GENETIC DIVERSITY OF MEDITERRANEAN AND ANTARCTIC EUPHAUSIIDS (CRUSTACEA : EUPHAUSIACEA) Diversité génétique d'Euphausiacés méditerranéens et antarctiques (Crustacea Euphausiacea)

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VIE MILIEU, 1997, 47 (4) : 395-396

GENETIC DIVERSITY OF MEDITERRANEAN AND ANTARCTIC EUPHAUSIIDS (CRUSTACEA : EUPHAUSIACEA)

Diversité génétique d'Euphausiacés méditerranéens et antarctiques (Crustacea Euphausiacea)

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GENETICS
CHROMOSOME
EUPHAUSIACEA

ABSTRACT. – Preliminary results on chromosome number and morphology are given for nine euphausiid species from two distinct pelagic ecosystems, the Mediterranean Sea and the South Indian area of the Antarctic Ocean.

GÉNÉTIQUE
CHROMOSOME
EUPHAUSIACEA

RÉSUMÉ. – Des résultats préliminaires sur le nombre et la morphologie des chromosomes sont donnés pour neuf espèces d'Euphausiacés récoltées dans deux écosystèmes pélagiques distincts, la Mer Méditerranée et la région Sud-Indienne de l'Océan Antarctique.

Euphausiids, the pelagic crustaceans known as "krill", are world-wide distributed. The Antarctic krill, *Euphausia superba*, and the northern krill, *Meganyctiphanes norvegica* are key species of the pelagic ecosystem and serve as food for large marine invertebrates (squids) and vertebrates (fishes, birds, seals and whales). The 86 known euphausiid species (Baker *et al.* 1990) share a common morphology that distinguish them from other eucarids (decapods and mysids). But, neighbour species are difficult to recognize using morphological characters. Knowledge of the genetic structure of euphausiids may help to clarify their taxonomy and whether there are geographically isolated populations.

Euphausiid genetic differentiation has been studied using allozymes (e.g. Fevolden 1982, MacDonald *et al.* 1986). Yet, few cytogenetic studies have been published. The haploid chromosome number has been given for *Euphausia pacifica* (n = 16, Yabu and Kawamura 1981) and *Euphausia superba* (n = 16, Yabu and Kawamura 1984, and n = 17, Phan *et al.*, 1989). The karyotype of mediterranean *Meganyctiphanes norvegica* has been described by Thiriot-Quiévreux and Cuzin-Roudy (1995).

In the present work, the chromosome number and morphology of nine species of euphausiids were studied from male gonadal tissue using the method described in Thiriot-Quiévreux and Cuzin-Roudy (1995). The present paper reports preliminary results which will be later detailed (Thiriot-Quiévreux *et al.* in press).

Euphausiids were sampled in two distinct pelagic ecosystems : the Mediterranean Sea (*Meganyctiphanes norvegica*, *Nematoscelis megalops*, *Euphausia hemigibba*, *Euphausia krohni*, *Euphausia brevis*, *Nyctiphanes couchi*) and the South Indian area of the Antarctic Ocean (*Euphausia superba*, *Thysanoessa macrura* and *Thysanoessa vicina*).

The haploid chromosome number of the 9 species studied varied from n = 11 to n = 19 among the Mediterranean species, and from n = 13 to n = 20 for the Antarctic ones. The two species *Thysanoessa macrura* and *T. vicina*, which are not easily distinguished by morphological characteristics and have overlapping distributions in the Southern Ocean, show very distinct karyological features (n = 20 and n = 13 respectively).

Chromosome morphology was determined from mitotic metaphases or meiotic metaphases II. Heteromorphic sexual chromosomes were not observed in any of the studied species. The karyotypes of species sharing the chromosome number of n = 19 may be distinguished by the chromosome size and morphology (see Fig. 1).

The present data were compared to those from the litterature on peracarids and decapods (Nakamura *et al.*, 1988; Thiriot-Quiévreux, 1994). The euphausiid species studied here are characterized by an exceptionally large chromosome size and by a restricted range of haploid chromosome number (n = 11 to 20).

ACKNOWLEDGEMENTS – This work was supported by the RDM.

Fig. 1. – Karyotypes of two euphausiid species sharing the same chromosome number (n = 19). A, *Meganyctiphanes norvegica*. The chromosome pairs show a regular decreasing size and a similar metacentric morphology. B, *Nematoscelis megalops*. The last few chromosome pairs show a sharper decrease in size than in *Meganyctiphanes*, and two chromosome pairs (nos 6 and 12, see arrows) are submetacentric. Scale bar = 10 µm.

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Reçu le 3 février 1997; received February 3, 1997
Accepté le 20 mars 1997; accepted March 20, 1997