

A NOTE ON CHROMOSOMES OF *PONTELLOPSIS HERDMANI* AND  
*PONTELLA PRINCEPS* (COPEPODA) FROM THE LACCADIVE SEA

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*Pontellopsis herdmani* and *Pontella princeps* (Pontellidae, Calanoida, Copepoda) showed a diploid number of 20 and a haploid number of 10 chromosomes during the spermatogonial metaphase and metaphase II stages. The chromosomes were in the size range of 0.50-3.11  $\mu\text{m}$  in the former and between 0.44-1.21  $\mu\text{m}$  in the latter species. The karyotype formula was 10M + 10A in *Pontellopsis herdmani* and 16M + 4A in *Pontella princeps*.

**Key-words :** Chromosome. *Pontellopsis herdmani*, *Pontella princeps*, Laccadive Sea.

The Copepods belonging to the family Pontellidae, Calanoida, are mainly oceanic forms. Earlier, Goswami and Goswami (1979b) studied 14 species belonging to the genus *Labidocera* from the Laccadive sea. The present communication deals with cytological studies of *Pontellopsis herdmani* and *Pontella princeps*, two other genera of the same family.

Zooplankton samples were collected from the surface using a square net on board RV *Gaveshani* during the 31st cruise (March-April, 1978) from stations 856-871 lying between lat. 8° to 14° N and long. 71° to 74° E in the Laccadive Sea. The various environmental parameters noted were as follows: salinity 34.5-35.64‰, temperature 28.5-30.5°C, dissolved oxygen + 4- + 12%.

The material after filtration was fixed in acetic-alcohol (1:3) and preserved in 70% alcohol. Male specimens were sorted out and stained in acetic orcein. Squash preparations were made from the gonads and karyotypic details were studied.

The diploid number of chromosomes encountered at the spermatogonial metaphase stages was 20 in both *P. herdmani* and *P. princeps* (Figs. 1 and 4). The haploid number encountered at metaphase II stages was 10 (Fig. 3).

In *P. herdmani* the chromosomes were in the size range of 0.50 to 3.11  $\mu\text{m}$ , whereas in *P. princeps* it was 0.44 to 1.21  $\mu\text{m}$  (Table I). Homologous chromosomes of the pairs No. 8 and 9 (Figs. 3 and 5) in both the species, were the smallest in size (below 0.62  $\mu\text{m}$ ).

The karyotype formulae were 10M + 10A in *P. herdmani* and 16M + 4A in *P. princeps*. The classification of the metacentric and acrocentric chromosomes were done depending upon the arm length ratio. In *P. herdmani* the arm length ratio of metacentric pairs varied between 1.00 and 1.14. In *P. princeps*

the centromeric constriction was conspicuous only in homologous pairs No. 1 and 3 which had the arm length ratio of 1.00. All the other pairs were rod shaped without conspicuous arms. These were either with both the ends rounded or with one end conical and a darkly stained granule. The former type of chromosomes were taken as metacentric and the latter type as acrocentric.

The orientation of chromosomes at the metaphase plate was irregular irrespective of the size variations of chromosomes in both the species. The large sized homologous chromosomes had a tendency to lie next to each other in the metaphase plate of *P. herdmani* (Fig. 4).

The sex-chromosomes in both the species could not be distinguished.

Goswami and Goswami (1972, 1973, 1974, 1978, 1979a and 1979b) had described the chromosome numbers in about forty species of calanoid copepods from Indian waters, belonging to various families. In majority of the cases, all the genera belonging to the same family tended to show the same diploid and modal number of chromosomes.

During the present study also, *P. herdmani* and *P. princeps*, two genera of family Pontellidae, showed  $20 = 2n$  and  $10 = 1n$  chromosomes. Nine species belonging to the other genus Labidocera of this family also showed the same chromosome number (Goswami and Goswami, 1979b). On the basis of similarities of chromosome number and morphological characters, the inclusion of all these three genera under the family Pontellidae is justified. However, karyotypic details of *Pontellopsis herdmani* and *Pontella princeps*, viz., size of chromosomes, karyotype formulae and shape of the metacentric chromosomes were quite apart. Thus, the identity of these two species under the separate generic names is reinforced.

**Table I.** Karyotypic details in *Pontellopsis herdmani* and *Pontella princeps* (males).

Homologous pair number	1	2	3	4	5	6	7	8	9	10
	<i>P. herdmani</i>									
Arm ratio L/S	1.09	1.14	→	1.00	↔	1.00	→	1.00	→	→
Average total length (μm)	3.11	2.89	2.09	1.81	1.60	1.65	1.27	0.74	0.61	0.50
Chromosome type	M	M	A	M	A	M	A	M	A	A
	<i>P. princeps</i>									
Average total length (μm)	1.21	1.05	0.99	0.99	0.72	0.66	0.66	0.66	0.44	0.44
Chromosome type	M	M	M	M	M	M	M	M	A	A

Abbreviations used: L = Long arm of chromosomes, S = Small arm of chromosomes, → Terminal position of centromere, M = Metacentric chromosomes and A = Acrocentric chromosomes.



Figs. 1-3. *P. herdmani*, male: Spermatogonial metaphase; Metaphase II; Karyogram.  
 Figs. 4-5. *P. princeps*, male: Spermatogonial metaphase and Karyogram.

ACKNOWLEDGEMENTS

The authors are grateful to the Director, National Institute of Oceanography and the Head, Biological Oceanography Division for facilities and encouragement.

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