



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

**MiPAAF**

## **Report of the MedSudMed-06 Oceanographic and Ichthyoplankton Survey**

Straits of Sicily, Libyan continental shelf

12 – 24 August 2006



**MEDSUDMED**



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

**Type of survey:** Oceanographic – ichthyoplankton  
**Country and region:** Libya, FAO GFCM Geographical Sub-area 21  
**Research vessel:** R/V Urania (Italy)  
**Survey number/date:** MedSudMed Oceanographic and Ichthyoplankton  
 Number of days

**General objectives:**

- identification of spawning areas of the target species
- study of the correlation between mesoscale physical structures and the distribution and abundance of small pelagic fish eggs and larvae and zooplankton in the study area
- measurement of physical parameters with a multiparametric probe
- analysis of sediments

The survey was organized with the scope of collecting data in the Libyan waters, in order to update existing information and to extend the coverage of the MedSudMed Project area. The overall objective is to get a regional scheme on transport patterns of small pelagic fish eggs and larvae at regional scale and to identify the oceanographic features responsible for retention areas.

to provide a first outline of the composition of fish eggs and larvae in Libyan waters during summer; to locate the areas of major concentration of eggs and larvae of small pelagic fish species; to relate the distribution and abundance of ichthyoplankton to the mesoscale physical structures characterizing the area.

**Itinerary:**

| Sail         | Port             | Dock         | Port            | Days at sea | No. stations |
|--------------|------------------|--------------|-----------------|-------------|--------------|
| 12 August 06 | Siracusa (Italy) | 14 August 06 | Zwara (Libya)   | 2           | 5            |
| 14 August 06 | Zwara (Libya)    | 21 August 06 | Zwara (Libya)   | 8           | 58           |
| 21 August 06 | Zwara (Libya)    | 24 August 06 | Messina (Italy) | 4           | 10           |

**Cruises leader:** Dr Angelo Bonanno, IAMC-CNR, Mazara del Vallo, Italy

**Participating institutes:**

Istituto per l'Ambiente Marino Costiero (CNR-IAMC) Mazara del Vallo and Messina  
 FAO MedSudMed Project

Marine Biology Research Centre (MBRC), Tripoli, Libya

Fishery Acoustic Laboratory, VNIRO, Moscow, Russia

Istituto di scienze marine (CNR- ISMAR) section of Oceanografia Fisica, La Spezia, Italy

Istituto Nazionale di Geofisica e Vulcanologia, La Spezia, Italy

**Experts on board:**

- |                       |                                   |
|-----------------------|-----------------------------------|
| 1) Angelo Bonanno     | CNR-IAMC, Mazara del Vallo, Italy |
| 2) Bahri Tarub        | FAO MedSudMed                     |
| 3) Gualtiero Basilone | CNR-IAMC, Mazara del Vallo, Italy |
| 4) Mireno Borghini    | ISMAR-CNR La Spezia, Italy        |
| 5) Salem Zgozi        | MBRC, Tripoli, Libya              |
| 6) Vincenzo Pernice   | CNR-IAMC, Mazara del Vallo, Italy |
| 7) Abdul Bari Ramadan | MBRC, Tripoli, Libya              |
| 8) Hisham Ghmati      | MBRC, Tripoli, Libya              |

|                         |                                   |
|-------------------------|-----------------------------------|
| 9) Paola Bonanno        | CNR-IAMC, Mazara del Vallo, Italy |
| 10) Mostapha Talha      | MBRC, Tripoli, Libya              |
| 11) Giovanni Giacalone  | CNR-IAMC, Mazara del Vallo, Italy |
| 13) Sergey Popov        | VNIRO, Moscow, Russia             |
| 14) Sergey Levashov     | VNIRO, Moscow, Russia             |
| 15) Mohamed Hamza       | MBRC, Tripoli, Libya              |
| 16) Titone Gabriella    | CNR-IAMC, Mazara del Vallo, Italy |
| 17) Carla Rallo         | CNR-IAMC, Mazara del Vallo, Italy |
| 18) Grazia Maria Armeri | CNR-IAMC, Mazara del Vallo, Italy |
| 19) Emanuela Borzi      | CNR-IAMC, Mazara del Vallo, Italy |
| 20) Rosario Grammauta   | CNR-IAMC, Mazara del Vallo, Italy |
| 21) Marina Locritani    | INGV, La Spezia, Italy            |
| 22) Jamal Salem Rabha   | MBRC, Tripoli, Libya              |

### Summary of activities:

In total, the following samples were collected:

- 52 ichthyoplankton samples
- 120 anchovy larvae preserved individually in liquid nitrogen
- 40 Box Corer samples (samples in PVC tubes)
- 41 Sediments samples (samples in plastic bags)
- 52 CTD casts and ADCP profiles
- 3 waters samples (trace elements)
- 14 water samples (nutrients and micro-algae)
- Continuous acoustic data
- Continuous sodar data
- Meteorological data.

The sampling design was based on the one adopted in 1974 (Zorgani, 1982) and sampling stations were carried out approximately in the same point of the 1974. Samples were not collected at less than 3 nm from the coast and were duplicated to obtain a double set of samples.

**Sample/data processing:** 07-18 January and 14-24 February 2007, Mazara del Vallo, Italy.

### Summary of results:

Data on species composition shows that the predominant species was anchovy representing about 51% of the collected larvae and round sardinella with 9.6% of the larvae. Each of the other species represents only a minor fraction of the collected larvae, except the Serranidae family (5.6%), the Gobidae family (3.7%), *Auxis rochei* (2.3%) and the Labridae family (3%).

Among the larval specimens collected in the Libyan waters 11 Orders, 39 Families, 39 Genera and 40 Species were identified (see Annex 2). Annex 3 shows the distribution maps of the most abundant larvae species and/or families.

The area with the highest concentration of anchovy eggs is located in the western part of the Libyan waters, with high densities in at depths of about 150 m. High values of eggs density were also found in more coastal sea areas between Zauara and Tripoli and east of Tripoli.

A description of oceanographic and sediments characteristics, phytoplankton composition, and presence of organic matters, nutrients, and trace elements was provided.

**Follow up:** The preliminary results were presented at the SAC Sub-Committee on Stock Assessment (FAO GFCM, Kavala, Greece, 17-21 September 2007).

**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 survey carried out and the results obtained illustrate how cooperation was successfully established between the participating Institutes. The step forward is to focus on specific topics that can be explored in the future if there is any interest in this sense.