



ASSESSMENT AND MONITORING OF THE FISHERY RESOURCES
AND ECOSYSTEMS IN THE STRAITS OF SICILY

MiPAAF

Report of the MedSudMed-08 Oceanographic and Acoustic Survey

Straits of Sicily, Libyan continental shelf

14 August – 07 September 2008



MEDSUDMED



***MedSudMed Component on “Small Pelagic Fish: Stock
Identification and Oceanographic Processes Influencing their
abundance and distribution”***

Type of survey: Oceanographic – acoustic

Country and region: Libya, FAO GFCM Geographical Sub-area 21

Research vessel: R/V Dalla Porta (Italy)

Survey number/date: MedSudMed Oceanographic and acoustic

Number of days: 24

Target species: Anchovy (*Engraulis encrasicolus*), Round sardinella (*Sardinella aurita*), Sardine (*Sardina pilchardus*); Mediterranean horse mackerel (*Trachurus mediterraneus*); Chub mackerel (*Scomber japonicus*); Bogue (*Boops boops*); *Spicara* sp.; Red-eye round herring (*Etrumeus teres*)

General objectives:

- Assessment of small pelagic target species biomass;
- Describe of the spatial distribution of target specie;
- Delineate of some biological characteristics (e.g. length frequency distribution, length weight relationship) during the survey time
- Describe some oceanographic characteristics of water masses (e.g. temperature, salinity, oxygen, ph, water transparency.)
- Highlight any possible differences in physical parameters in water masses during the study period

The survey was organized with the scope of collecting data in the Libyan waters, in order to provide and up to date description of the overall biomass and distribution of some small pelagic species and to extend areas monitored by experimental surveys in the south-central Mediterranean Sea (MedSudMed Project area).

Survey main itinerary:

Sail	Port	Dock	Port	Activity
14 August '08	Catania (Italy)	15 August '08	Siracusa (Italy)	Transfer Calibration of instruments
18 August '08	Siracusa (Italy)	18 August '08	Malta	Transfer Sampling
19 August '08	Malta	21 August '08	Zwara (Libya)	Transfer Sampling
21 August '08	Zwara (Libya)	26 August '08	Sirt (Libya)	Sampling
27 August '08	Sirt (Libya)	03 September '08	Ra'S At Tin (Libya)	Sampling
03 September '08	Ra'S At Tin (Libya)	06 September '08	Mazara del Vallo (Italy)	Sampling Disembarking

Cruise leader:

On 14-26 August 2008 Dr Angelo Bonanno, IAMC-CNR, Mazara del Vallo, Italy

On 26 August – 07 September 2008 Dr Gualtiero Basilone, IAMC-CNR, Mazara del Vallo, Italy

Participating institutes:

- Istituto per l'Ambiente Marino Costiero (CNR-IAMC) Mazara del Vallo and Messina
- Marine Biology Research Centre (MBRC), Tripoli, Libya
- Fishery Acoustic Laboratory, VNIRO, Moscow, Russia
- Istituto di scienze marine (CNR- ISMAR), Fishing Technology Unit, Ancona;Italy
- FAO MedSudMed Project.

Experts on board:14-26 August 2008

1) Angelo Bonanno	CNR-IAMC Mazara del Vallo, Italy
2) Tarub Bahri	FAO MedSudMed
3) Domenico Tegolo	CNR-IAMC Mazara del Vallo, Italy
4) Sergey Goncharov	VNIRO, Moscow, Russia
5) Salem Zgozi	MBRC, Tripoli, Libya
6) Sergey Popov	VNIRO, Moscow, Russia
7) Mohamed Hamza	MBRC, Tripoli, Libya
8) Mohamed Elsgar	MBRC, Tripoli, Libya
9) Ahmed Nfate	MBRC, Tripoli, Libya
10) Vito Palumbo	CNR-IAMC Mazara del Vallo, Italy
11) Jamal Salem Rabha	Tripoli, Libya

26 August-07 September 2008

1) Gualtiero Basilone,	CNR-IAMC Mazara del Vallo, Italy
2) Ignazio Fontana	CNR-IAMC Mazara del Vallo, Italy
3) Giovanni Giacalone	CNR-IAMC Mazara del Vallo, Italy
4) Luca Caruana	CNR-IAMC Mazara del Vallo, Italy
5) Salem Zgozi	MBRC, Tripoli, Libya
6) Sergey Popov	VNIRO, Moscow, Russia
7) Mohamed Hamza	MBRC, Tripoli, Libya
8) Mohamed Elsgar	MBRC, Tripoli, Libya
9) Ahmed Nfate	MBRC, Tripoli, Libya
10) Jamal Salem Rabha	Tripoli, Libya

Summary of activities:

In total, the following sampling was completed:

- 152 CTD casts/stations covered
- 134 acoustic hauls; in total, about 1958 nm were covered;
- 28 mid water trawling for adult sampling

The echosurvey covered the entire Libyan continental shelf (0 to 200 m depth). The sampling scheme was designed according to the general protocol agreed and adopted by the MedSudMed expert. The echosurvey was conducted along parallel transects perpendicular to the coastline. The average distance between transect was set to 10 nm. Due to the different extension of the continental shelf, the sampling scheme was slightly modified in the western (wide shelf, distance between transects set to 15 nm) and in the eastern (small continental shelf, a zig-zag survey design was adopted) parts of the study area.

Sample/data processing: 09-16 December 2009, Tajoura, Libya.

Summary of results:

Total abundance of target species was estimated and GIS maps describing the spatial distribution pattern of target species were produced. Length frequency distribution and length-weight relationship for small pelagic species were also obtained and curve parameters estimated. Anchovy was the species with the highest biomass, followed by Round sardinella, Bogue and Spicara sp. Les abundant resulted Sardine.

Temperature, salinity and conductivity pattern along offshore and inshore coastal sections were drawn. Overall, a well stratified environment where the upper mixed layer is about 20 m depth and the thermocline is between 20 and 50 m depth was found.

A clear low salinity area (37.7 ‰) in the western part of the Libyan waters characterizes the upper water masses, while in the eastern higher salinity values were recorded (39 ‰).

The oxygen pattern shows a clear low density in the upper mixed layer except for the western area where a certain degree of mixing with lower layers exists.

Follow up: The outcomes of the survey will be discussed in the framework of the MedSudMed Working Group on Small Pelagic Fisheries Resources and presented to the relevant Scientific Advisory Committee (FAO GFCM) together with the results of the second MedSudMed acoustic survey carried out in Libyan waters during summer 2010.

Report status: Draft available at the MedSudMed Project, reference: Bonanno, A., Zgozi, S., Bahri, T. (eds) 2008. Report of the MedSudMed-06 Oceanographic Survey carried out on the Libyan continental shelf (12 – 24 August 2006). GCP/RER/010/ITA/MSM-TD. *MedSudMed Technical Documents*.

Constraints/comments: The MedSudMed acoustic survey was the first acoustic inspections covering the entire Libyan waters and the first following the experimental survey carried out in 1993-94. The work at sea and the joint data processing confirmed the effectiveness of the cooperation established between the participating research institutions.