SAC GFCM. Subcommittee of Stock Assessment	Assessment form Sheet #0 Basic data on the assessment

Date	05/09/07	Person in charge	Iole Leonori	Code	
Species Scientific name	*E. encrasicolus*		Species common name	Anchovy	

Data source

Geographical limits	South-Western Adriatic Sea - GSA 18	Period of time	1987-2006

Description of the analysis

Type of data	Acoustic and net samplings data on small pelagic fish, environmental data	Data source	Database of ISMAR-CNR (Istituto di Scienze Marine – Sezione di Ancona) built in the ambit of several MIPAF projects and one EU project
Method of assessment	Echosurvey	Software used	Echolog 500, Echoview 4.20, Arcview 3.3, Visual Basic, Matlab R2007a

Sheets filled out

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

TS	TS1	TS2	TS3	TS4	AS	EP
					X	

Comments, bibliography, etc.

Azzali M., De Felice A., Cosimi G., Luna M., Parmiggiani F., 2002. The state of the Adriatic Sea centered on the small pelagic fish populations. P.S.Z.N.: Marine Ecology, 23, Suppl. 1, 78-91.

Azzali M., Cosimi G., De Felice A., Luna M., Manoukian S., 2001: Fluctuations in space and time of pelagic populations in the North Adriatic Sea from 1976 to 1998. 36th CIESM congress proceedings.

Azzali M., De Felice A., Kariš T., Luna M., Tičina V., Franicevic M., 2002: Pilot Joint Echo-Survey in a northern part of the Adriatic Sea on small pelagic fish and its implications on the historical surveys. FAO-ADRIAMED report presented at GFCM-SAC Working Group on Small Pelagic Fish.

Azzali M., 2002: Valutazione acustica della biomassa, distribuzione e struttura delle popolazioni pelagiche in Adriatico, in relazione con i dati ambientali ricavati da satellite. *MIPAF final report.* 118 pp.

Azzali M., De Felice A., Leonori I., Luna M. 2005. Kinds of variability affecting small pelagic fish in the northern part of the Adriatic sea. Proceedings of the Underwater Acoustic Measurements Congress. Crete, Greece.

Azzali M., Ticina V., De Felice A., Leonori I., Paschini E., Marini M., Grbec B., Vidjak O., Grubisic L., Pallaoro A., Matic F., 2005. Inter - ship calibration to compare acoustic estimations of small pelagic fish in the Adriatic Sea. SCSA 2005 proceedings.

Azzali M., Giovagnoli L., De Felice A., Leonori I. 2005. Diet, abundance and interaction with fishery of cetaceans in the Adriatic Sea (1988-1998). Proceedings of the 19° Conference of the European Cetacean Society, La Rochelle, France.

Simmonds & MacLennan, 2005. Fisheries Acoustics; 2nd edition, Eds. Blackwell, 437 pp.

SAC GFCM. Subcommittee of Stock Assessment	Assessment form Sheet AS Direct methods: acoustics

Western part of GSA 18 (South-Western Adriatic Sea)

Code	
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Cruise		B/O	Dallaporta		
Total area (km^2)	12008			Date	1987-2006

Objective (in general)	Assessment of small pelagic fish biomass (in particular anchovy and sardine) in South-Western Adriatic Sea
Target species	Anchovy, sardine
Echosounder	Simrad EK500 (38, 120, 200 kHz)
Sampling strategy	Zig-Zag transects (alternately parallel)
ESDU	1 nm
Pulse duration	1 ms
Echogramm identification	Pelagic trawl samplings
Samples (gear used)	Mid-water trawl
Biological data obtained	Mean length, mean weight and percentage in weight of the pelagic species

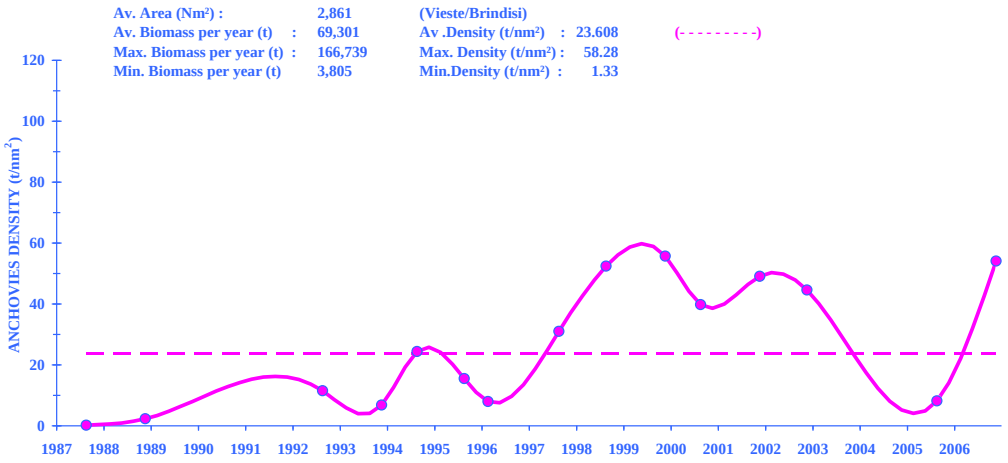
Results obtained. (Biomass in metric tons, amount of fish etc.)	Biomass in tons Year 2006 (Area 3501 nm^2 = 12008 km^2) Total pelagic biomass = 237617 tons (CV = 14.97%) Anchovy biomass = 189332 tons

Comments

In 2006 the estimated biomass of anchovies increased. Is is around is around 79.7% of the total biomass (average density 54.1 t/nm^2, biomass 189332 t).
The trend of anchovy biomass derived from echosurveys in the time interval 1987-2006 refer to the north-western part of GSA 18.

The anchovy stock showed a state of crisis in the years 1987-1993. The recovery began in 1994 and since 1997 anchovy biomass maintained a good level, only in these last years there was a remarkable fluctuation made of a decline and a following recovery. Mean density of anchovy biomass from 1987 to 2006 was estimated at 23.6 t/nm^2.

TREND OF ANCHOVIES IN SOUTHERN ADRIATIC SEA



Management advice and recommendations:

The results of the studies of small pelagic populations derived from the historical surveys in the western Adriatic Sea show that these populations are affected by large variability in time and space. This variability is mostly due to environmental factors and this is why an effort is currently in progress to find possible relations between abundance estimates and oceanographic parameters. Even if anchovy (both in Northern and Southern Adriatic) and sprat stock (in Northern Adriatic) showed good levels of abundance in 2006 survey they have just recovered from a previous worse condition; moreover sardine stock still shows a low level of abundance that is going on with continuity since 1998. For this reasons is reasonable not to increase the actual level of fishing effort on small pelagic fish.