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Chromosomes of *Calanus cristatus* KRÖYER

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Abstract

Cytological observation was carried out for *Calanus cristatus* of Calanoidae, which was collected from the North Pacific. The chromosome number was counted to be 2n=34 in oogonia, and n=17 in oocytes. The metaphase chromosomes in oogonia indicated that all were metacentric and submetacentric chromosomes. At meiotic metaphase, 17 chromosomes formed a ring consisting of four chromatids.

Calanus cristatus KRÖYER, the largest species of Copepoda is distributed widely in the North Pacific, North Atlantic, Sea of Okhotsuk and Bering Sea (Yamaji, 1977). Recent publications indicate that the species is a fairly important food source for sea birds, fish and whales (Odate, 1977 ; Taka, Kitakata and Wada, 1985 ; Taka, Kitakata and Wada, 1982 ; Maeda, Takahashi and Ueno, 1980 ; Ogi, Kuboderа and Nakamura, 1980 : Kawamura, 1982). Quite recently, the complete life cycle of this species collected from the North Pacific was described in detail by Charles et al. (1984). So far as I am aware, the chromosomes in Calanoidae have not yet been published, so the present study was undertaken.

Materials used were collected at 48°00′N, 173°27′E on August 1, 1985 with a 160 cm plankton net (length 750 cm, mesh size 2 mm) which was towed horizontally at a depth of 500 m on the cruise of Hokusei Maru, Hokkaido University.

Immediately after catching, the materials were fixed with acetic alcohol (1 : 3). Aceto-iron-haematoxylin-chloral hydrate solution was used for staining of chromosomes according to Wittman (1965).

The specimens of 80 females and 20 males were examined. The dividing nuclei were observed in the gonads of 35 females.

The metaphase plates in the oogonia had 2n=34 metacentric and submetacentric chromosomes, each of which was ca. 1-3 μm length and rod-shaped (Fig. 1.A, B, C & C′). The short diameter of an oocyte shown in Fig. 1.A & B, was ca. 15 μm. The metaphase chromosomes showed metacentric and submetacentric chromosomes (Fig. 1. C′ & D).

At meiotic metaphase, 17 chromosomes were easily detected ; each of which formed a ring consisting of four chromatids ca. 2-8 μm in width (Fig. 2. A, B, C, D & E). The short diameters of oocytes shown in Fig. 2. A, B & E were ca. 29, 35 & 43 μm. The short diameter of the oocyte shown in Fig. 2. F was ca. 66 μm, however chromosomes could not be observed.

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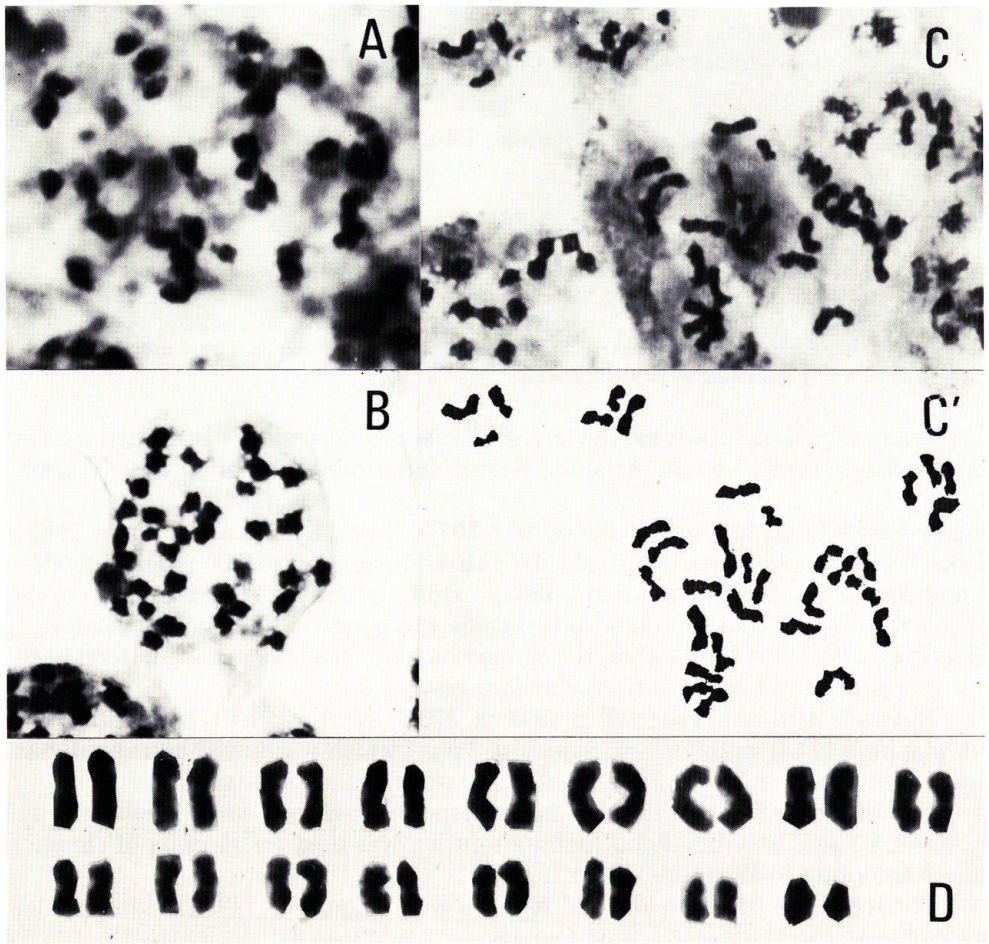

Fig. 1. Nuclear divisions in *Calanus cristatus*.
A-C. Mataphase chromosomes in oogonia.
C'. Drawing of chromosomes in C.
D. Chromosomes from the enlarged photograph of C.
Magnification; A: ×1,880. B & C: ×1,650. D: ×2,350.

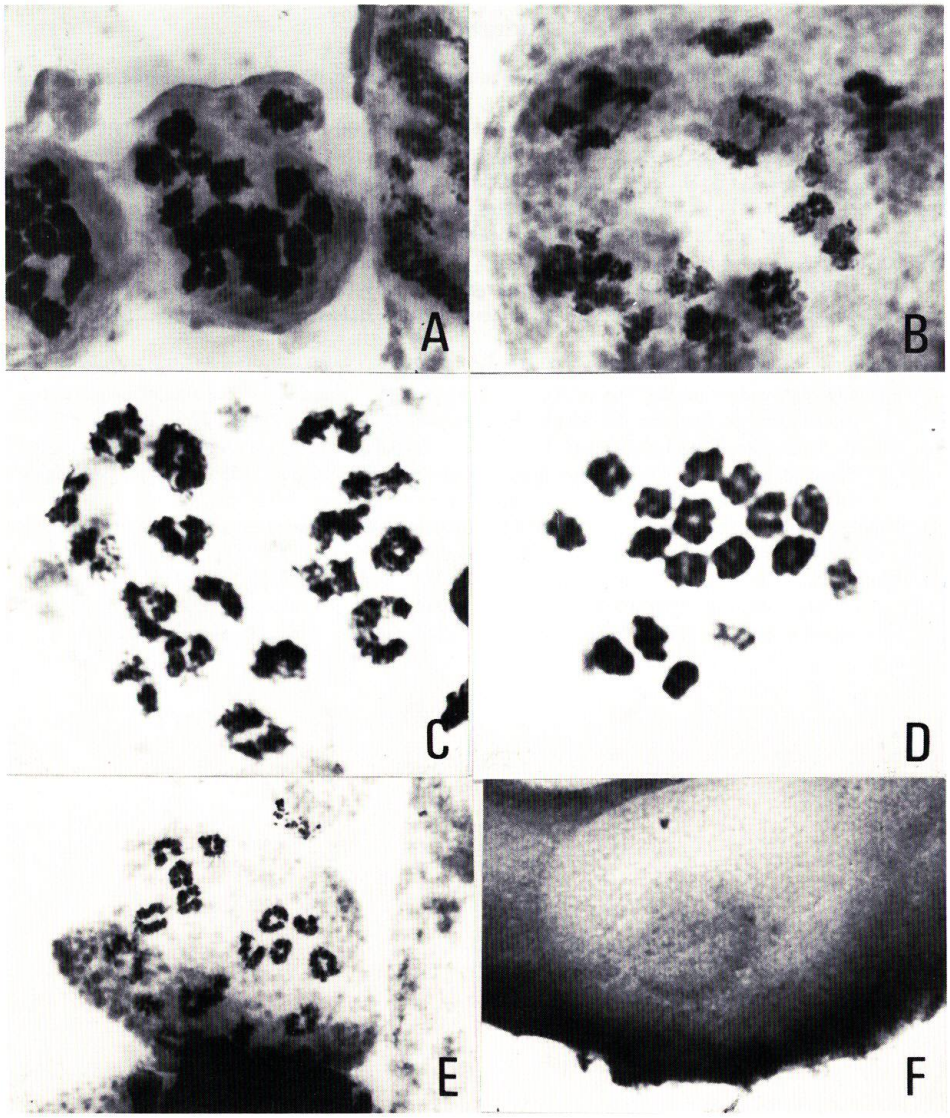

Fig. 2. Meiotic metaphase chromosomes and an oocyte in *Calanus cristatus*.
A-E. Metaphase showing 17 chromosomes in haploid.
F. An oocyte having a short diameter of 66 μm in which no chromosomes were found.
Magnification ; A, B & C : ×1,500. D : ×1,700. E : ×700. F : ×600.

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