

PRELIMINARY DATA ON MESOPELAGIC ICHTHYOPLANKTON IN THE JONIAN SEA (EASTERN MEDITERRANEAN)

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**Abstract**

During POP-EOCUMM '95 oceanographic cruises, zooplankton was collected in the southern Jonian sea, by a multinet BIONESS. The early life stages of fishes were sorted and studied to characterize their horizontal and vertical distribution. Gonostomatids *Cyclothone braueri* and *C. pygmaea*, Myctophid *Myctophum punctatum* and Sternoptychid *Argyropeleus hemigymnus* were the most abundant species.

*Keywords: ichthyoplankton, distribution, Eastern Mediterranean*

**Introduction**

Mesopelagic fishes are one of the most promising unconventional fishery resources in the world. They are distributed throughout all the oceans and dominate the mesopelagic zone (1).

The actual knowledge on the ecology of Mediterranean mesopelagic ichthyoplankton is fragmentary. Data about taxonomy and distribution of ichthyoplankton are available for the Jonian sea and the Strait of Messina (2-7).

**Materials and methods**

Zooplankton samples were carried in the southern Jonian sea during the POP-EOCUMM '95 oceanographic cruises (15-30 July '95), using BIONESS (8), equipped with ten nets of 250 mm mesh size. The BIONESS continuously measured temperature, salinity and depth during tows. Four stations were sampled along the study area following regular intervals of six hours (6.00, 12.00, 18.00 and 24.00).

The early life stages of fishes were sorted, identified into families and species. The larval stages were divided into three sub-stages: preflexion, flexion and postflexion that are based on the degree of flexion of the terminal section of the notochord during caudal fin development (8). The standard length-frequency distribution and the occurrence of the most abundant species were studied.

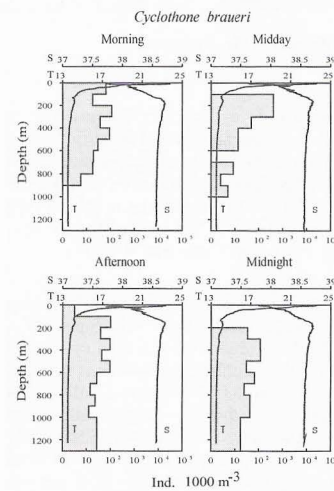
**Tab. 1 – Mesopelagic ichthyoplankton collected in the whole study area, positive stations and depth ranges for each species.**

N° of Species	Stations specimens collected	Depth range (m)
<i>Cyclothone braueri</i> Jesp. & Taning, 1926	829	J1-J2-J3-J4 0-1770
<i>Cyclothone pygmaea</i> Jesp. & Taning, 1926	118	J1-J2-J3 0-1770
<i>Argyropeleus hemigymnu</i> Cocco, 1829	30	J1-J2-J3 0-1770
<i>Vinciguerra attenuata</i> Cocco, 1838	4	J1-J2-J3 150-500
<i>Chauliodus sloani</i> Schneider, 1801	1	J1 500-600
<i>Stomias boa</i> Risso, 1810	4	J1-J2-J3 0-200
<i>Myctophum punctatum</i> Rafinesque, 1810	44	J1-J2-J4 0-1770
<i>Ceratoscopelus maderensis</i> Lowe, 1839	1	J1 0-1770
<i>Benthoema glaciale</i> Reinhardt, 1837	2	J2 0-200
<i>Lampanyctus crocodilus</i> Risso, 1810	2	J2 200-1293
<i>Hygophum benoitii</i> Cocco, 1838	6	J1 0-1770
<i>Hygophum hygomi</i> Lutken, 1892	1	J3 400-500
<i>Lobianchia gemellari</i> Cocco, 1838	1	J2 700-800
<i>Diaphus rafinesquei</i> Cocco, 1838	2	J1-J2 0-600
<i>Electrona rissoi</i> Cocco, 1829	2	J1 500-1000
<i>Paralepis speciosa</i> Bellotti, 1878	6	J1-J2-J3 0-1000

**Results and discussion**

A total of 16 mesopelagic fish species belonging to Gonostomatidae, Sternoptychidae, Chauliodontidae, Myctophidae and Paralepididae were collected in the whole study area (tab. 1). The table showed a increasing specific density moving north-south, contemporaneously with decrease of bottom depth.

*Cyclothone braueri* (transforming stages and juveniles) represented the most abundant species (829 individuals) and was collected mainly between 200-300 m. *C. pygmaea* (89 collected juveniles and adults) and larvae, postlarvae and juvenile stages of *Myctophum punctatum* and *Argyropeleus hemigymnus* (44 and 30 individuals, respectively) followed. The size of *C. braueri* ranged between 13 and 31 mm SL (mean 20.32 mm ±2.68) while in *C. pygmaea* varied between 13 and 21 mm SL (mean 17.81 mm ±1.40). Day-night vertical occurrence, in relation to the temperature and salinity profiles, was given for *C. braueri* at station J2 (fig.1). The early life stages of *C. braueri*, *M. punctatum* and



**Fig. 1 - Day-night vertical distribution of *Cyclothone beaueri* at station J2**

*A. hemigymnus* occurred at surface during the day and migrated deeply during the evening hours; the oldest stages of *C. pygmaea* did not migrate. There was a rich literature concerning the migratory and trophic activities of the mesopelagic fishes. They can be separated into two categories, based on vertical distribution: "deep non-migrating" and "mesopelagic migrating", but this also depend on the trophic activity of mesopelagic fishes. These organisms do not have a very hydrodynamic shape, which inhibits long-range displacements as seen in the great superficial migrations. Underwater observations demonstrate that they spend long periods in an immobile position, with the head pointing downward, and often in dense aggregations (10).

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