

**G**eneral  
**F**isheries  
**C**ommission for the  
**M**editerranean



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# ACTIVITIES OF THE SUBCOMMITTEE ON STOCK ASSESSMENT OF THE GFCM/SAC IN 2012–2013



# Working Groups on stock assessment of demersal & small pelagic spp.



## DEMERSAL STOCKS

**29 assessments.**

8 spanned more than one GSA

**overfishing status for all** demersals stocks with ref. points for fishing mortality.

2 stocks with biomass ref. points = **overexploited**

**Low or very low biomass** for 4 stocks without ref. points.



## SMALL PELAGIC STOCKS

**12 assessments.**

2 spanned more than one GSA

4 stocks had ref. points for biomass & F  
1 stocks had ref. points for F only  
2 stocks had ref. points for biomass only

Sardine in GSA07 : **collapsed**

Anchovy in GSA 16 : **overexploited**

Sardine in GSA17 & anchovy in GSA07 :  
**fully exploited**

Sardine in GSA16, anchovy in GSA17 & sprat in GSA29 **sustainably exploited**

# SCSA MANAGEMENT ADVICE:

**Reduce fishing mortality** on all overfished &/or overexploited stocks

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For some fully exploited stocks of small pelagics **keep F's at current levels.**


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The stock of **sardine in the Gulf of Lions** is considered collapsed, & therefore a recommendation to **close the fishery** has been formulated by the SCSA.

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Specific measures for each individual assessed stock are proposed in GFCM/SAC/15/ inf 9

# SARDINE IN THE ADRIATIC

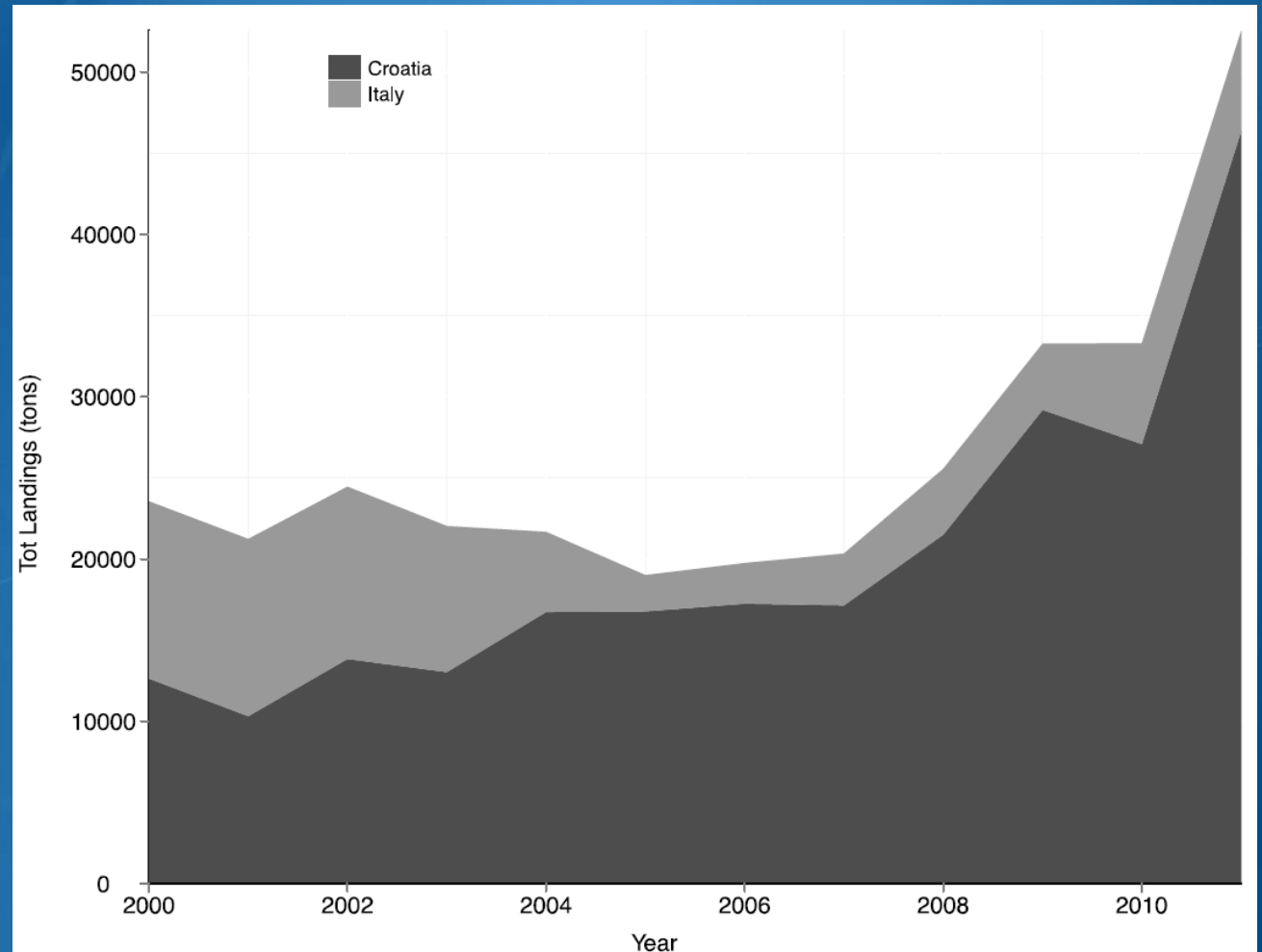
Scientific name:	Common name:	
<i>Sardina pilchardus</i>	Sardine	
Geographical sub-area:		
GSA 17		
Stock assessment method: Combined		
<p>Authors: Carpi P. (1), (<i>in alphabetical order</i>) Angelini S. (1), Belardinelli A. (1), Biagiotti I. (1), Campanella F. (1), Canduci G. (1), Cingolani N. (1), Čikeš Keč V.(2), Colella S. (1), Croci C. (1), De Felice A. (1), Donato F.(1), Leonori I. (1), Martinelli M. (1), Malavolti S. (1), Modic T. (3), Panfili M. (1), Pengal P. (3), Santojanni A. (1), Ticina V. (2), Vasapollo C. (1), Zorica B. (2), Arneri E (4).</p>		
<p>Affiliation: (1) CNR-ISMAR (Ancona, Italy), (2) Institute of Oceanography and Fisheries (Split, Croatia), (3) Fisheries Research Institute of Slovenia (Ljubjana, Slovenia), (4) FAO-Adriamed (Rome, Italy)</p>		

*Description of operational units in the stock*

	Country	GSA	Fleet Segment	Nb of Boats	Species	Catch (tons)
Operational Unit 1*	Italy	17	Pelagic trawlers	84	Sardine pilchardus	6800
Operational Unit 2	Italy	17	Purse Seiners	19	Sardine pilchardus	486
Operational Unit 3	Croatia	17	Purse Seiners	NA	Sardine pilchardus	46000
Operational Unit 4	Slovenia	17	Purse Seiners	5	Sardine pilchardus	300
Operational Unit 5	Slovenia	17	Pelagic trawlers	1	Sardine pilchardus	

*Total landings (in tons) by country for GSA 17 from 2000 to 2011*

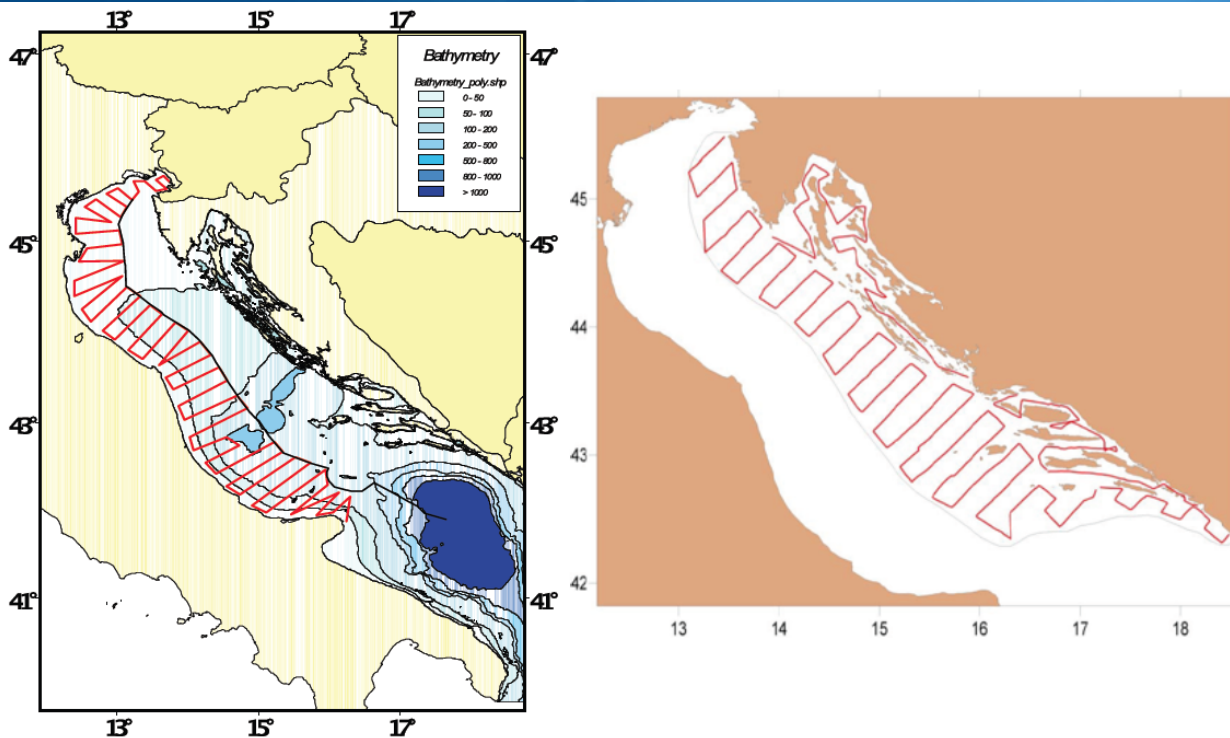
	Catch (tn)
2000	23558
2001	21242
2002	24459
2003	22028
2004	21671
2005	19008
2006	19759
2007	20329
2008	25566
2009	33279
2010	33301
2011	52546
Average	26396



Criterion	Current value	Units	Reference Point
E(1-4)	0.52		0.4
Blim	215050	tons	78000
Bpa	215050	tons	109200

# Fisheries independent information

## *MEDIAS ECHOSURVEY (Acoustic survey)*



*Acoustic transects*

	Tons
2004	287675
2005	140082
2006	312793
2007	217897
2008	272370
2009	365939
2010	258130
2011	483224

Estimated biomasses

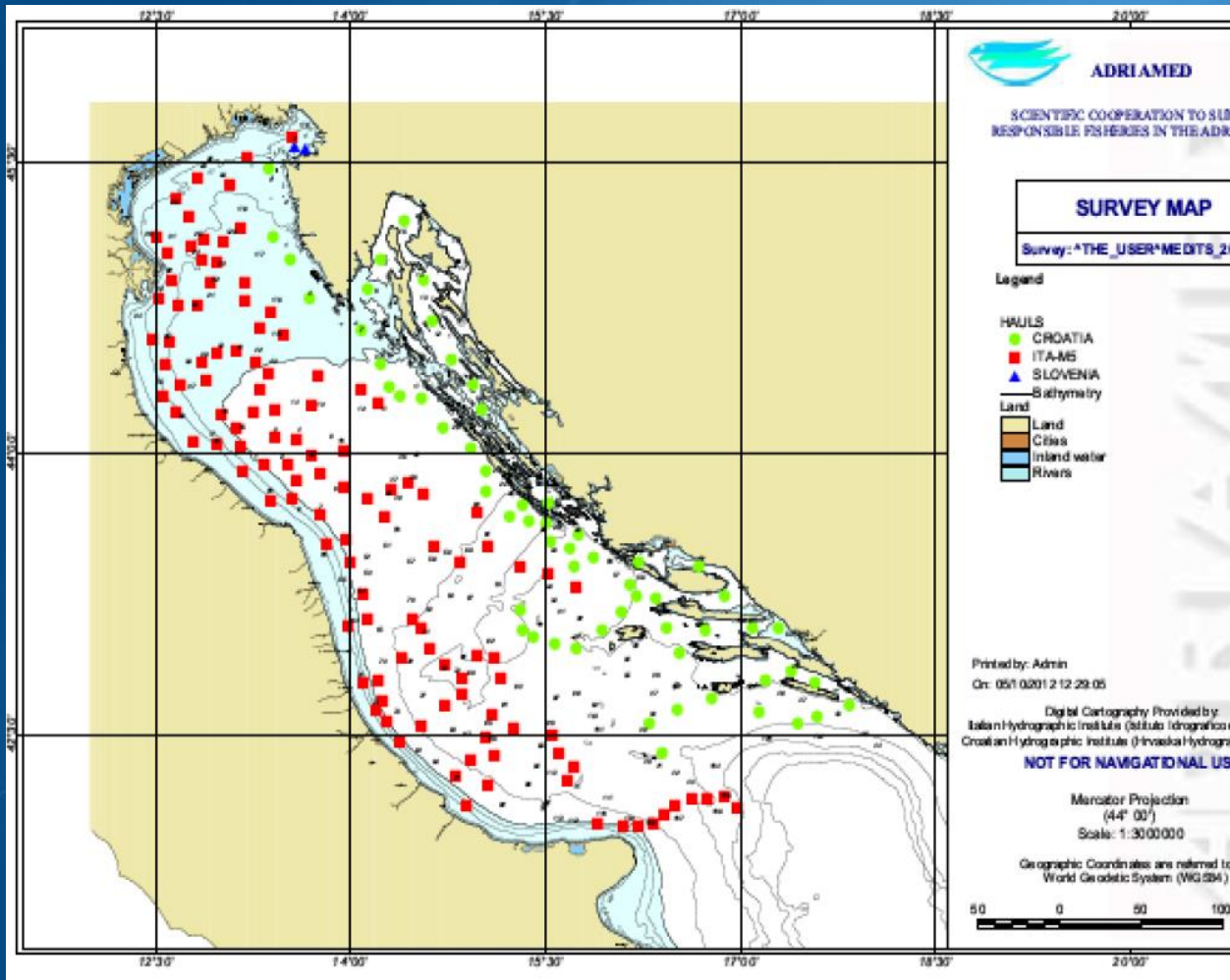


# MEDITS

## MeditS biomass index

kg/km<sup>2</sup>

2000	9.85
2001	12.59
2002	15.05
2003	10.96
2004	18.69
2005	4.04
2006	5.90
2007	3.18
2008	6.58
2009	6.89
2010	8.74
2011	29.97



## STOCK ASSESSMENT RESULTS

the 2011 total biomass (215050 tons) is above of both the proposed  $B_{lim}$  (78000 tons) and  $B_{pa}$  (109200 tons) reference points.

The acoustic surveys in 2011 estimated a really high biomass (about 500000 tons), the highest of the time series up to now.

steep increase in the total biomass trend starting in 2009  
steep increase in the recruitment since 2007

exploitation rate higher than the reference point

It should be noted that Adriatic small pelagic fishery is multispecies and effort on anchovy cannot be separated from effort on sardine, so that most of the management decision have to be taken considering both species.

Although  $F$  is higher than the  $RP$ , the  $SSB$  shows an increasing trend, so the current state of the fishery seems to be sustainable. On the overall, the suggestion is not to increase the fishing mortality.

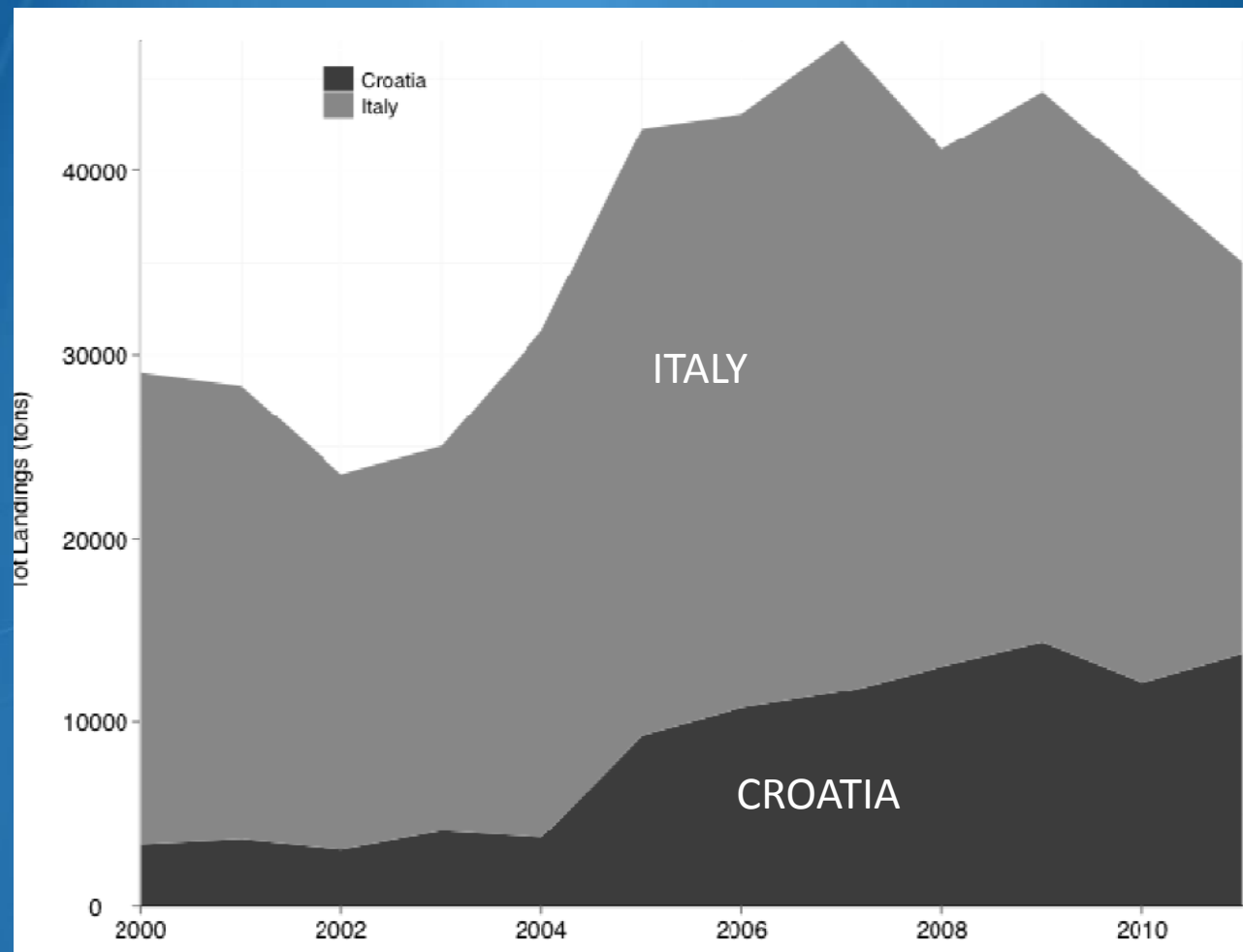
# ANCHOVY IN THE ADRIATIC

Scientific name:	Common name:	ISCAAP Group:
<i>Engraulis encrasicolus</i>	European anchovy	35 - Herrings, sardines, anchovies
Geographical sub-area:		
GSA 17		
Stock assessment method: (direct, indirect, combined, none)		
Combined		
Authors: Carpi P. (1), ( <i>in alphabetical order</i> ) Angelini S. (1), Belardinelli A. (1), Biagiotti I. (1), Campanella F. (1), Canduci G. (1), Cingolani N. (1), Čikeš Keč V.(2), Colella S. (1), Croci C. (1), De Felice A. (1), Donato F.(1), Leonori I. (1), Martinelli M. (1), Malavolti S. (1), Modic T. (3), Panfili M. (1), Pengal P. (3), Santojanni A. (1), Ticina V. (2), Vasapollo C. (1), Zorica B. (2), Arneri E (4).		
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*Description of operational units*

	Country	GSA	Fleet Segment	Nb of Boats	Species	Catch (tons)
Operational Unit 1*	Italy	17	Pelagic trawlers	84	Anchovy	17200
Operational Unit 2	Italy	17	Purse Seiners	19	Anchovy	2500
Operational Unit 3	Croatia	17	Purse Seiners	NA	Anchovy	13600
Operational Unit 4	Slovenia	17	Purse Seiners	5	Anchovy	124
Operational Unit 5	Slovenia	17	Pelagic trawlers	1	Anchovy	

	Catch (tn)
2000	29036
2001	28280
2002	23467
2003	25016
2004	31280
2005	42296
2006	43090
2007	47055
2008	41151
2009	44280
2010	39639
2011	35058
Average	35804

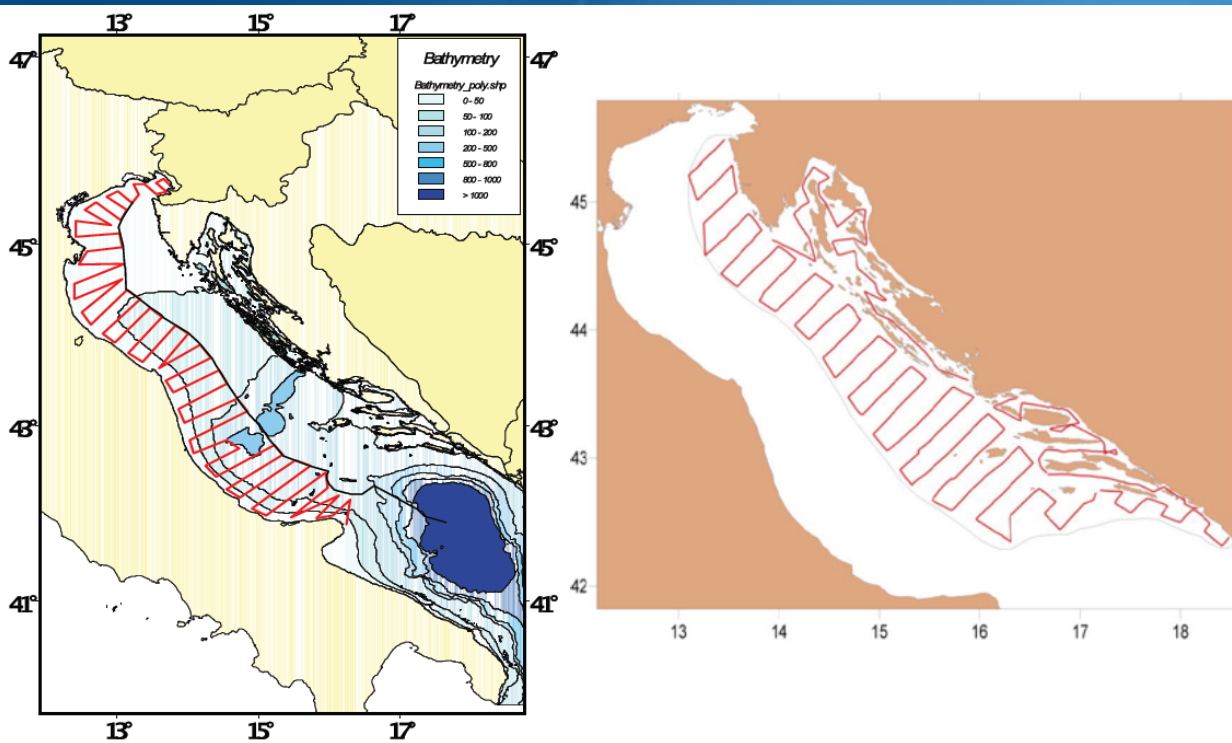


## *List of reference points*

Criterion	Current value	Units	Reference Point	Trend
E	0.41		0.4	Stable
Blim	333404	tons	179000	Stable
Bpa	333404	tons	250600	Stable

# Fisheries independent information

## *MEDIAS ECHOSURVEY (Acoustic survey)*



*Acoustic transects*

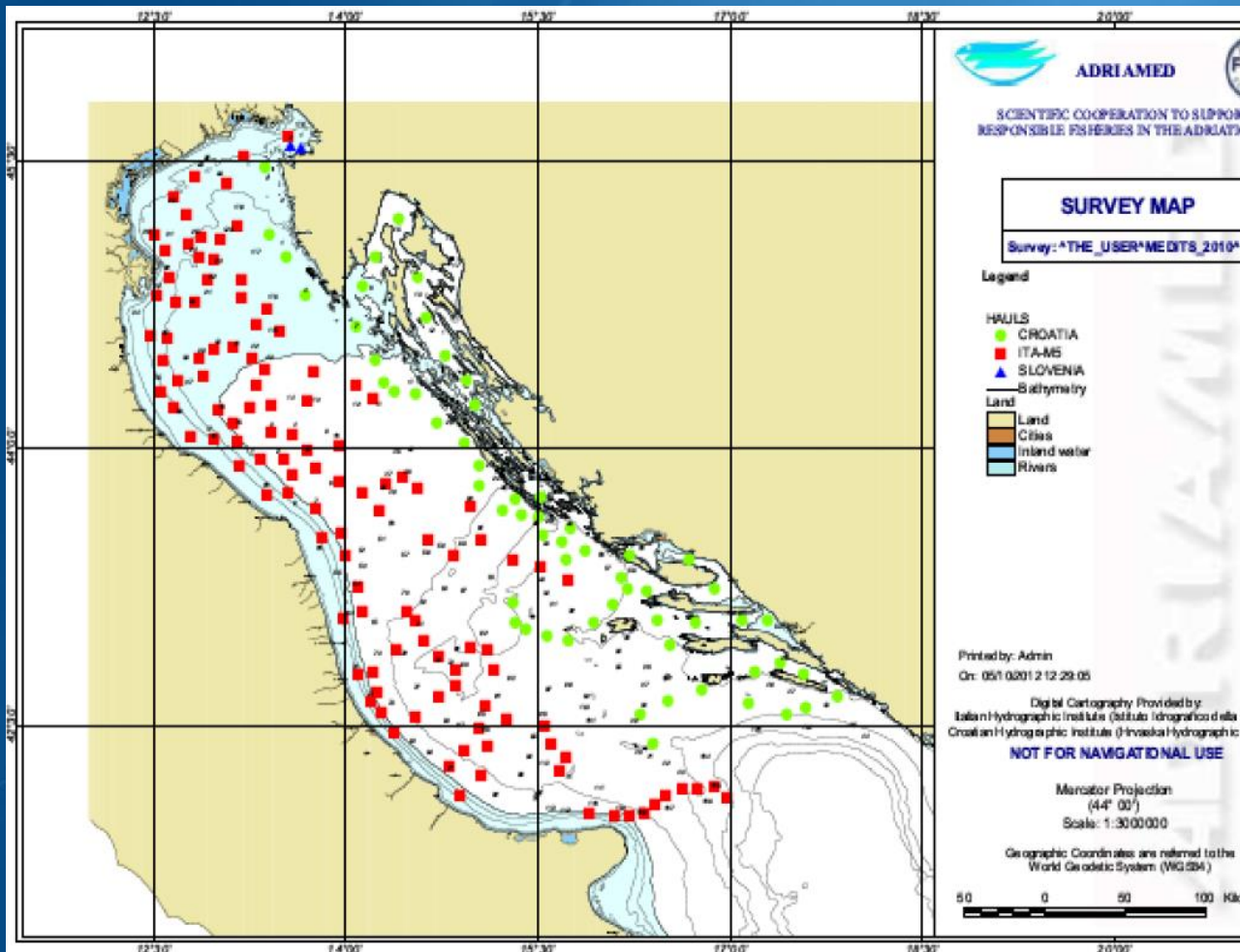
	Tons
2004	302130
2005	335312
2006	627226
2007	533525
2008	858497
2009	486373
2010	642184
2011	474920

Estimated biomasses

# MEDITS

## MEDITS biomass index (kg/km<sup>2</sup>)

Year	kg/km <sup>2</sup>
2000	37.42
2001	86.00
2002	72.37
2003	71.57
2004	55.00
2005	58.92
2006	56.54
2007	32.27
2008	48.42
2009	27.06
2010	51.77
2011	116.56





# STOCK ASSESSMENT RESULTS

- ★ increase in the biomass trend starting in 2009
- ★ exploitation rate is around the reference point

The 2011 total biomass (333404 tons) is above  $B_{lim}$  (179000 tons) and  $B_{pa}$  (250600 tons)

★ recruitment increasing in the last year,  
on the average it's quite stable with little fluctuations  
compared to other small pelagic stocks.

- ★ The acoustic surveys show some fluctuations with no particular trend.  
The 2011 value is about 475000 tons.

It should be noted that Adriatic small pelagic fishery is multispecies and effort on anchovy cannot be separated from effort on sardine, so that most of the management decisions have to be taken considering both species.

On the overall, the suggestion is not to increase the fishing mortality.

# Thanks for the attention

