

**The chromosomes of *Macrochlamys tugurium* (Benson, 1852)
from Nepal
(*Stylommatophora*, *Sigmurethra*: *Ariophantidae*)**

Communication No. 10 of the Netherlands Centre for Alpine Biological
Research (N.C.A.B.R.), Utrecht

B. KIAUTA

Institute of Genetics, University of Utrecht, Utrecht, The Netherlands

& L.J.M. BUTOT

Research Institute for Nature Management (R.I.N.), Leersum, The Netherlands

INTRODUCTION AND ACKNOWLEDGEMENTS

In the material brought home by the 1972 Khumbu Himal Expedition of the Netherlands Centre for Alpine Biological Research, Utrecht, there was a series of living specimens of the snail, *Macrochlamys* (*Macrochlamys*) *tugurium* (Benson), collected in early October in the garden of the Nepal Research Center, Kathmandu. Next to the arionid, *Anadenus giganteus* Heynemann, this is by far the commonest land gastropod in the surroundings of Kathmandu, Nepal. From early spring to late autumn it is found, on humid days, in large numbers on brick walls and rocks.

Since very little is known on the cytotaxonomy of the ariophantid snails (for a review cf. Patterson, 1969) and the karyotypic analysis of the only other member of the genus hitherto studied does not seem very persuasive (cf. Natarajan, 1960) we believe it worth while to record our observations.

For hospitality in the Nepal Research Center, Kathmandu, the first author is obliged to Prof. Dr. W. Hellmich of the Institut für Vergleich-

chende Hochgebirgsforschung, Munich, and to Mr. G.B. Kalikote, Kathmandu. Mr. W. Backhuys, Rotterdam, has kindly identified the specimens, while Miss M.A.J.E. Brink, Utrecht, rendered assistance in the laboratory.

MATERIAL AND METHODS

Living animals were transported in dry, wooden boxes to the Netherlands. After arrival they were put in glass containers, which were kept humid and at room temperature for several months. The snails were fed on fresh lettuce and appeared healthy and active.

Out of 23 specimens collected randomly in the field in early October, 16 appeared juvenile; five of them were dissected, but no mitotic activity could be observed in their gonads. In the seven mature animals some cell divisions could be found, though meiotic phases were represented by the pachytene stage only. In all, 298 microphotographs were made of 32 permanent lacto-acetic-orcein squash preparations of gonad tissue. They were taken on a Zeiss phase contrast photomicroscope (100 x oil immersion, magnification on negative 400 x), with green filter and Agfa Gevaert panchromatic film.

The dissected specimens and microscopic slides are kept in the collection of the Netherlands Centre for Alpine Biological Research, Utrecht.

OBSERVATIONS ON THE KARYOTYPE

The diploid chromosome number is 64. This includes a pair of large, nearly metacentric chromosomes, while the others are of gradually decreasing magnitude. Nevertheless, among these, the largest three pairs, one metacentric and two submetacentrics, can be clearly distinguished in all figures. The centromere position in some of the other chromosome pairs can not be identified with certainty. Most of them are either metacentrics or submetacentrics, save for three of four medium-sized pairs that are more or less clearly subacrocentric.

There are no peculiarities at mitotic prophase, while 32 bivalents are distinguished at the pachytene stage.

DISCUSSION

Macroclamys vilipensa (Benson) from an unknown, but certainly south Indian locality, is the only other member of the genus hitherto

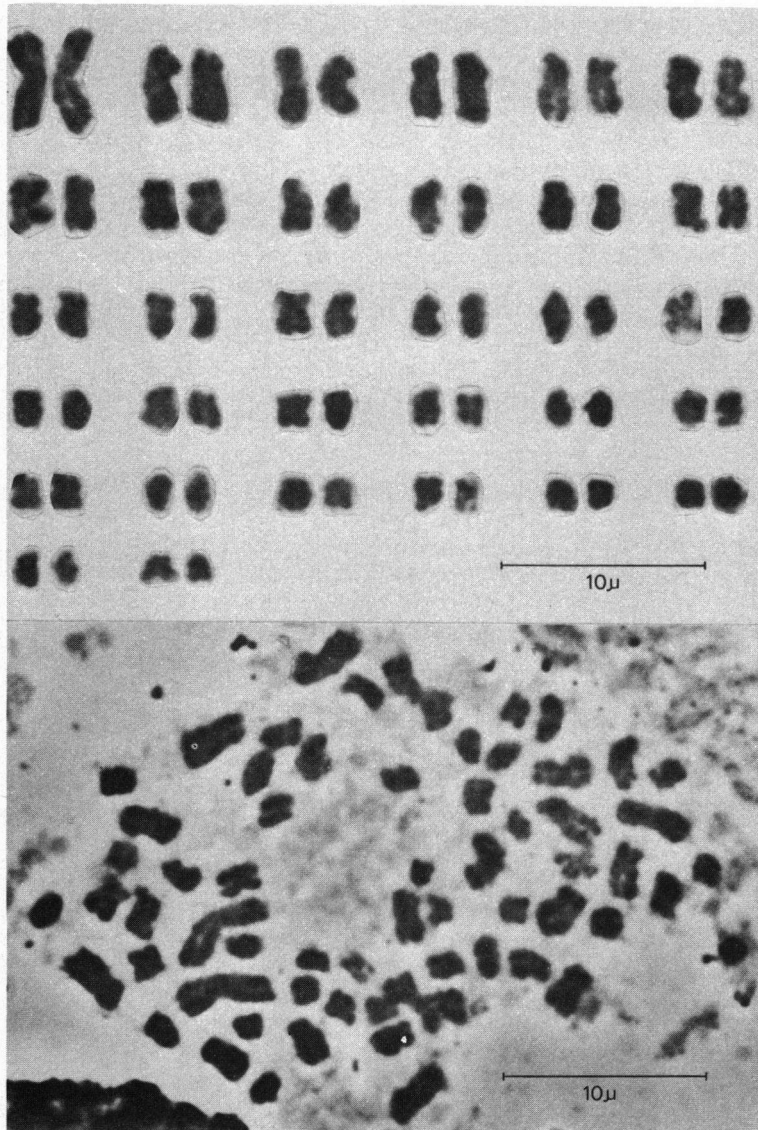


Fig. 1. *Macroclamys tugurium* (Benson). Mitotic metaphase and karyogram. (2700 x).

studied cytologically (Natarajan, 1960). Its karyotype was reported to consist of 60 metacentrics, including seven big pairs, the sixth of which is submetacentric ("J" shaped" in mitotic metaphase), while all others have the centromere in the median position.

In the same publication and in his 1958 paper Natarajan also reported diploid chromosome numbers of five other Indian species, referable to three ariophantid genera, viz. 50 (*Mariaella*), 54 (*Euplecta*), and 54, 56 and 64 (three species of *Cryptozona*). In view of the quality of the published microphotographs of mitotic metaphase or prometaphase, the accuracy of the chromosome counts for some of these might be doubtful.

Since no other members of the family have ever been studied cytologically, any considerations on the general karyotypic trends in the family should be deferred for the time being.

REFERENCES

- BENSON, W.H., 1852. Notice of an Australian Diplommatina; and characters of new East Indian Helicidae from Darjeeling and Sincapore. — *Ann. Mag. nat. Hist.* (2) 10: 348-351.
- NATARAJAN, R., 1958. Chromosomes of three species of South Indian pulmonate snails of the genus *Cryptozona* Mörch. — *Curr. Sci.* 27: 311-312.
- , 1960. Further cytological studies in Pulmonata (Mollusca: Gastropoda). — *J. zool. Soc. India* 12: 69-79.
- PATTERSON, C.M., 1969. Chromosomes of molluscs. *Proc. Symp. Mollusca Cochin (Mar. biol. Assoc. India Symp. Ser. 3)* 2: 635-686.