

SHORT COMMUNICATION

THE CHROMOSOMES OF *Mygdolus fryanus* WESTWOOD, 1863 (COLEOPTERA, CERAMBYCIDAE, ANOPLODERMATINAE)

Alejo Mesa¹ and Vanderlei G. Martins²

ABSTRACT

The subfamily Anoplodermatinae comprises 27 described species, none of them cytogenetically studied. In the present paper, three males of *Mygdolus fryanus* with $2n = 28$ and an Xyp male determining mechanism are studied. The karyotype is considered to be derived from the more primitive $2n = 20$.

INTRODUCTION

Anoplodermatinae is considered to be a subfamily of Cerambycidae, although in the past it was assigned family rank. In recent revisions (Dias, 1984, 1986, 1987 and 1988) the subfamily was divided into two tribes: Anoplodermatini (with seven genera and twenty species) and Mysteriini (with three genera and seven species). The geographical distribution of the subfamily is strictly Neotropical and none of the 27 species were cytologically analyzed previously. The genus *Mygdolus* (Anoplodermatini) includes species with larvae which feed on roots of several native plants and behave as plagues when plants of economic importance are involved.

¹ Departamento de Biologia, Instituto de Biociências, UNESP, Caixa Postal 199, 13500 Rio Claro, SP, Brasil.

² Faculdade de Filosofia e Ciências, UNESP, Caixa Postal 420, 17500 Marília, SP, Brasil. Send correspondence to V.G.M.

MATERIAL AND METHODS

Three males of *M. fryanus* (see Figure 1A), collected in Brazil, São Paulo, Assis (Copersucar's Experimental Station) were cytologically analyzed. The testes were fixed in Carnoy I during several hours, and after a three minute bath in acetic acid (45% aqueous solution), squashed in a drop of lacto-acetic orcein 1%. Observations were made after five hours of staining.

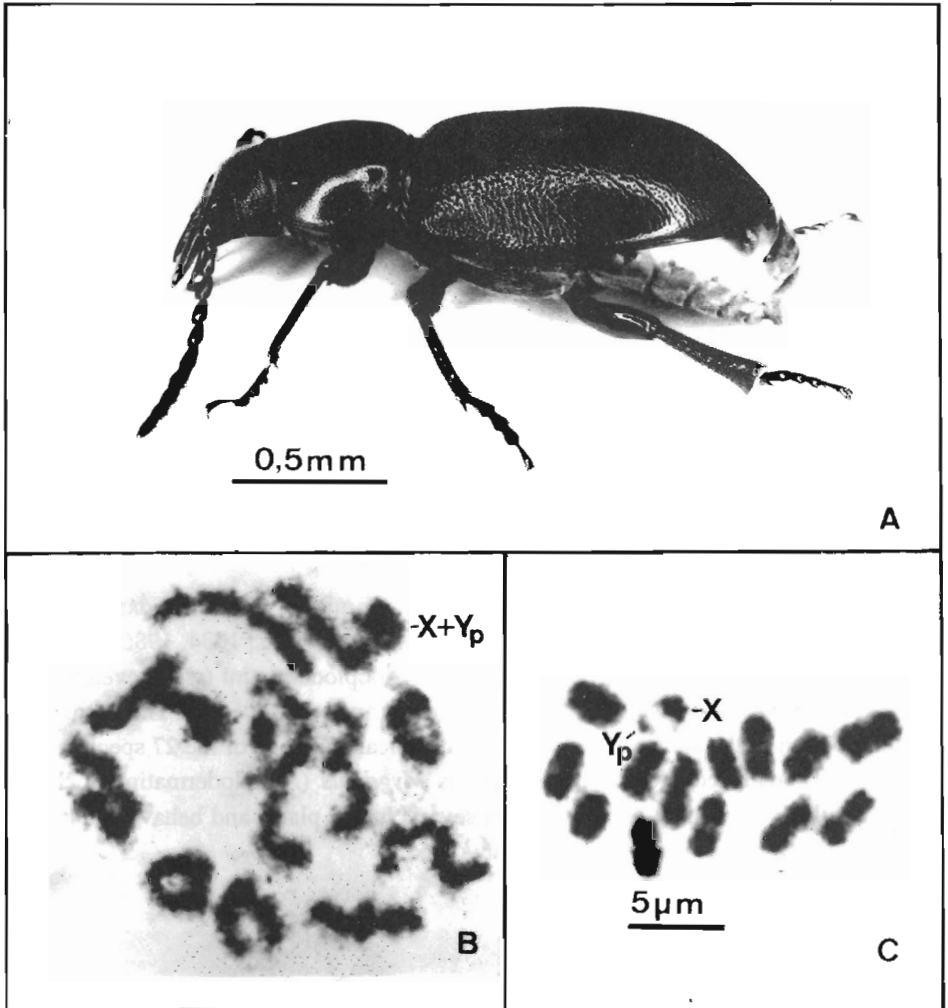


Figure 1 - *M. fryanus*. A) Male specimen, B) Diplotene, C) Metaphase I.

RESULTS

The chromosome number observed was $2n = 28$, including 13 pairs of autosomes plus an Xyp sex determining mechanism (Figure 1C). Both sex chromosomes are heterochromatic during prophase I (Figure 1B) and the majority of autosomal bivalentes show a single terminal or subterminal chiasma, less frequently, two chiasmata per bivalent occur.

DISCUSSION

Within Coleoptera, chromosome numbers are not uniform. In approximately two thousand species analyzed, the number $2n = 20$ with an Xyp sex determining mechanism is the most common karyotype and for this reason is considered to represent the ancestral number (Smith and Virkki, 1978). The fact that $2n = 20$ was also observed in *Ytu zeus*, the only species studied within the small and primitive suborder Myxophaga (Mesa and Fontanetti, 1985), reinforces the idea that this was indeed the basic ancestral karyotype. Among the cerambycids, little more than one hundred species have been cytologically studied. Nearly half of these (47%) show the ancestral karyotype, one third (31%) are $2n = 20$, and the remaining 22% present quite variable numbers, from $2n = 10$ in *Plocaederus obesus* (Aseminae) (Nath *et al.*, 1951, in Smith and Virkki, 1978) to $2n = 36$ in *Apriona japonica* (Lamiinae) (Abe *et al.*, 1971, in Smith and Virkki, 1978). Two species are $2n = 28$: *Macrotoma scutellaris* (Prioninae) (Dutrillaux, 1970) and *Purpuricerus indus* (Aseminae) (Agarwal, 1960, in Smith and Virkki, 1978). Accordingly, the karyotype of *M. fryanus* must be considered as derived. The study of other species of Anoplodermatinae might help to understand the evolutionary significance of the *M. fryanus* karyotype.

ACKNOWLEDGMENTS

The authors are grateful to Dr. Enrico De Beni Arrigoni for providing five specimens of *Mygdolus fryanus* and to Dr. Manoel Martins Dias, who confirmed species identification.

Publication supported by FAPESP.

RESUMO

A subfamília Anoplodermatinae compreende 27 espécies descritas, nenhuma das quais estudada citologicamente. Neste trabalho, três machos de *Mygdolus fryanus* com $2n = 28$ e mecanismo sexo-determinante do tipo Xyp foram estudados. O cariótipo é considerado derivado de cariótipos $2n = 20$, mais primitivos.

REFERENCES

- Dias, M.M. (1984). Revisão da subfamília Anoplodermatinae. Parte I. Tribo Anoplodermatini. Gênero *Mygdolus* Westwood, 1863. (Coleoptera, Cerambycidae). *Rev. Bras. Ent.* 28: 507-535.
- Dias, M.M. (1986). Revisão da subfamília Anoplodermatinae. Parte II. Tribo Anoplodermatini. Gêneros *Acanthomygdolus* Bruch, 1941, *Paramygdolus* Gen. N., *Anoploderma* Guérin-Ménéville, 1840, *Sypilus* Guérin-Ménéville, 1840 (Coleoptera, Cerambycidae). *Rev. Bras. Ent.* 30: 115-139.
- Dias, M.M. (1987). Revisão da subfamília Anoplodermatinae. Parte III. Tribo Anoplodermatini. Gêneros: *Cherrocrius* Berg, 1898, *Hypocephalus* Desmarest, 1832 (Coleoptera, Cerambycidae). *Rev. Bras. Ent.* 31: 101-112.
- Dias, M.M. (1988). Revisão da subfamília Anoplodermatinae. Parte IV. Tribo Mysteriini. Gêneros: *Mysteria* Thomson, 1860, *Pathocerus* Waterhouse, 1901, *Pseudopathocerus*, Gen. N. (Coleoptera, Cerambycidae). *Rev. Bras. Ent.* 32: 139-160.
- Dutrillaux, B. (1970). Étude cytogénétique de quatre especes de Prionines (Col. Cerambycidae). *Ann. Soc. Entomol. France* (N.S.) 6: 443-450.
- Mesa, A. and Fontanetti, C.S. (1985). The chromosomes of a primitive species of beetle: *Ytu zeus* (Coleoptera, Myxophaga, Torridincolidae). *Proc. Acad. Nat. Sci. Philad.* 137: 102-105.
- Smith, S.G. and Virkki, N. (1978). *Animal Cytogenetics*. Coleoptera. Vol. 3, Insecta, Ed. Gebrüder Borntraeger, Berlin, 366 pp.

(Received April 5, 1991)