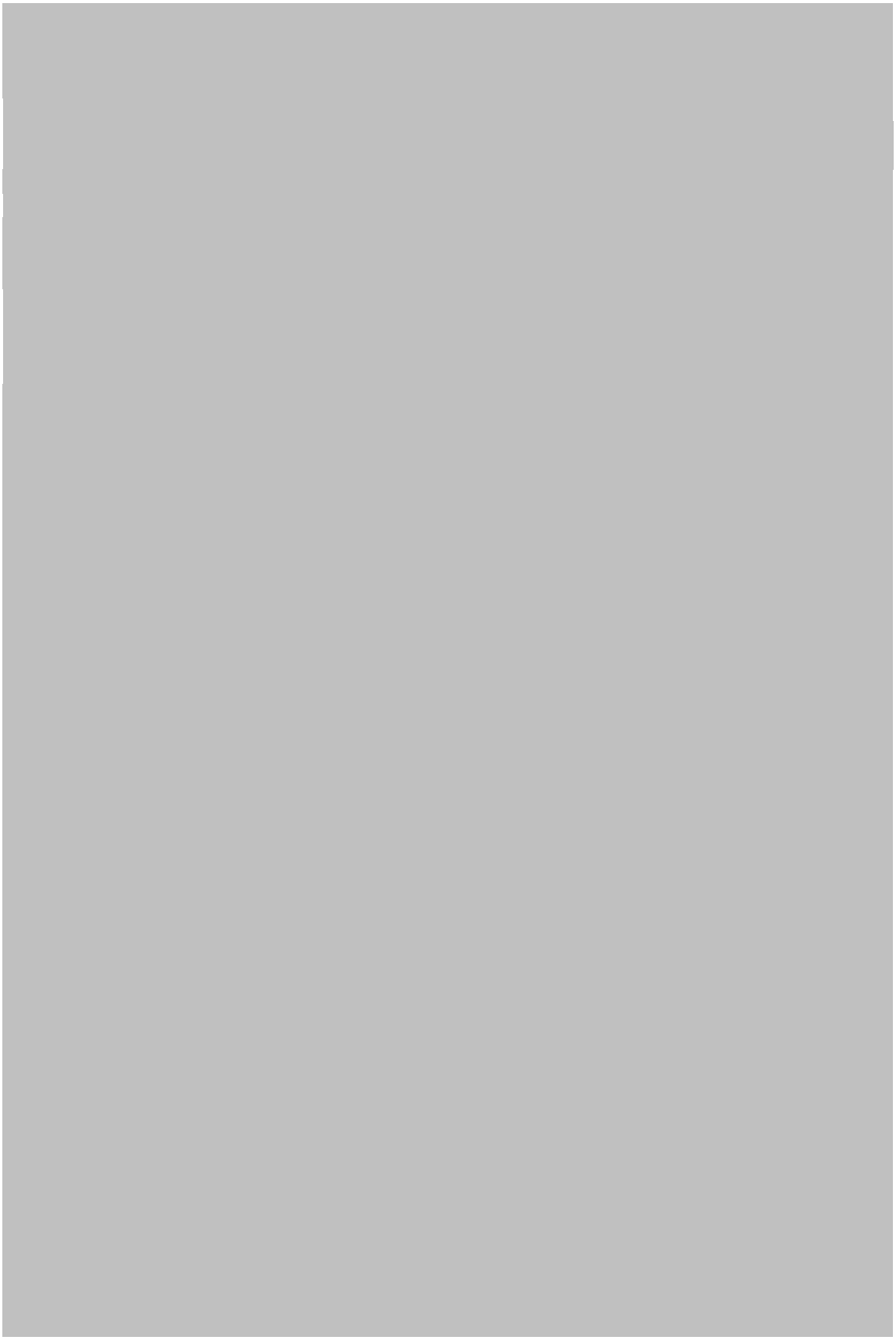
Carryng capacity		a	
Growth rate		b	
Catchability			
MSY			
EMSY		TACMSY	
E0.1		TAC0.1	
Ecurrent			

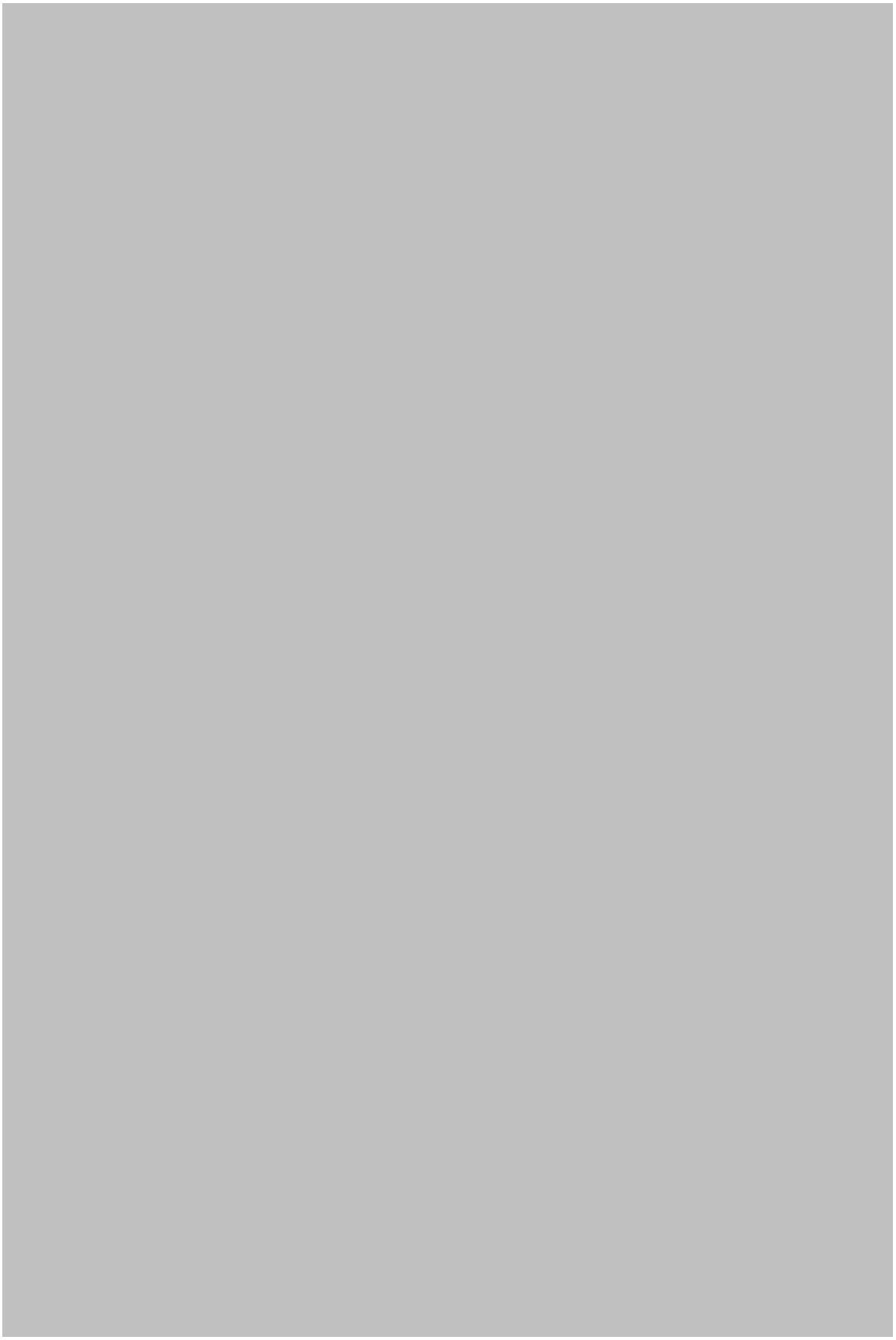
Comments

Comments









SAC GFCM - Sub-Committee on Stock Assessment (SCSA)	
Assessment form	**Sheet Y** **Indirect methods: Y/R**

Code: MUT0910Abe

Sex	M+F

Analysis #	1

# of gears	1	Software	Yield (FAO Package FAO Fish.Tech.Pap.487

Parameters used

Vector F	0-3
Vector M	0.8 (weighted average value)
Vector N	

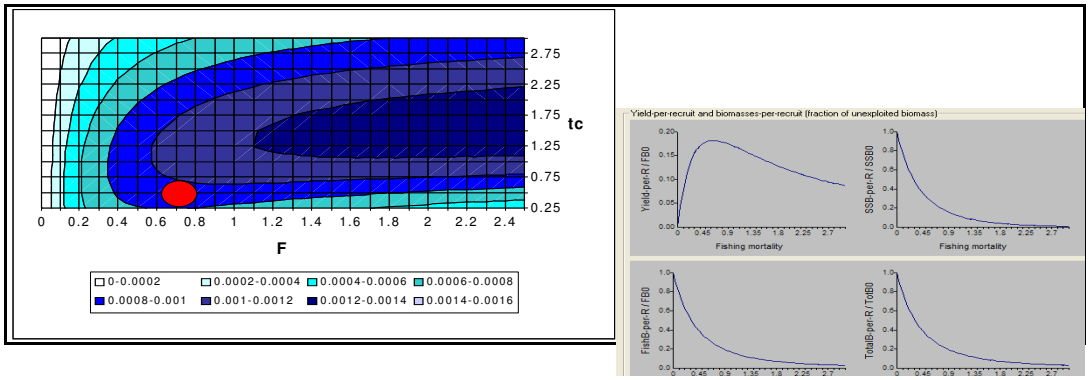
Model characteristics

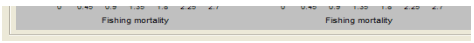
The models allows estimating Y/R, B/R and some Reference Points as F0.1
Data requested: growth parameters, L/W relationship, an estimate of M, age of first capture

Results

	Total	Gear			
Current YR					
Maximum Y/R					
Y/R 0.1					
F_{max}	0.63				
$F_{0.1}$	0.49				
Current B/R					
Maximum B/R					
B/R 0.1					

Comments





Comments

SAC GFCM - Sub-Committee on Stock Assessment (SCSA)	
Assessment form	**Sheet D Diagnosis**

Code: MUT0910Abe

Reference points

Criterion	Current value	Units	Reference Point	Trend	Comments
B				+	Biomass is approaching Bmsy
SSB				+	
F			Fmsy	-	F is decreasing and approaching Fmsy
Y					
CPUE				+	cpue's are increasing

Stock Status* Use one (or both) of the following two systems for the stock assessment status description

Unidimensional

☐	? - (or blank) Not known or uncertain. Not much information is available to make a judgment;
☐	U - Underexploited, undeveloped or new fishery. Believed to have a significant potential for expansion in total production;
☐	M - Moderately exploited, exploited with a low level of fishing effort. Believed to have some limited potential for expansion in total production;
☐	F - Fully exploited. The fishery is operating at or close to an optimal yield level, with no expected room for further expansion;
☉	O - Overexploited. The fishery is being exploited at above a level which is believed to be sustainable in the long term, with no potential room for further expansion and a higher risk of stock depletion/collapse;
☐	D - Depleted. Catches are well below historical levels, irrespective of the amount of fishing effort exerted;
☐	R - Recovering. Catches are again increasing after having been depleted or a collapse from a previous;

Bidimensional

Exploitation rate

☐	No or low fishing
☐	Moderate fishing
☉	High fishing mortality
☐	Uncertain / Not assessed

Stock abundance

☐	Virgin or high abundance
☉	Intermediate abundance
☐	Low abundance

☐	Depleted
☐	Uncertain / Not assessed

Comments

Code: MUT0910Abe

Management advice and recommendations*

The species is considered overexploited. The current F was estimated with ASPIC to be of 0.73. The value of the Reference Point Fmsy resulted to be 0.64. An overexploitation status is assumed and it is advisable a reduction of fishing mortality of about 12%. Simulations suggest that with such reduction, the Biomass will reach the level of Bmsy in a medium term.
It is advisable to reduce the fishing pressure on the individuals of small size, concentrated near the shore in late sSummer-Autumn. Such change in the fishing pattern is expcted to improve Y/R.

Advice for scientific research*

Abstract for SCSA reporting

Authors Abella A., Sartor P., Colloca F, Mannini A.

Year 2010

Species Scientific name Mullus barbatus - MUT

Source: GFCM Priority Species

Source: -

Source: -

Geographical Sub-Area 09 - Ligurian and North Tirrenian Sea

Fisheries (brief description of the fishery)*

Source of management advice*

(brief description of material -data- and methods used for the assessment)

Stock Status*

O - Overexploited. The fishery is being exploited at above a level which is believed to be sustainable in the long term, with no potential room for further expansion and a higher risk of stock depletion/collapse;

Exploitation rate

High fishing mortality

Stock abundance

Intermediate abundance

Comments

Management advice and recommendations*

The species is considered overexploited. The current F was estimated with ASPIC to be of 0.73. The value of the Reference Point Fmsy resulted to be 0.64. An overexploitation status is assumed and it is advisable a reduction of fishing mortality of about 12%. Simulations suggest that with such reduction, the Biomass will reach the level of Bmsy in a medium term.
It is advisable to reduce the fishing pressure on the individuals of small size, concentrated near the shore in late sSummer-Autumn. Such change in the fishing pattern is expcted to improve Y/R.

Advice for scientific research*