

Euphausia superba Danaの染色体

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Chromosomes of *Euphausia superba* DANA^{1), 2)}

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Abstract

The dividing nuclei in the seminal glands of *Euphausia superba* DANA collected in the Antarctic Ocean were examined to observe the chromosomes. The chromosome number was estimated as $2n=32$ in spermatocytes and $n=16$ in spermatogonia. All the chromosomes at metaphase in meiosis I were interstitial cruciate by the formation of one chiasma in each chromosome.

In the fixed materials of *Euphausia superba* DANA, one of the major zooplankton species in the Antarctic Ocean, collected during the KH-83-4 Cruise of R.V. Hakuho Maru of the Ocean Research Institute, University of Tokyo, we came across the dividing nuclei in their seminal glands.

Materials and Methods

Specimens used were obtained at 65°46.8'S, 140°21.9'E on January 15th (0925-0950) with a 10ft-IKMT and at 64°13.7'S, 136°10.6'E on January 16th (1217-1325) with a circle mid-water trawl in 1984. Immediately after the catch, the specimens were put into acetic alcohol (1:3) solution. In the laboratory of Faculty of Fisheries, Hokkaido University, the reproductive organs of both males and females were dissected out and stained with aceto-iron-haematoxylin-chloral hydrate solution recommended by WITTMANN (1965).

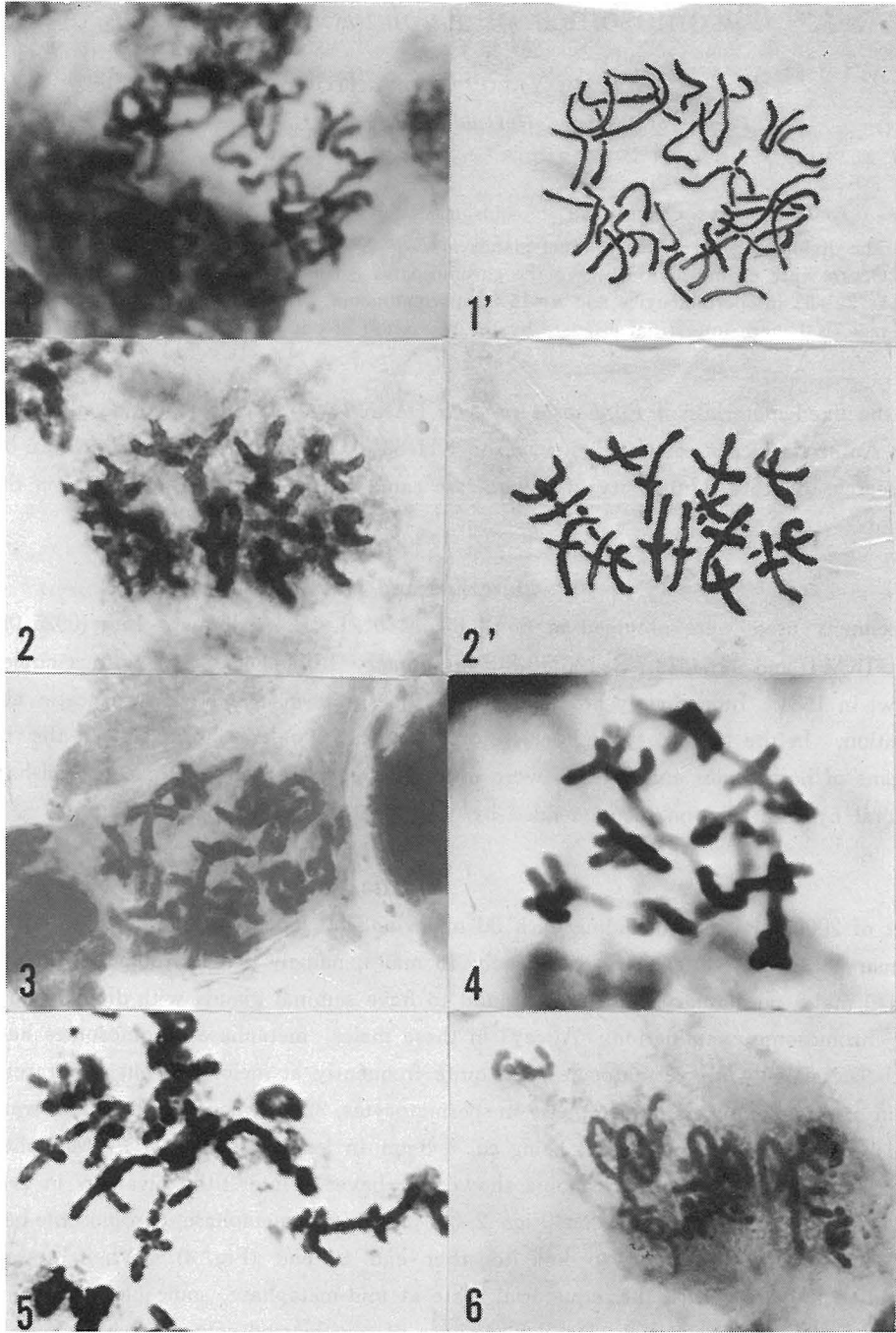
Results

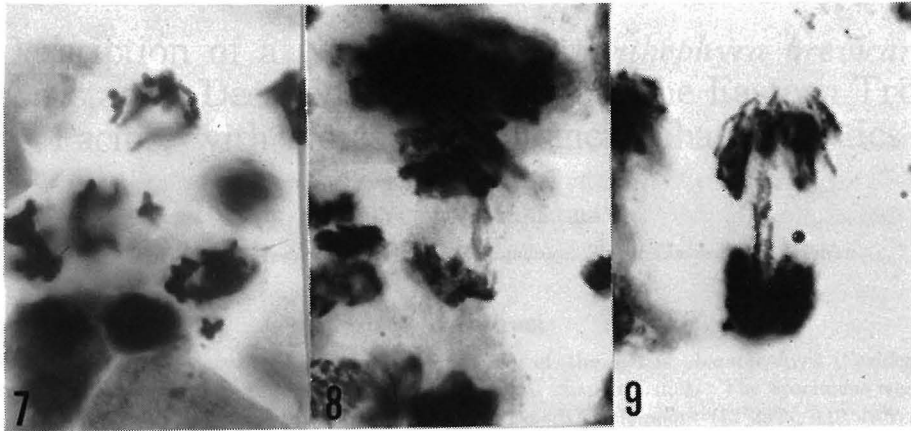
Out of 200 individuals including each 50 males and 50 females from the materials obtained on January 15th and 16th respectively, only 15 males, namely 6 males obtained on January 15th and 9 males on January 16th, were found to have seminal glands with dividing nuclei suitable for chromosome examination. Always in these males, metaphase chromosomes had been met with occasionally in spermatocytes and quite frequently at meiosis I, but very rarely at meiosis II in spermatogonia. At metaphase in spermatocytes, 32 univalent chromosomes were observed, which are usually slightly bent, being ca. 4-8 μm in length (Figs. 1, 1'). Metaphase chromosomes in meiosis I in spermatogonia showed to have 16 interstitial bivalents in cruciate-shape by the formation of one chiasma (Figs. 2, 3). At its mid-metaphase, chromosome became sticky and occasionally was found to link together end to end (Fig. 4). When the chromosomes begin to move towards the equatorial plate at mid-metaphase, some of the chromosomes are transformed into O-shape due to the presence of two biased centromeres as seen in Figs. 5

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Figs. 1-9. Dividing nuclei in the spermatocyte (Fig. 1), and in meiosis I in the spermatogonia (Figs. 2-9) of *Euphausia superba* DANA. All figures, $\times 1,120$.

Fig. 1. Metaphase chromosomes. Fig. 1'. Diagram of Fig. 1. Figs. 2, 3. Metaphase chromosomes. Note the interstitial split in each chromosome. Fig. 2'. Diagram of Fig. 2. Figs. 4, 5. Metaphase chromosomes in more advanced stage than in Figs. 2, 3. Fig. 6. Metaphase chromosomes in the side view. Fig. 7. Metaphases with each one odd bivalent. Fig. 8. Anaphase with one lagging chromosome. Fig. 9. Anaphase with double chromosome bridge.

and 6. Chromosome aberrations were noticed in two males, both obtained on January 16th. In these two males, considerable number of metaphase figures contained one odd chromosome in meiosis I (Fig. 7) and II, and one lagging chromosome (Fig. 8) or chromosome bridge of either single or double strand (Fig. 9) was often detected. In meiosis II, no well defined metaphases with countable chromosomes could be found in any male. The number of chromosomes of this species ($2n=32$ and $n=16$) is the same as reported by YABU & KAWAMURA (1981) for *Euphausia pacifica* HANSEN.

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