The fin whale and other large pelagic filterers as samplers of *Meganyctiphanes norvegica*

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The study of the population structure and dynamics of Euphausiids is often hampered by the scarcity of samples, due to the fact that these shrimps have a high rate of avoidance of plankton nets. The problem is similar to that of collecting study material of cephalopods, which cannot be obtained by common fishing gear. In the latter case, marine odontocetes, who often are specialized hunters of this prey, are the best samplers (CLARKE, 1986a) and their stomach content, albeit digested, given the tools now available (CLARKE, 1986b), are a very important source of information.

As to solution to the problem of the quantity of material needed to assess length/frequency distribution in Euphausiids, the collections effected by large pelagic filterers may be of great utility. Two cases are possible:

a) freshly ingested Euphausiids which may be directly measured

b) digested prey where some hard remains may be measured and related to total length.

The fin whale, which is frequently encountered during the summer months in the Ligurian Sea (VIALE-PICHOD, 1977) is the most powerful sampler of *M. norvegica* (RELINI ORSI and GIORDANO, 1992). The feces of *B. physalus* which can be dipnetted in surface waters contain in a few ml of volume, in form of isolated mandibles, the equivalent of several hours of work at sea using the 15 feet I.K.M.T. net. To make such material utilizable we have established the total length/mandible length relationship. The shrimps were obtained by a I.K.M.T. haul, from 750 to 0 m (August 1991) and measured from the frontal border to the telson in mm; the mandibles were measured under the stereomicroscope by means of a micrometric ocular lens, in mm, along the axis from the molar process to the opposite tip (Fig.1).

For N = 53 and R = 0.96 the linear regression is:

Total length (mm) = 12,3350899 mandible length (mm) + 5.1071876.

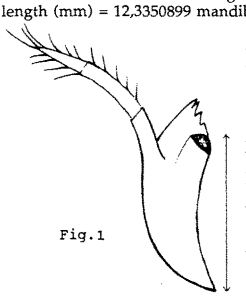

Fig.1

It is interesting to compare the sizes of prey of *Balaenoptera physalus* and the specimens caught by the I.K.M.T. at the same time. Couples of such data (fig. 2 and 3) have been collected in some stations of the Liguro-Provençal basin which were considered "hot spots" for *M. norvegica* (RELINI *et al.*, 1992). The summer samples obtained by the plancton net include two main age groups, each of them formed by several subcohorts. The relative importance of the two main groups varies in different stations (RELINI *et al.*,1992). Similar patterns result from samples of feces of different fin whales.

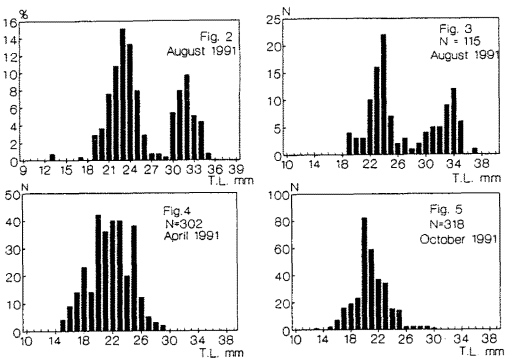

Fig. 2,3,4,5. Length/frequency distributions of *M. norvegica* obtained by I.K.M.T. (Fig.2), by feces of fin whales (Fig. 3 and 4) and by the stomach content of a devilfish (Fig. 5).

Samples collected in temporal sequence are obviously useful for growth assessment. Two examples of length/frequency distributions obtained in different seasons are shown (fig 4-5). The latter represents case a), i.e. *M. norvegica* directly measured from a meal of *Mobula mobular*. This large pelagic filterer was caught by a swordfish driftnet.

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