



GENERAL FISHERIES COMMISSION FOR
THE MEDITERRANEAN
COMMISSION GÉNÉRALE DES PÊCHES
POUR LA MÉDITERRANÉE



SAC GFCM
Sub-Committee on Stock Assessment

SCSA Assessment Forms

> Enter <



Tool designer (GFCM consultant)	Federico De Rossi
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SAC GFCM - Sub-Committee on Stock Assessment (SCSA)

PLEASE READ CAREFULLY BEFORE STARTING THE DATA ENTRY

Macro - Security settings

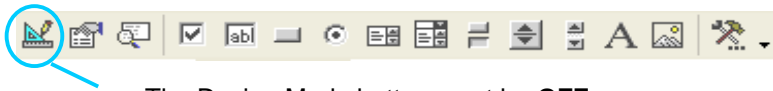
In order to ensure the proper full working of this Data Entry System, **the macros must be allowed to run.**

To change the security settings, please go to: **Tools > Macro > Security** and then select the **Medium** level. Close and re-open the file.

Now you are ready to start by clicking on the Cover button!

Control toolbox settings

To visualize the **Control toolbox** go to: **View > Toolbars > Control toolbox**



The Design Mode button must be **OFF**.

WARNINGS



Please do not try to **Delete, Rename, Move** or **Copy** any Excel Worksheets.



Right now it is not possible to **Print** the completed worksheets only.



Once the data entry process is completed, the **file size** will be increased significantly. Before sending it by email, please compress the file by using any zip tool available in your pc.


Colours and symbols meaning

WORKSHEETS

Green ► Not compulsory sheet


Orange ► Compulsory sheet

Red ►  Not completed sheet


Bright green ►  Completed sheet

CELLS

Black asterisk ► * Compulsory sheet/field

Turquoise ►  Compulsory field not yet completed

White ►  Free cell

Light green ►  Cell with the scroll-down menu

Light yellow ►  Auto-complete cell

Excel shortcuts

Ctrl + C Copy

Ctrl + V Paste

Ctrl + X Cut
Ctrl + Z Undo
Ctrl + P Print
Alt + Enter Line break within a cell

For more detailed information about Excel shortcut and function keys, please refer to the Microsoft website. > [CLICK HERE](#) <

SAC GFCM
Sub-Committee on Stock Assessment

SCSA Assessment Forms Release 2 (2007) beta version

Since the SAC, and SCSA, inception (1999) a set of assessment forms were made available to scientists in order to provide a common framework to present assessments.

It has been decided to present a new release of these forms to facilitate their use. We took advantage of these upgrade to modify and amend some aspects. We would like to receive comments and suggestions from the users in order to improve the forms.

The structure of this new release is basically the same. The differences are:

- Migration from Word to Excel
- Some fields (yellow) are filled automatically
- Some sheets have been added
 - o A cover sheet with title, authors, species and GSAs
 - o A new sheet "other" allowing to include assessments based on methodologies other than the usual ones.
 - o An abstract sheet to be included (copy/paste) in the SCSA report
- It is more clear what sheets or fields are compulsory to fill
- The sheets for direct methods have not been yet upgraded

Excerpts from the presentation of 1st version of the assessment forms (1999), however the sheet "other" can be used in such a case

Each assessment consists of several sheets. Each assessment will take, at least, one sheet of paper numbered "0" (Sheet #0) and will also include no less than one copy of sheets "B", "P1" and "P2a" (now using the current "operational units" terminology). It is not compulsory to fill out any of the other sheets that make up this assessment form, but the person in charge is supposed to fill out some of them: otherwise no assessment is actually made. There may be more than one copy in several cases. Sheets "D" (diagnosis) and "Z" (conclusions and recommendations) should be considered as essential too.

Sheet	Title	Contents	# of sheets	Priority
0	Preliminary basic data on the assessment	Species, person in charge, date and code. All the sheets that belong to the same assessment share this code.	1	Indispensable
B	Biology of the species	Biological parameters used in the analyses (it is assumed that only one set of parameters is used).	1	Indispensable
P1	General information about the fishery	Catches by gear and associated fleet.	1 or more	Indispensable
P2a	Fishery by Operational Unit	Time series for the operational in question, including structure by size (or age).	At least as many as the OU numbers	Indispensable
P2b	Fishery by Operational Unit	Accompanying species and regulations applicable to operational unit.	At least as many as the OU numbers	If available
G	Indirect methods: global model	Description of model, data, parameters and results of each analysis.	As many as used in the analysis	If available
A1	Indirect methods: VPA, LCA	Description of model used and of general results of an analysis.	As many as used in the analysis	If available
A2	Indirect methods: data	Description of data used by gear for the analysis in A1.	As many as used in the analysis by OU	If available, requires A1
A3	Indirect methods: results of VPA	Detailed description of results by gear, structured by size or age.	As many as used in the analysis by OU	If available, requires A1
Y	Indirect methods: Y/R	Description of model, data, parameters and results.	As many as used in the analysis	If available
Other	Other assessment methods	Description of model, data, parameters and results of other assessment methods not included in the previous sheets.	1	If available
D	Diagnosis	Synthesis of results of analyses and diagnosis on the state of resources.	1	Indispensable
Z	Objectives and recommendations	Set the objectives to be attained and recommendations for their attainment.	1	Indispensable

C	Comments	At the option of the person in charge.	Unspecified	If available
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SAC GFCM Sub-Committee on Stock Assessment

Date*

14	July	2008
----	------	------

 Code*

MUT0508Que

Authors*

Quetglas A., Ordines F., Ruíz S., Moranta J.
--

Affiliation*

IEO-Centre Oceanogràfic de Balears

Species Scientific name* **1**
Source: GFCM Priority Species

2
Source: -

3
Source: -

Geographical area*

Mallorca

Geographical Sub-Area (GSA)*

05 - Balearic Island

Combination of GSAs

1	
2	
3	

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

Assessment form

Sheet #0

Basic data on the assessment

Code: MUT0508Que

Date*	14	Jul	2008	Authors*	Quetglas A., Ordines F., Ruíz S., Moranta J.
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Species Scientific name*	Mullus barbatus - MUT	Species common name*	Red mullet
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Data Source

GSA*	05 - Balearic Island	Period of time*	2000-2007
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Description of the analysis

Type of data*	Size composition of commercial catches, official landings, CPUE from survey and commercial fleet	Data source*	IEO, Fishermen Association, Autonomous Government, Ministry of Fisheries
Method of assessment*	Tuned cohort analysis (XSA), pseudocohort analysis and yield per recruit analysis	Software used*	Lowestoft (Darby and Flatman, 1994), VIT (Leonart and Salat, 1997)

Sheets filled out

B	P1	P2a	P2b	G	A1	A2	A3	Y	Other	D	Z	C
1	1	#REF!	#REF!	#REF!	#REF!	1	#REF!	1	#REF!	1	1	#REF!

Comments, bibliography, etc.

Abella, A., Caddy, J.F., Serena, F. (1997). Do natural mortality and availability decline with age? An alternative yield paradigm for juvenile fisheries, illustrated by the hake *Merluccius merluccius* fishery in the Mediterranean. *Aquat. Liv. Res.*, 10: 257–269.

Astudillo A. y J.F. Caddy (1986) Periodicidad de los desembarcos de merluza (*Merluccius merluccius*) y salmonete (*Mullus sp. sp.*) en la Isla de Mallorca. *Int. Symp. Long Term Changes Mar Fish Pop.*, Vigo: 221–233.

Caddy, J.F. (1991). Death rates and time intervals: is there an alternative to the constant natural mortality axiom? *Rev. Fish. Biol. Fish.*, 2: 109–138.

Darby, C.D. and Flatman, S., (1994). *Virtual Population Análisis: version 3.1 (Windows/DOS) user guide*. Info. Tech. Ser., MAFF Direct. Fish. Res., Lowestoft, nº 1, 85 pp.

Jardim, E. and Azevedo, M. (2004). *FLeda - an R package for fisheries exploratory data analysis, version 0.0-2*.

Leonart J. and J. Salat (1997) *VIT: Software for fishery analysis. User's manual*. FAO Computerized Information Series (Fisheries). Nº 11. Rome, FAO, 105 pp.

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

Assessment form

Sheet B
Biology of the species

Code: MUT0508Que

Biology

Somatic magnitude measured (LH, LC, etc)*				Total length	Units*	cm
Sex	Fem	Mal	Both	Unsexed		
Maximum size observed				28.7(1)	Reproduction season	May-July
Size at first maturity				12.2(2)	Reproduction areas	Continental shelf(4)
Recruitment size				7.8(3)	Nursery areas	Continental

Parameters used (state units and information sources)

		Units	Sex			
			female	male	both	unsexed
Growth model	L_{∞}	26(5)				
	K	0,41				
	t0	-0,4				
	Data source					
Length weight relationship	a	0,00624				
	b	3,1597				
	M	0.4 (6)				
	sex ratio (mal/fem)					

Comments

- (1) Size composition of trawl catches in GSA01.
- (2) From the Spanish DCR National Programme
- (3) García-Rodríguez M. and Fernández A.M .2005. Influencia de la geometría de la malla del copo en las captura,selectividad y rendimientos de algunas especies de peces comerciales en el Golfo de Alicante (SE de la península Ibérica). Inf.Tec.Ins.Esp.Oceanogr. 185.
- (4) Lombarte A., L. Recasens, M. González and L. Gil de Sola (2000) Spatial segregation of two species of Mullidae (Mullus surmuletus and M. barbatus) in relation to habitat. Mar. Ecol. Prog. Ser., 206: 239-249.
- (5) Set of growth parameters adopted in the SGMED-08-03 meeting.
- (6) Vector of M at age, calculated from Caddy (1991) equation using the PROBIOM Excel spreadsheet (Abella et al., 1997):
- | | |
|------|-----|
| Age | M |
| 0 | 0.8 |
| 1 | 0.5 |
| 2 | 0.3 |
| 3 | 0.3 |
| 4 | 0.3 |
| 5 | 0.2 |
| Mean | 0.4 |

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

Assessment form

Sheet P1

General information about the fishery

Code: MUT0508Que

Data source*	Size composition of trawl catches: IEO and Spanish National Data Collection Programme; official landings: Fishermen Assotiation and Regional Government; fleet: Ministry of Fisheries	Year (s)*	2000-2007
Data aggregation (by year, average figures between years, etc.)*	By year for XSA and average 2000-2007 for pseudocohort and Y/R analysis		

Fleet and catches (please state units)

	Country	GSA	Fleet Segment	Fishing Gear Class	Group of Target Species	Species
Operational Unit 1*	ESP	05	E - Trawl (12-24 metres)	03 - Trawls	33 - Demersal shelf species	MUT
Operational Unit 2						
Operational Unit 3						
Operational Unit 4						
Operational Unit 5						

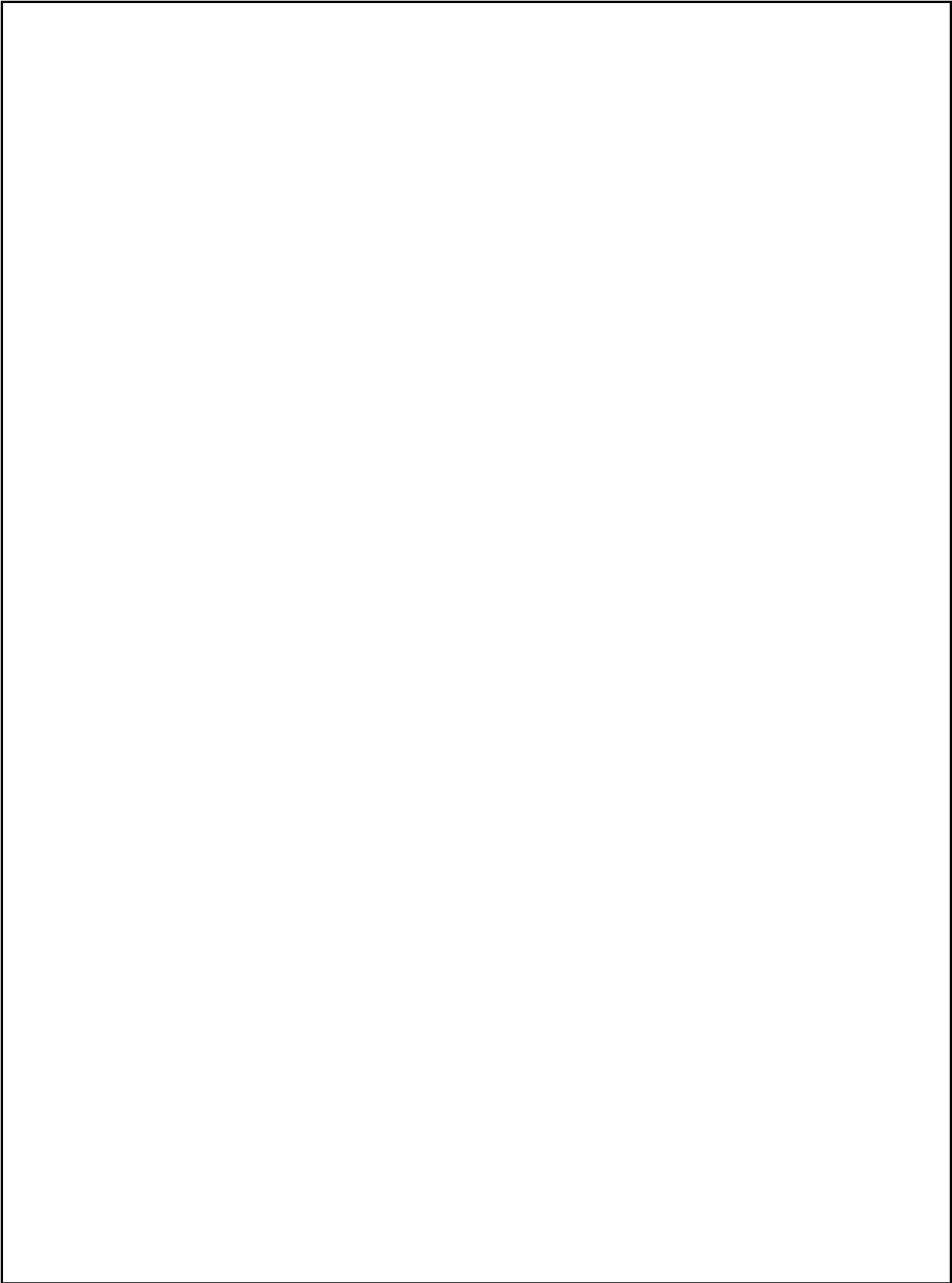
Operational Units*	Fleet (n° of boats)*	Kilos or Tons	Catch (species assessed)	Other species caught	Discards (species assessed)	Discards (other species caught)	Effort units
ESP 05 E 03 33 - MUT	38	Tons	16,6	See sheet P2b	No(3)		days
Total	38		16,6				

Legal minimum size	11 cm total length
--------------------	--------------------

Comments

- (1) Fleets (n° of boats) refers to: 1) the average number of trawlers in Mallorca during 2000-2007.
- (2) Catch is the average landings of Mallorca during the period 2000–2007.
- (3) Carbonell (1997).

Comments

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

Assessment form

Sheet P2a
Fishery by Operational Unit

Code: MUT0508Que

#REF!

Data source*	IEO: size composition of trawl catches; Official landings: Autonomous Government	OpUnit 1*	ESP 05 E 03 33 - MUT
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Time series

Year*	2000	2001	2002	2003	2004	2005
Catch	27,8	22,3	14,4	10,5	20,3	12,7
Minimum size	8	9	8	7	9	7
Average size Lc	15,0	16,1	16,2	15,2	16,1	15,4
Maximum size	22	26	23	25	23	25
Fleet	41	39	39	37	37	37

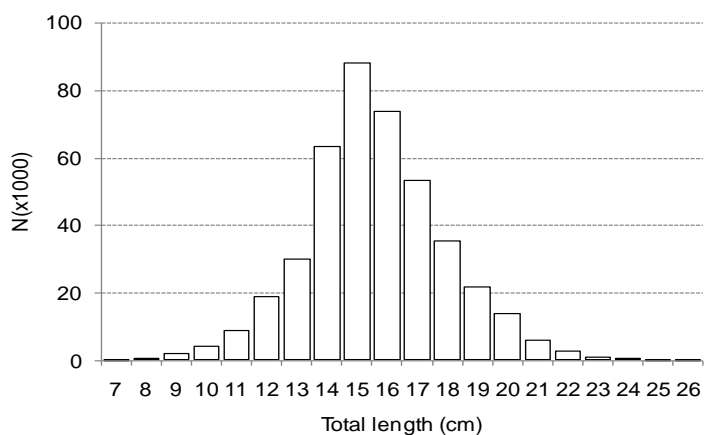
Year	2006	2007				
Catch	11,3	13,7				
Minimum size	7	9				
Average size Lc	15,6	15,7				
Maximum size	26	26				
Fleet	36	36				

Selectivity

Remarks

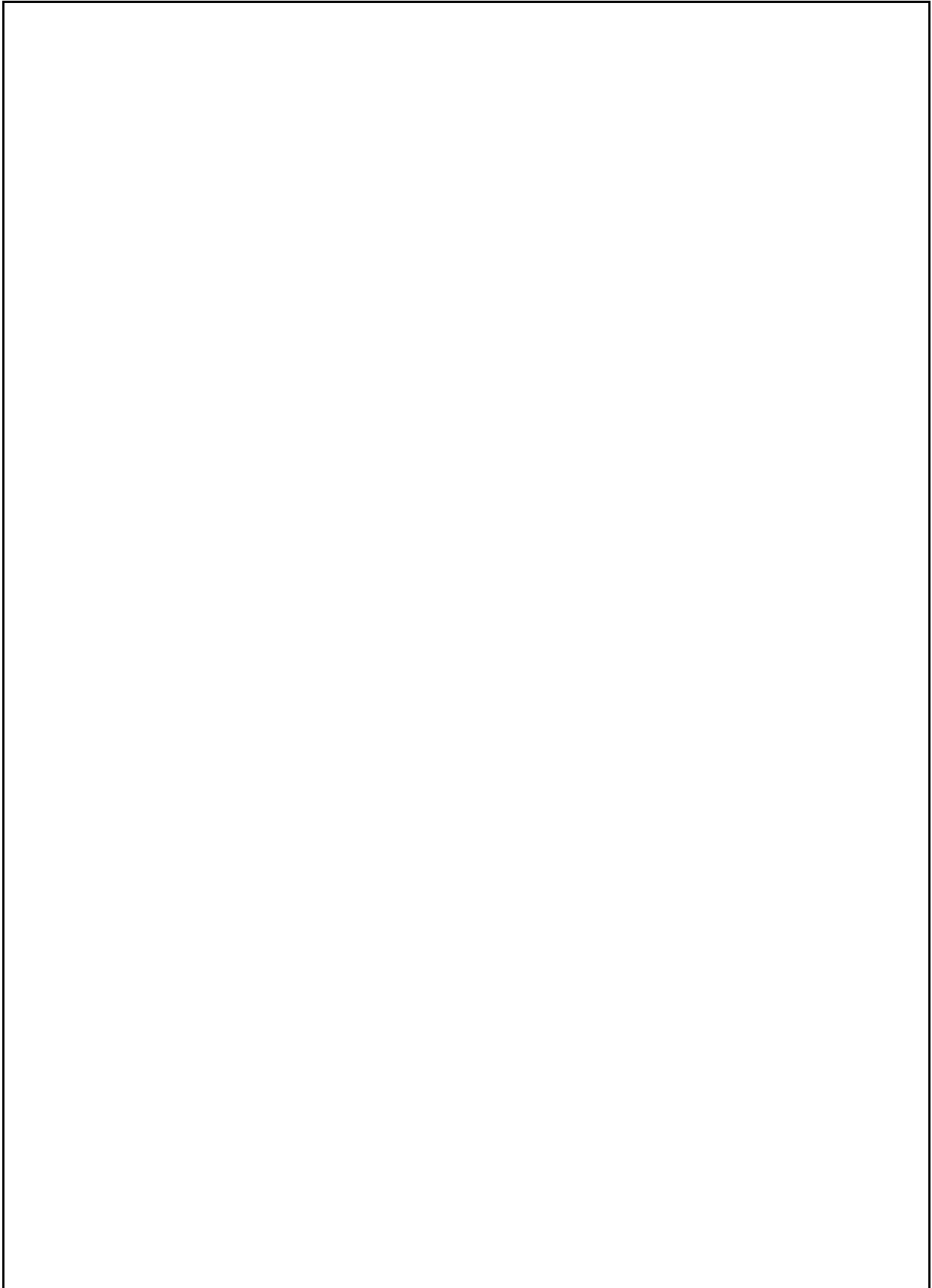
L25	6,9	Parameters for 40 mm diamond mesh in the cod-end From García-Rodríguez and Fernández (2005).
L50	7,8	
L75	8,9	
Selection factor	1,95	

Structure by size or age



Average size frequency distribution (cm; total length) of trawl catches in the geographical sub-area 05 (Balearic Islands) for the period 2000–2007. Size composition of catches have been obtained from monthly length sampling (stratified random method) on board trawl fishing vessels at different ports of Mallorca.

Structure by size or age

A large, empty rectangular box with a thin black border, occupying most of the page. It is positioned below the section header and above the footer. The interior of the box is completely blank, suggesting it is a placeholder for a diagram, chart, or data table related to the section header.

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

Assessment form

Sheet P2b
Fishery by Operational Unit

Code: MUT0508Que

####

Data source*	IEO: size composition of trawl catches; Official landings: Autonomous Government	OpUnit 1*	ESP 05 E 03 33 - MUT
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Regulations in force and degree of observance of regulations

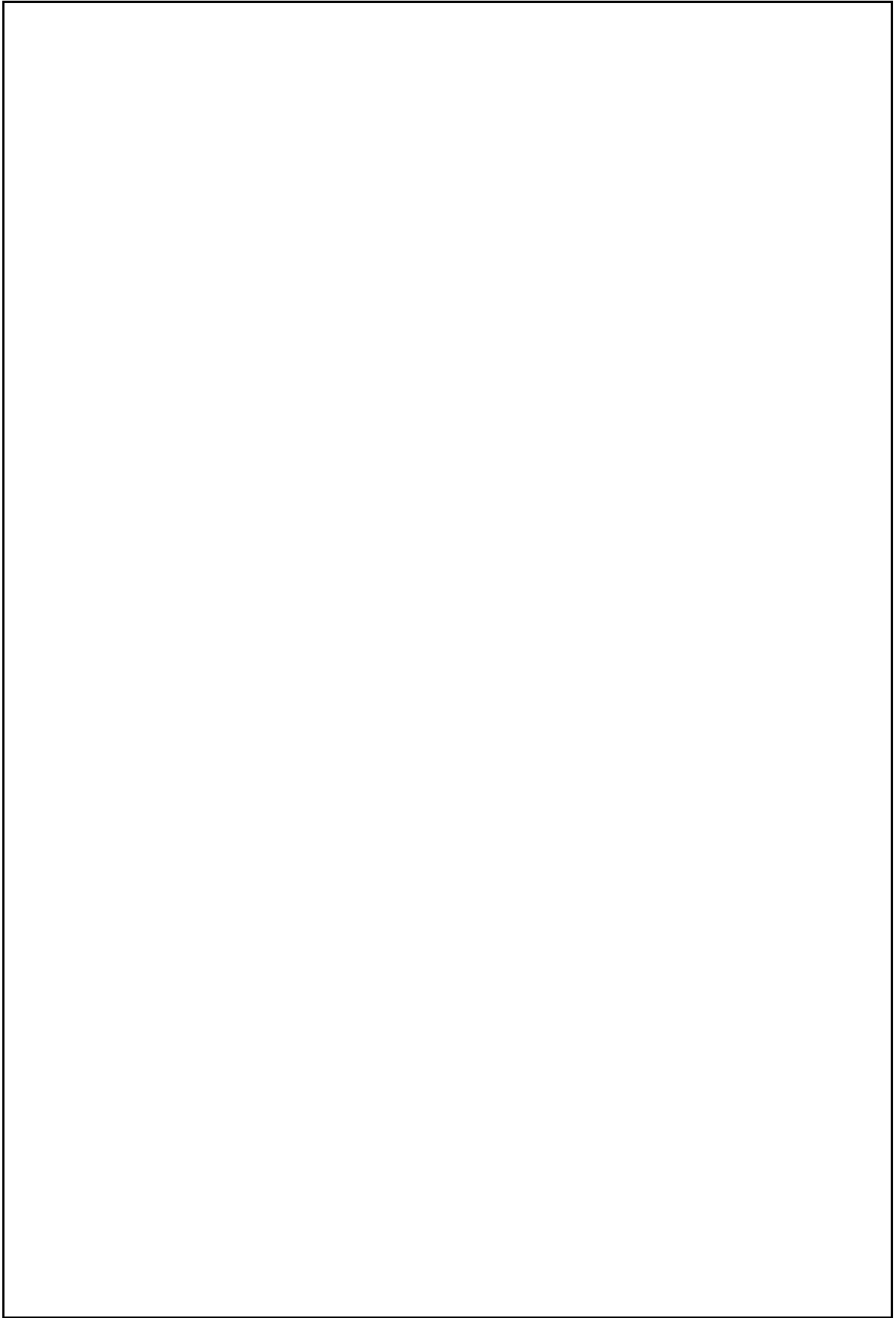
- Fishing license: fully observed
- Engine power limited to 316 KW or 500 CV: not observed
- Mesh size in the cod-end (40 mm stretched): fully observed
- Fishing forbidden upper 50 m depth: not fully observed
- Time at sea (12 hours per day and 5 days per week): fully observed

Accompanying species

Trawl fishery developed along the continental shelf of the Balearic Islands is a multi-specific fishery. It is performed mainly on detritic bottoms of rhodophytic and corallinic algae. In addition to *M. barbatus*, the following species can be considered as important in landings:

- *Spicara smaris*
- *Mullus surmuletus*
- *Merluccius merluccius*
- *Pagellus acarne*
- *Pagellus erythrinus*
- *Trachurus mediterraneus*
- *Scyliorhinus canicula*
- *Trachinus draco*
- *Scorpaena notata*
- *Trigloporus lastoviza*
- *Scorpaena scrofa*
- *Octopus vulgaris*

#REF!



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

Assessment form

Sheet A1
Indirect methods: VPA, LCA

Sex* Unsexed

Code: MUT0508Que
#REF!

Time series

Analysis # * 1

Data	Size	Age
(mark with X)		X

Model	Cohorts	Pseudocohorts
(mark with X)	X	

Equation used	Catch equation	Tuning method	Extended Survivor Analysis
# of gears	1	Software	Lowestoft VPA suite (Darby and Flatman, 1994)
F _{terminal}	1,21		

Population results (please state units)

	Sizes	Ages		Amount	Biomass
Minimum			Recruitment	1,28	12,5
Average			Average population	2,1	46,1
Maximum			Virgin population	SSN	SSB
Critical			Turnover	0,98	27,12
				N in millions	in tons

Average mortality

	Total	Gear				
F ₁	0,964					
F ₂	0,0059					
Z	1,364					

(F1 and F2 represent different possible calculations. Please state them)

Comments

F1 was calculated averaging FBAR0-5 from 2000–2007; FBAR0-5 is an arithmetic mean calculated for each year over all the range of ages (0–5 years).

F2 is the mean F at age 0 from 2000 to 2007.

Z= 0.4+F1

The vector of fishing mortalities by age in the last year was obtained from a previous separable VPA:

Age (years)	F
0	0.006
1	0.555
2	1.424
3	1.419
4	1.379
5	1.210

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

Assessment form

Sheet A1
Indirect methods: VPA, LCA

Sex*

Code: MUT0508Que
#REF!

Time series

Analysis # *

Data	Size	Age
(mark with X)		X

Model	Cohorts	Pseudocohorts
(mark with X)		X

Equation used	Catch equation	Tuning method	
# of gears	1	Software	VIT (Leonart and Salat, 1997)
F_{terminal}	1,21		

Population results (please state units)

	Sizes	Ages		Amount	Biomass
Minimum			Recruitment	1,61	7,23
Average	9,87	0,86	Average population	2,62	42,21
Maximum			Virgin population		95,52
Critical	16,29	2	Turnover		125,71
				SSN	SSB
				1,12	26,75

Average mortality

	Total	Gear				
F_1	0,917					
F_2	0,247					
Z	1,367					

(F_1 and F_2 represent different possible calculations. Please state them)

Comments

F_1 is the arithmetic mean of F calculated along the different ages.
 F_2 is Global F , which equates to an average F weighted by the number of individuals (Leonart and Salat, 1992).

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

Assessment form

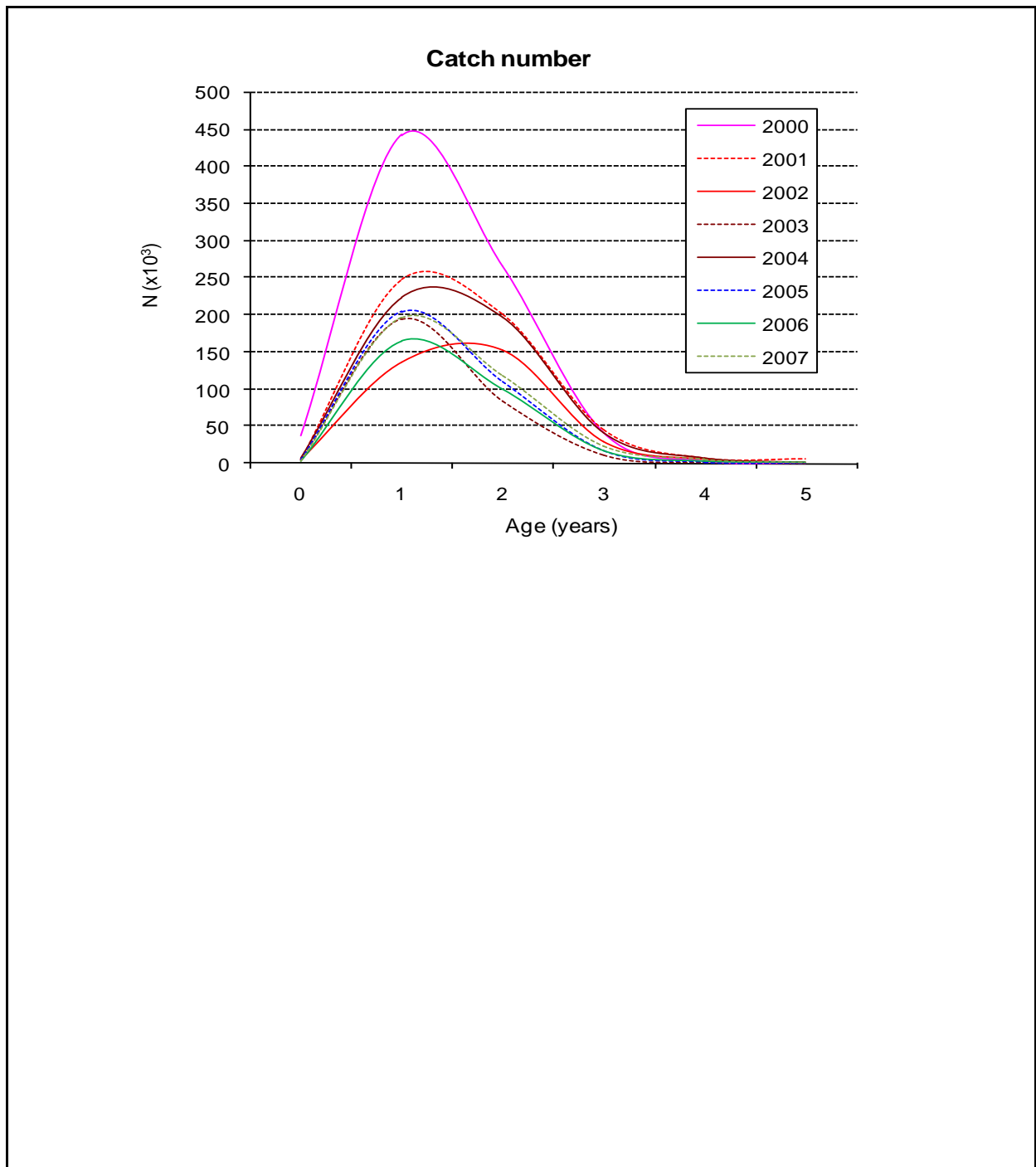
Sheet A2
Indirect methods: data

Code: MUT0508Que

Sex*	Unsexed	Gear*	Trawl	Analysis # *	1
------	---------	-------	-------	--------------	---

Data	Catch in number by age and CPUE from surveys and commercial fleet
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Data



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

Assessment form

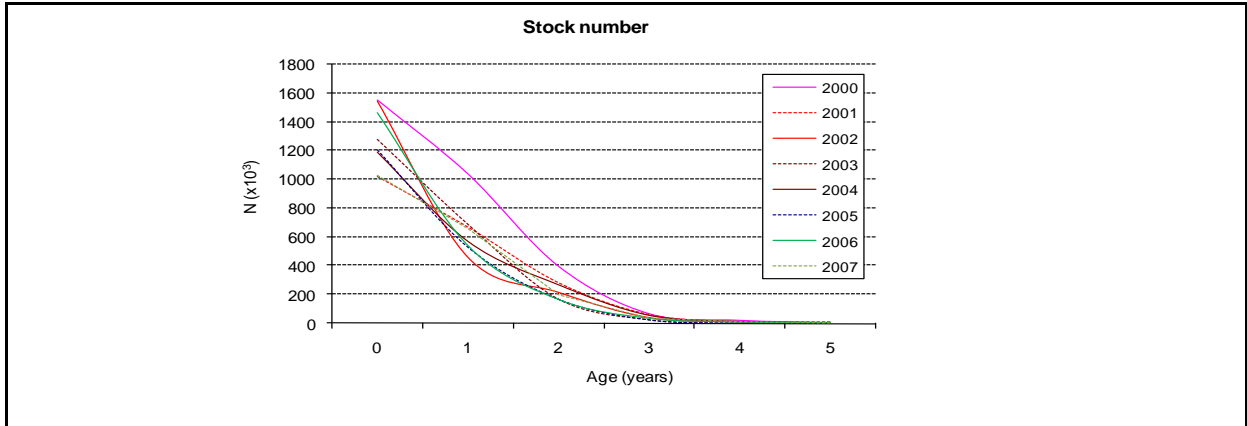
Sheet A3
Indirect methods: VPA results

Code: MUT0508Que

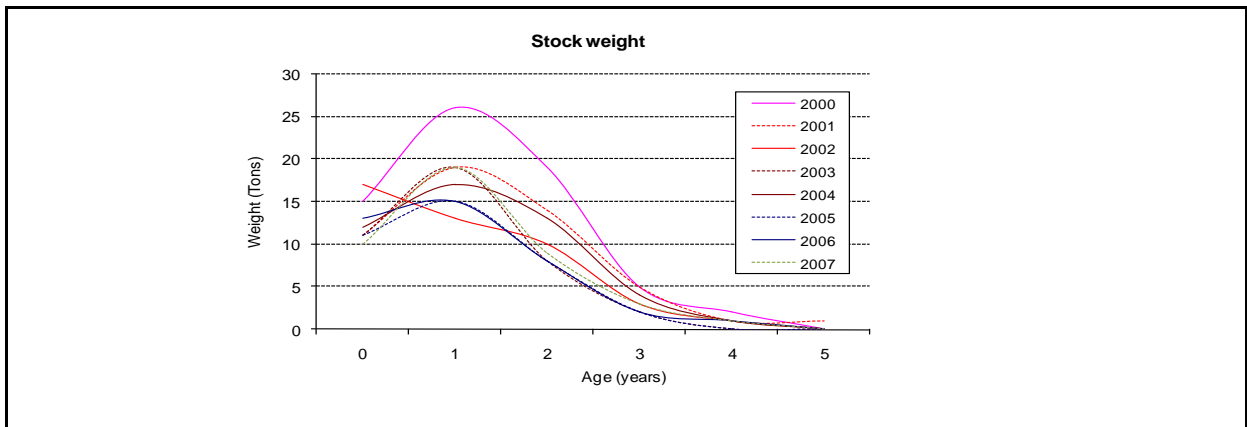
#REF!

Sex*	Unsexed	Gear*	Trawl	Analysis #*	1
------	---------	-------	-------	-------------	---

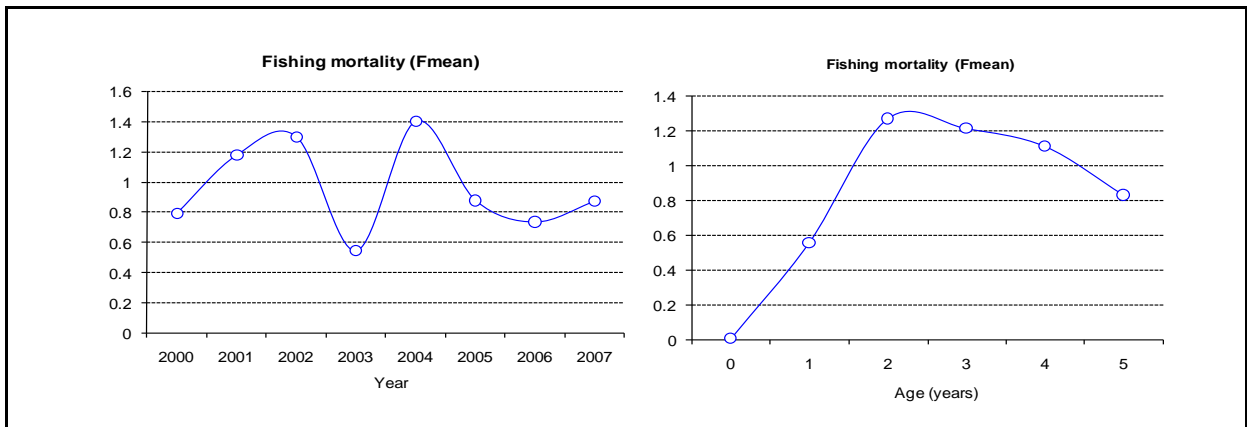
Population in figures



Population in biomass



Fishing mortality rates



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

Assessment form

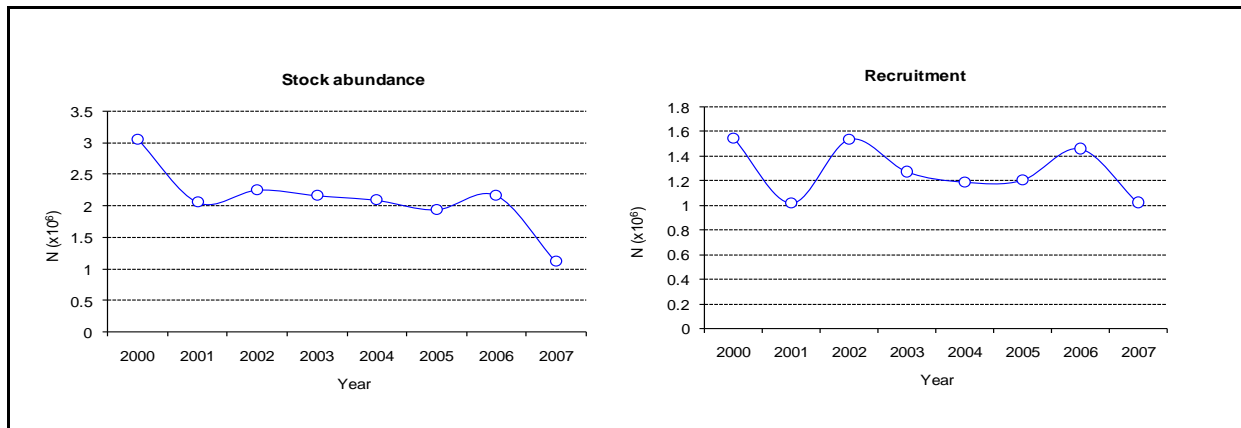
Sheet A3
Indirect methods: VPA results

Code: MUT0508Que

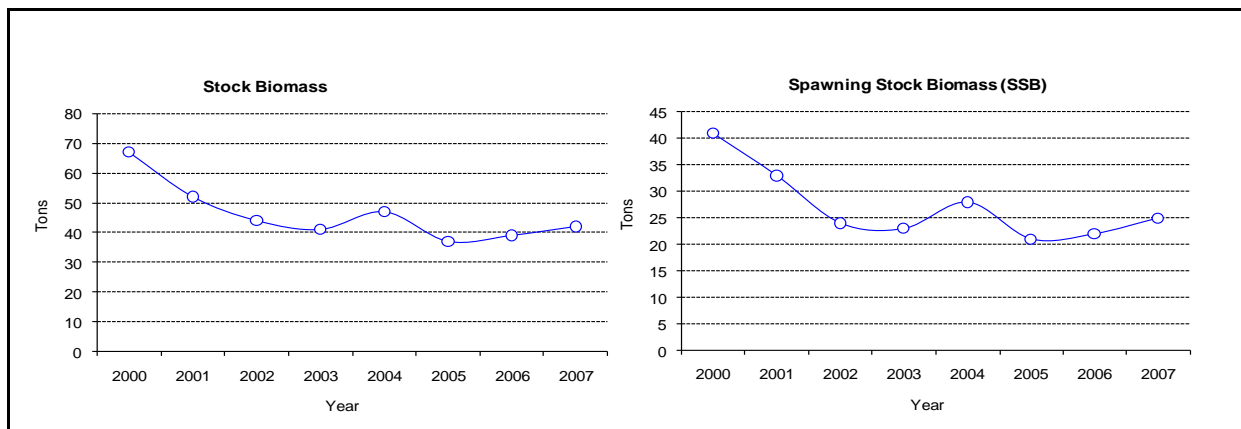
#REF!

Sex*	Unsexed	Gear*	Trawl	Analysis #*	1
------	---------	-------	-------	-------------	---

Population in figures



Population in biomass



Fishing mortality rates



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

Sex <input type="checkbox"/> Unsexed	Code: MUT0508Que
	Analysis # <input type="text" value="3"/>

# of gears	1	Software	VIT (Leonart and Salat, 1997)
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Parameters used

Vector F	From a previous separable VPA (see comments in sheet A1)
Vector M	Vector of M at age shown in sheet B
Vector N	From pseudocohort analysis

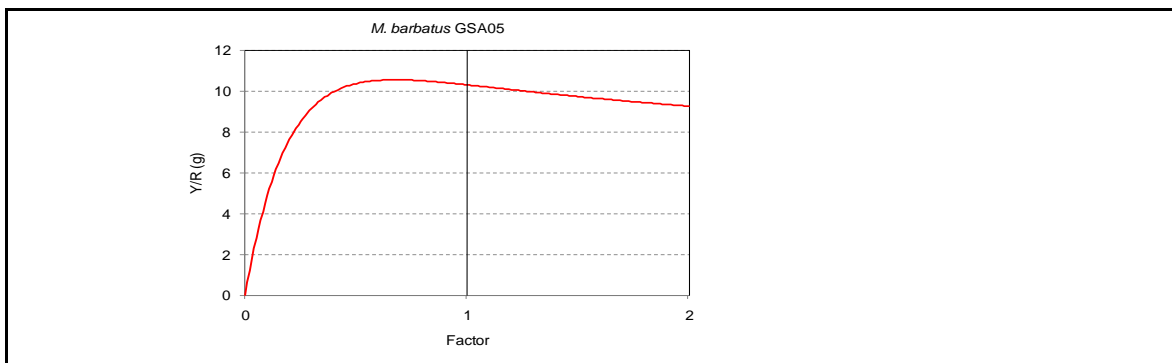
Model characteristics

See Leonart and Salat (1997), page 94.

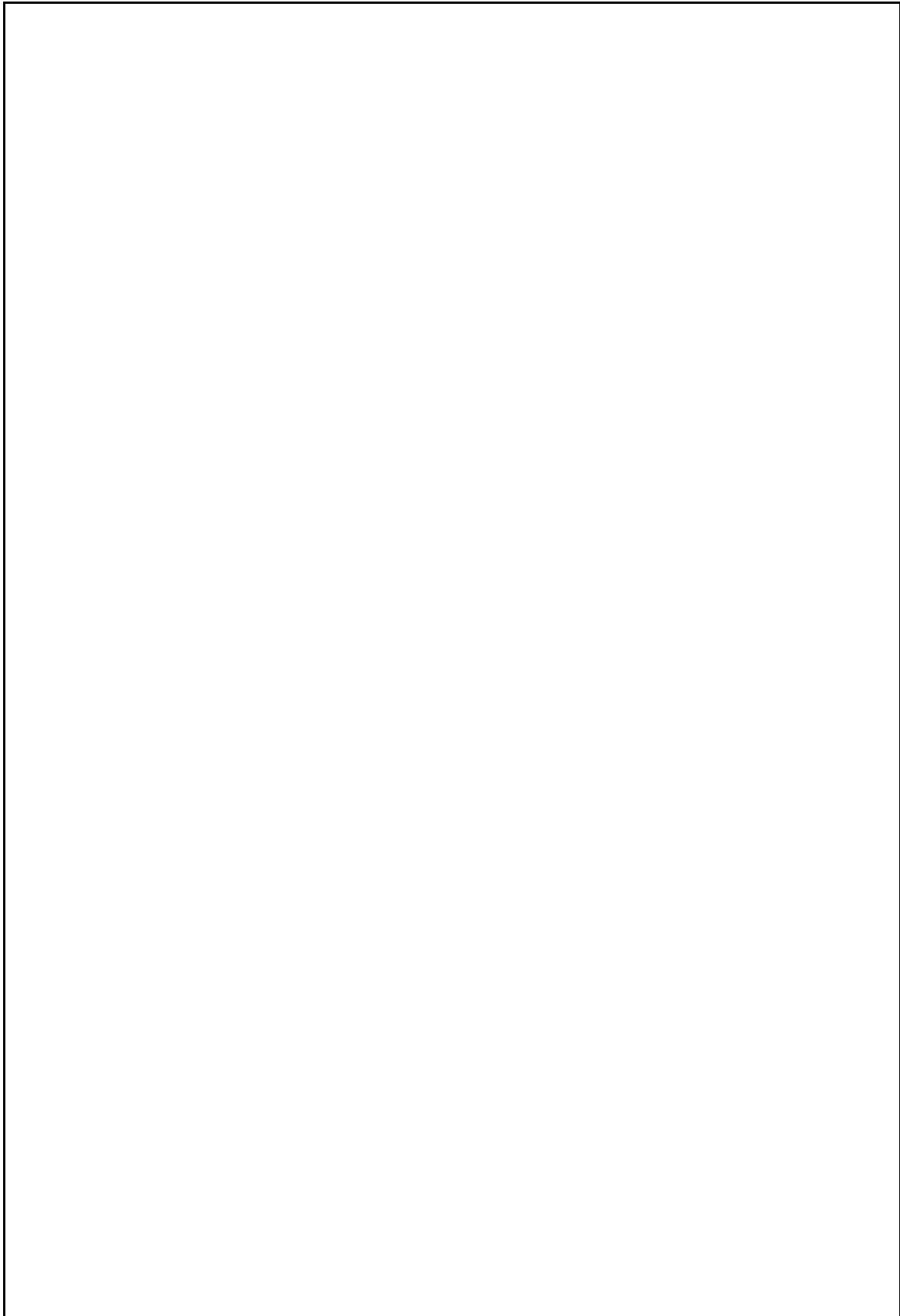
Results

	Total	Gear			
Current YR	10,31				
Maximum Y/R	10,56				
Y/R 0.1	9,97				
F _{max}	0,69				
F _{0.1}	0,40				
Current B/R	14,83				
Maximum B/R	59,25				
B/R 0.1	27,05				

Comments



Comments

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

Assessment form

Sheet D
Diagnosis

Code: MUT0508Que

Indicators and reference points

Criterion	Current value	Units	Reference Point	Trend	Comments
B	42	tons	46,1	-	Bmean as reference point (Blow=37)
SSB	27,12	tons	59,5	-	SSBmean as reference point (SSBlow= 21)
F	0,875		0,964	-	Fmean as reference point (Flow= 0.547)
Y	13,7	tons	16,6	-	Ymean as reference point (Ylow= 10.5)
CPUE	22,8	/day/boat	28,54	-	Total Mallorca trawl fishery data. CPUElow= 17.22

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

Unidimensional	<input type="radio"/>	? - (or blank) Not known or uncertain. Not much information is available to make a judgment;
	<input type="radio"/>	U - Underexploited, undeveloped or new fishery. Believed to have a significant potential for expansion in total production;
	<input type="radio"/>	M - Moderately exploited, exploited with a low level of fishing effort. Believed to have some limited potential for expansion in total production;
	<input checked="" type="radio"/>	F - Fully exploited. The fishery is operating at or close to an optimal yield level, with no expected room for further expansion;
	<input type="radio"/>	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;
	<input type="radio"/>	D - Depleted. Catches are well below historical levels, irrespective of the amount of fishing effort exerted;
	<input type="radio"/>	R - Recovering. Catches are again increasing after having been depleted or a collapse from a previous;

Bidimensional	Exploitation rate		Stock abundance	
	<input type="radio"/>	No or low fishing	<input type="radio"/>	Virgin or high abundance
	<input checked="" type="radio"/>	Moderate fishing	<input checked="" type="radio"/>	Intermediate abundance
	<input type="radio"/>	High fishing mortality	<input type="radio"/>	Low abundance
	<input type="radio"/>	Uncertain / Not assessed	<input type="radio"/>	Depleted
			<input type="radio"/>	Uncertain / Not assessed

Comments

Current Y/R very close to the maximum and B_{now} being 25% of B_{virgin}.

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

Assessment form

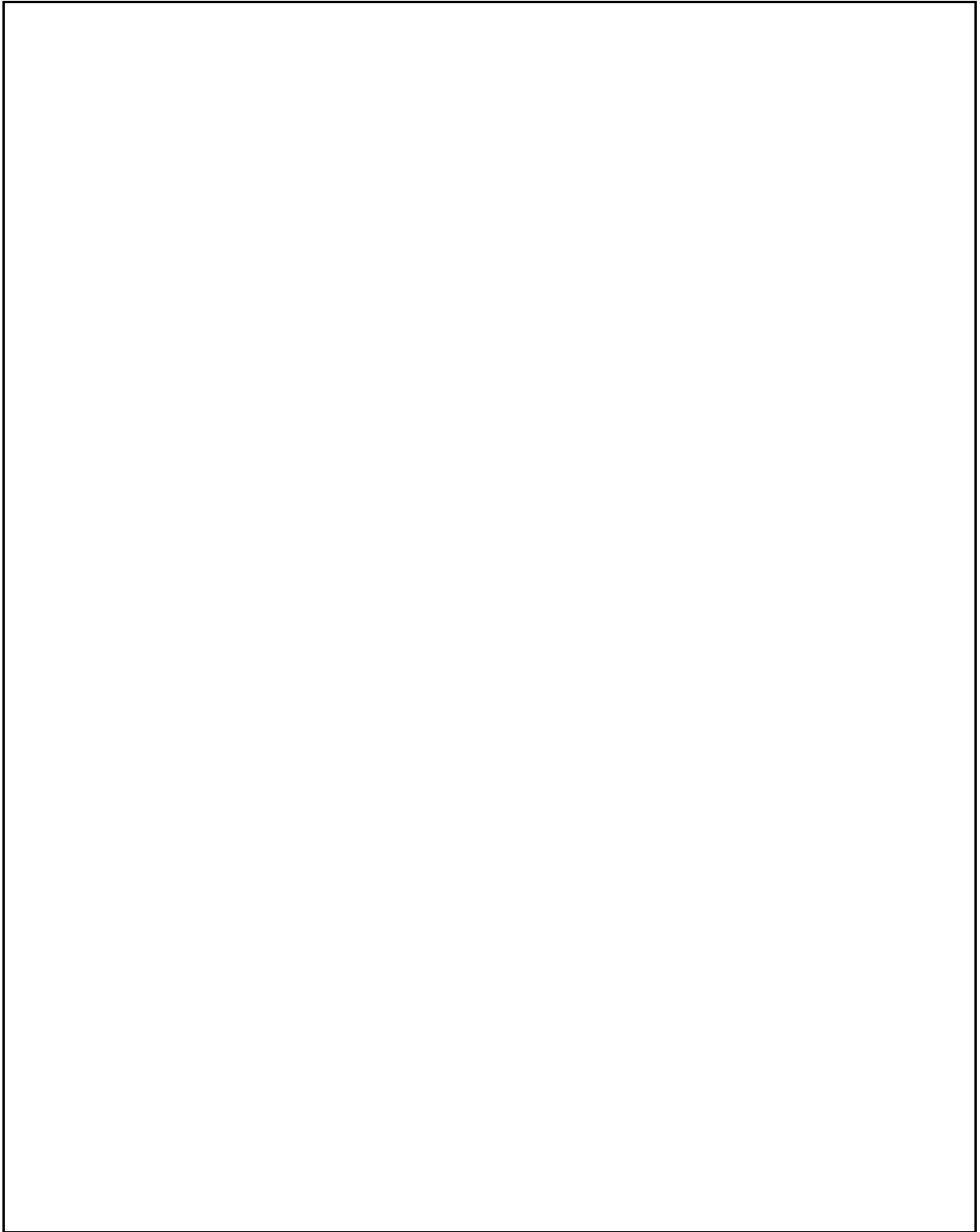
Sheet Z
Objectives and recommendations

Code: MUT0508Que

Management advice and recommendations*

No increase the fishing effort.

Advice for scientific research*



Abstract for SCSA reporting

Authors

Quetglas A., Ordines F., Ruíz S., Moranta J.

Year

2008

Species Scientific name

Mullus barbatus - MUT

Source: GFCM Priority Species

Source: -

Source: -

Geographical Sub-Area

05 - Balearic Island

Fisheries (brief description of the fishery)*

The two species of red mullet inhabiting the Mediterranean, *Mullus surmuletus* and *M. barbatus*, are present in the Balearic Sea. However, *M. surmuletus* predominates in this area where the species is targeted by both the artisanal and trawl fleet working along the continental shelf. On the contrary, *M. barbatus* is caught as a by-catch species by trawlers operating mainly on the deep shelf. In the Balearic Islands, *M. surmuletus* and *M. barbatus* represent about 80% and 20% of the total red mullet catches respectively. During the 2000-2007 period, the landings of *M. barbatus* from Mallorca have ranged between 10.5 and 27.8 tons.

Source of management advice*

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

The stock of *Mullus barbatus* of the GFCM-GSA05 has been assessed using data from the trawl fishery on a time series covering eight years (2000-2007). The assessment has been carried out applying tuned VPA (Extended Survivor Analysis, XSA) on the cohorts present during 2000-2007 and both VPA and Y/R analysis on a mean pseudo-cohort from that period. These approaches were performed using monthly size composition of catches, official landings and the growth parameters accorded in the SGMED-08-03 meeting. Other biological parameters (length-weight relationships, oögive of maturity) were obtained within the framework of the Spanish Data Collection Programme. The VPA was tuned with CPUE from bottom trawl surveys carried out around the Balearic Sea during 2001–2007. The vector of natural mortality by age was calculated from Caddy’s (1991) formula, using the PROBIOM Excel spreadsheet (Abella et al., 1997). Terminal fishing mortality was obtained from the catch equation using the FLeda package (Jardim and Azevedo, 2004) and the vector of fishing mortality by age from a separable VPA. The software used to run the assessments were the Lowestoft VPA program (Darby and Flatman, 1994) for the XSA and the VIT program (Leonart and Salat, 1997) for the VPA and Y/R analysis from a mean pseudo-cohort.

Stock Status*

F - Fully exploited. The fishery is operating at or close to an optimal yield level, with no expected room for further expansion;

Exploitation rate

Moderate fishing mortality

Stock abundance

Intermediate abundance

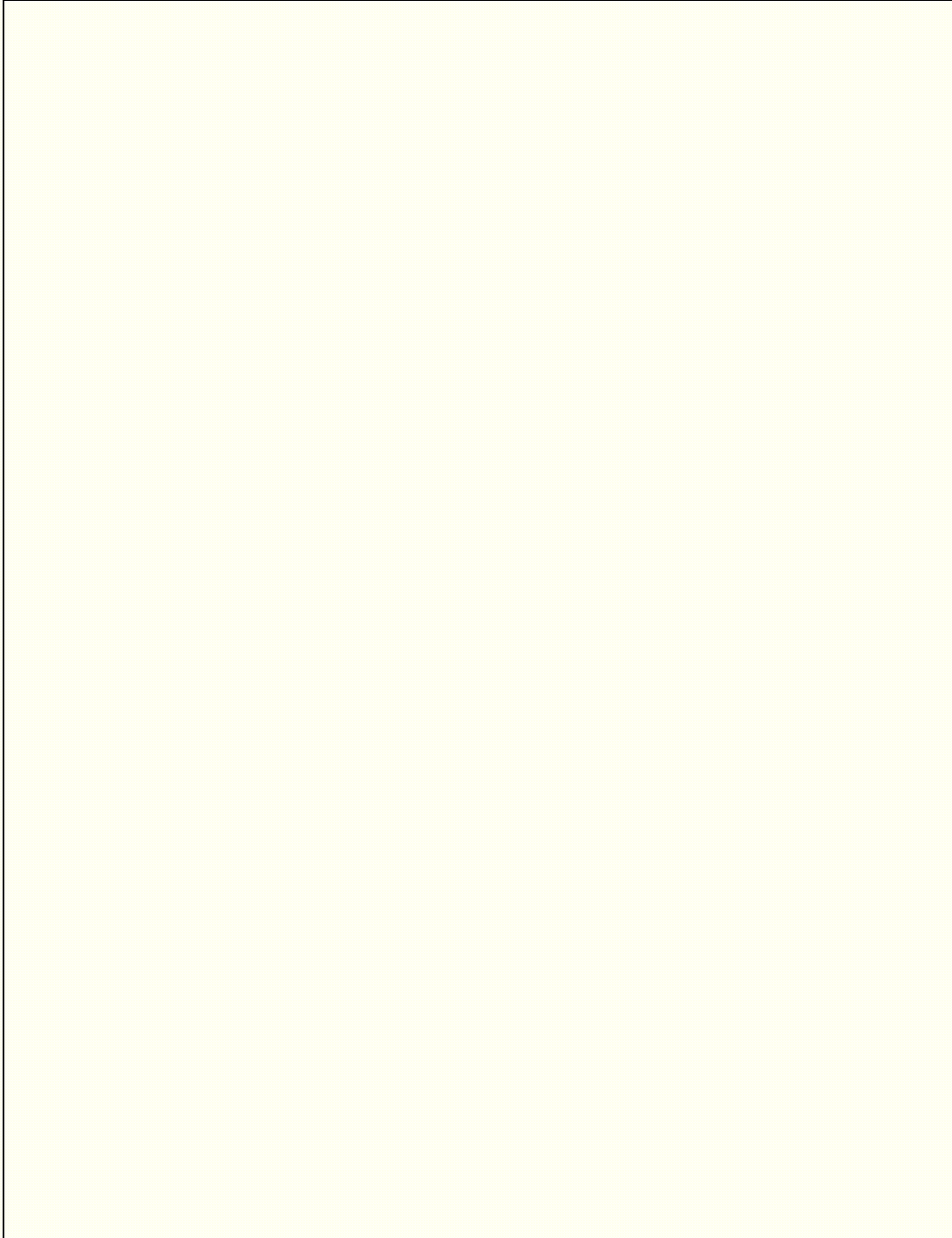
Comments

Current Y/R very close to the maximum and B_{now} being 25% of B_{virgin} .

Management advice and recommendations*

No increase the fishing effort.

Advice for scientific research*



Assessment of Red mullet (*Mullus barbatus* - MUT) from 05 - Balearic Island. Quetglas A., Ordines F., Ruíz S., Moranta J.

Description of fishery: The two species of red mullet inhabiting the Mediterranean, *Mullus surmuletus* and *M. barbatus*, are present in the Balearic Sea. However, *M. surmuletus* predominates in this area where the species is targeted by both the artisanal and trawl fleet working along the continental shelf. On the contrary, *M. barbatus* is caught as a by-catch species by trawlers operating mainly on the deep shelf. In the Balearic Islands, *M. surmuletus* and *M. barbatus* represent about 80% and 20% of the total red mullet catches respectively. During the 2000-2007 period, the landings of *M. barbatus* from Mallorca have ranged between 10.5 and 27.8 tons.

Source of management advice: The stock of *Mullus barbatus* of the GFCM-GSA05 has been assessed using data from the trawl fishery on a time series covering eight years (2000-2007). The assessment has been carried out applying tuned VPA (Extended Survivor Analysis, XSA) on the cohorts present during 2000-2007 and both VPA and Y/R analysis on a mean pseudo-cohort from that period. These approaches were performed using monthly size composition of catches, official landings and the growth parameters accorded in the SGMED-08-03 meeting. Other biological parameters (length-weight relationships, oogive of maturity) were obtained within the framework of the Spanish Data Collection Programme. The VPA was tuned with CPUE from bottom trawl surveys carried out around the Balearic Sea during 2001-2007. The vector of natural mortality by age was calculated from Caddy's (1991) formula, using the PROBIOM Excel spreadsheet (Abella et al., 1997). Terminal fishing mortality was obtained from the catch equation using the FLeda package (Jardim and Azevedo, 2004) and the vector of

Exploitation rate: Moderate fishing mortality

Stock abundance: Intermediate abundance

Comments: Current Y/R very close to the maximum and B_{now} being 25% of B_{virgin} .

Management advice and recommendation: No increase the fishing effort.

Advice for scientific research:

