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A NOTE ON THE KARYOTYPES OF SOME CALANOID COPEPODS

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ABSTRACT

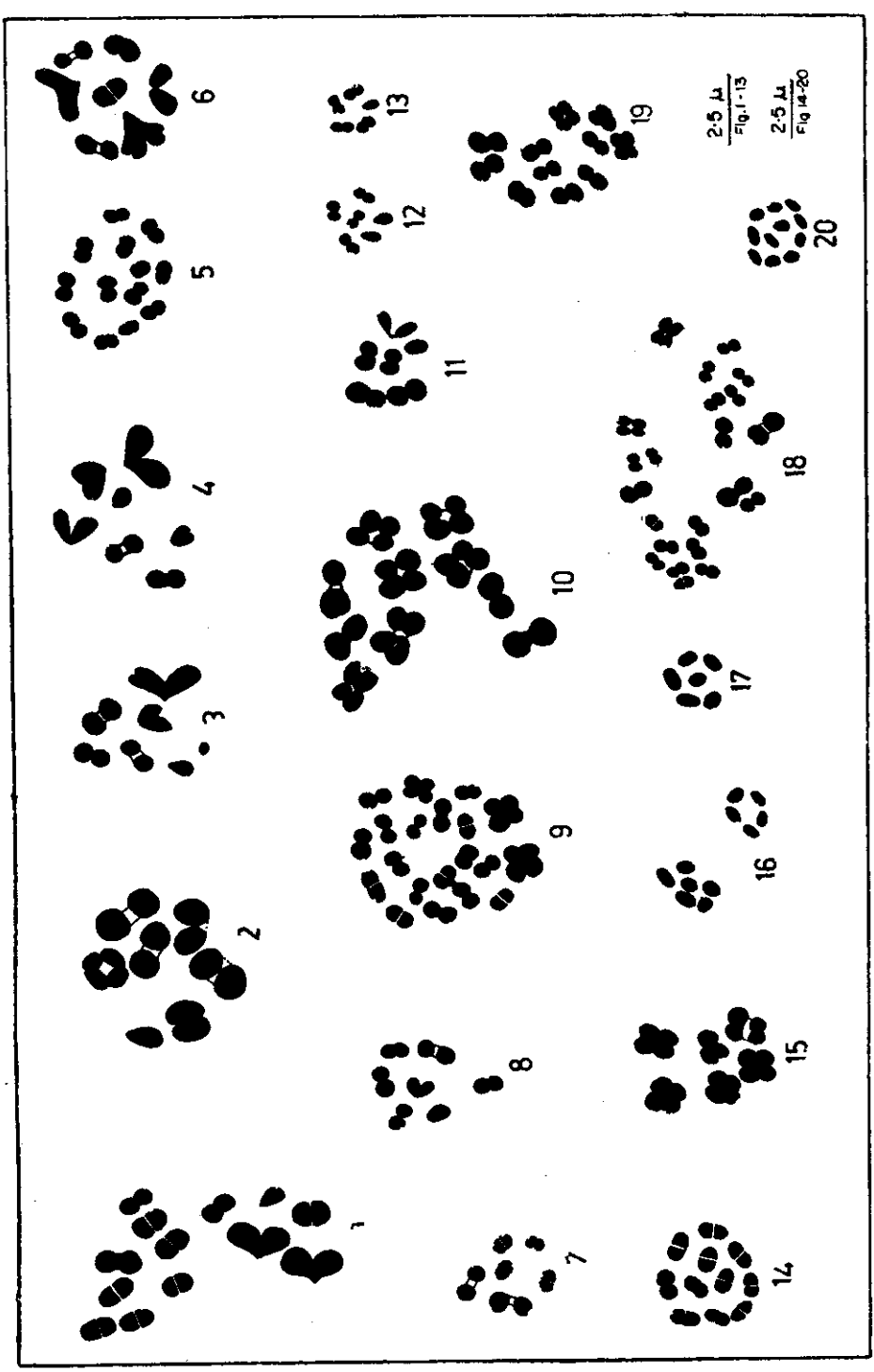
Karyological studies have been made on 6 species of calanoid copepods, *viz*, *Temora stylifera*, *T. discaudata*, *Labidocera detruncata*, *Acartia southwelli*, *Pseudodiaptomus aurivilli* and *P. serricaudatus*. They respectively showed a diploid number of 13, 13, 20, 11, 11 and 22 chromosomes. The results have been compared and discussed with the earlier data available on chromosomes of the same genera and the modal numbers are being suggested.

Copepods play an important role in the overall economy of the sea. Earlier, Goswami and Goswami (1972, 73, 74 & 77) have published an account of chromosomal studies on 26 species of copepods from Indian waters. However, there are still wide gaps left in chromosome number even within genera belonging to the same families which are essential to be filled in before deriving any substantial conclusions about the basic chromosome number, cytotaxonomical relationship and the evolution of the karyotype in them. Harding (1950) has said that knowledge of chromosome number is essential to analyse copepod evolution.

During the present investigations karyotypes of six species of calanoid copepods belonging to the genera described earlier by the present workers have been given to fill up some of these gaps. The species, *viz*., *Temora styilfera* (Dana), *T. discaudata* Giesbrecht, *Labidocera detruncata* (Dana), *Acartia southwelli* Sewell, *Pseudodiaptomus aurivilli* Cleve and *P. serricaudatus* (T. Scott) have been collected from the nearshore and estuarine waters of Goa. The methods of collection, preparation of slides and studies are the same as described earlier (Goswami and Goswami, 1974 and 77).

Temora stylifera and *T. discaudata* have a diploid number of 13 and haploid number of 7 chromosomes encountered during the spermatogonial and meiotic metaphases (Figs. 1–8). The average total length of the homologous pairs varies from 0·72–1·25μ in the former species whereas in the latter, all the pairs are of the same length (0·72μ). The karyotype of *T. stylifera* comprises 12 metacentric autosomes and a single acrocentric sex chromosome. In *T. discaudata*, however, both the autosome and sex chromosome are metacentric. The sex mechanism is of the XO type in both the species.

In *Labidocera discaudata*, the diploid chromosomal complement consists of 20 metacentric chromosomes varying in average total length from 0·60–1·20μ (Fig. 9). Metaphase I reveals 10 chromosomes (Fig. 10). There is no distinction of the sex chromosomes.



Species: *Temora stylifera*—*Fig. 1* Spermatogonial metaphase, *Fig 2.* Metaphase I, *Figs 3 & 4.* Metaphases II with 7 chromosomes Species: *Temora discaudata*—*Fig. 5.* Spermatogonial metaphase, *Fig. 6.* Metaphase I, *Figs. 7 & 8.* Metaphases II with 6 and 7 cromosomes respectively. Species: *Lobidocera detruncata*— *Fig. 9.* Spermatogonial metaphase, *Fig. 10.* Metaphase I. Species: *Acartia southwelli*—*Fig. 11.* Spermatogonial metaphase, *Fig. 12.* Metaphase I, *Fig. 13* Metaphase II. Species: *Pseudodiaptomus aurivilli*—*Fig. 14.* Spermatogoniar metaphase, *Fig. 15.* Metaphase I, *Fig. 16.* Telophase I showing 5 and 6 chromosomes at the two poles respectively. Species: *Pseudodiaptomus serricaudatus*—*Fig. 18.* Spermatogonial metaphase, *Fig. 19.* Metaphase I, *Fig. 20.* Metaphase II.

In *Acartia southwelli*, the $2n$ chromosome number is 11 and $n = 6$ (Figs. 11–13). The karyotype comprises 8 metacentric and 3 acrocentric chromosomes. The sex chromosome belongs to the latter category. The sex mechanism is of the XO type.

The last two species, belonging to the genus *Pseudodiaptomus*, namely, *P. aurivilli* and *P. serricaudatus* have a diploid number of 11 and 22 and a haploid number of 6 and 11 chromosomes respectively (Figs. 14–20). All the chromosomes in both the species are metacentric. In *P. aurivilli*, the average total length of the individual chromosomes is 1·11μ and in *P. serricaudatus*, it varies from 0·55–1·25μ. In *P. aurivilli*, the two types of metaphase II plates carrying 5 and 6 chromosomes respectively denote the XO type of sex mechanism.

Earlier, Goswami and Goswami (1974) described the haploid chromosome number 3 for *Temora Turbinata*. The haploid number in *T. stylifera* and *T. discaudata*, however, is 7. With this limited data available, presently no generalization can be made about the modal number of this genus.

In genus *Labidocera*. the same workers have reported 10(n) for *Labidocera pectinata*, *L. acuta*, *L. kroyeri* and *L. pavo*. The species *L. detruncata* described presently also shows the same haploid number of chromosomes. So the modal number 10(n) can safely be suggested for this genus.

In the genus *Acartia*, Goswami and Goswami (1973) have described the haploid chromosome number of 6 chromosomes in four species, *viz*., *A. spiencauda*, *A. negligens*, *A. centrura* and *A. plumosa*. *A. southwelli* investigated presently also shows the same haploid number. Thus, 6(n) is hereby, suggested as the modal number for the genus *Acarita*.

In the last genus *Pseudodiaptomus* the chromosome number is known only for *P. aurivilli* and *P. serricaudatus* studied here. The two species show the haploid chromosome numbers quite wide apart, *e.g*., 6 and 11 respectively. The addition of more information for this genus alone will show whether this is a common trend amongest the species of this genus.

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