Cytogenetic and phylogenetic analysis of three species of *Pseudotetracha* Fleutiaux, 1894

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Background. Three species of the poorly studied Australian genus *Pseudotetracha* Fleutiaux, 1894 (Figure 1), belonging to the tribe Megacephalini, have been analyzed through cytogenetic and phylogenetic methods. It is intended: first to confirm and extend the cytogenetic data available for this genus, and second to contrast the contradictory assumptions made by Sumlin (2) and Zerm *et al.* (3) about the taxonomic validity of the *blackburni/murchisona* species complex and explore the putative existance of undescribed cryptic species.

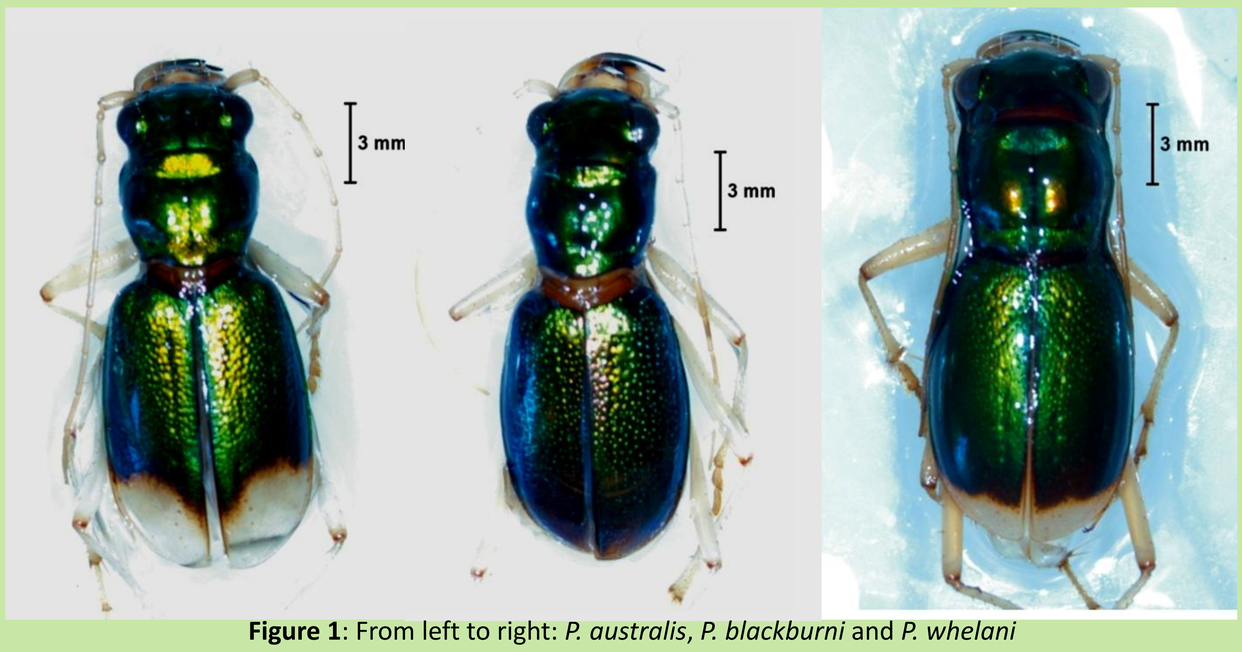

Figure 1: From left to right: *P. australis*, *P. blackburni* and *P. whelani*

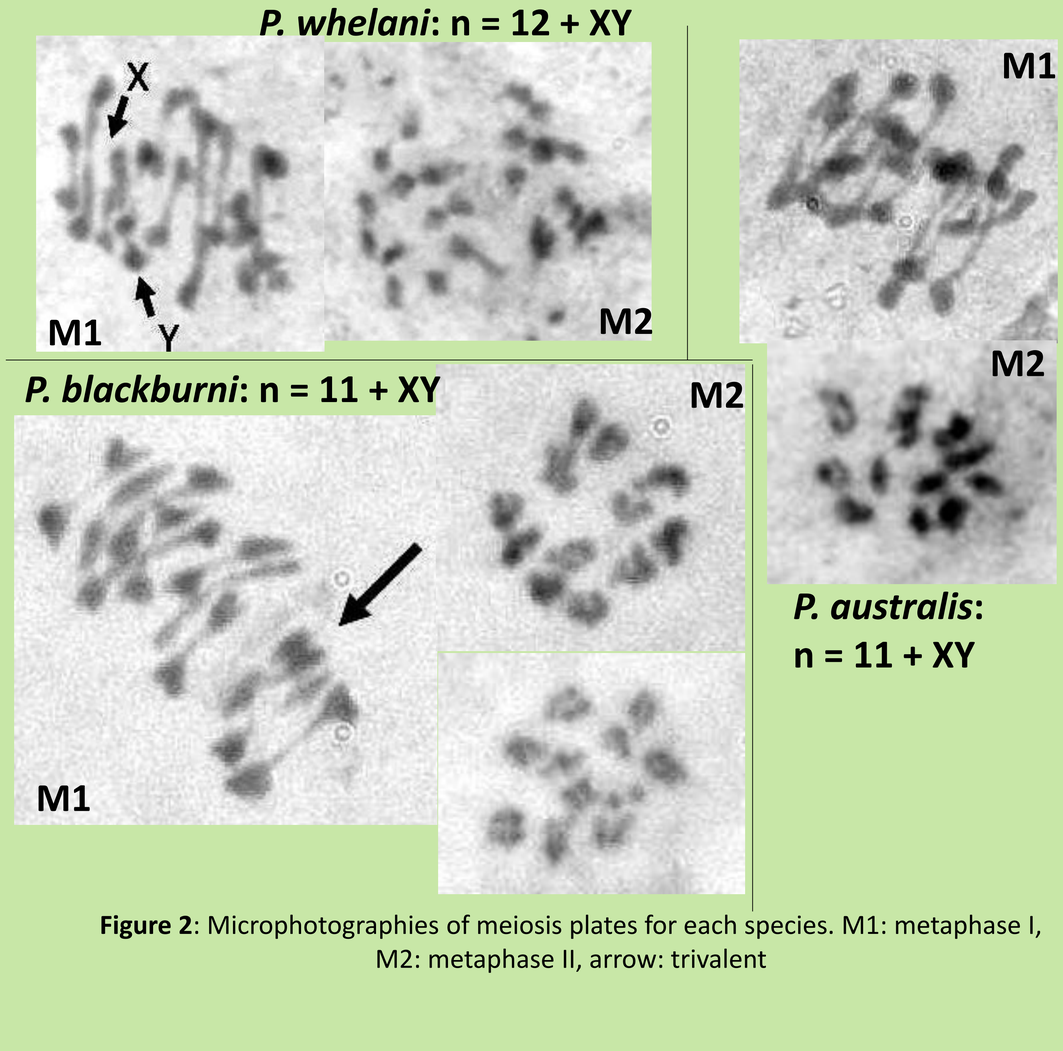

Figure 2: Microphotographies of meiosis plates for each species. M1: metaphase I, M2: metaphase II, arrow: trivalent

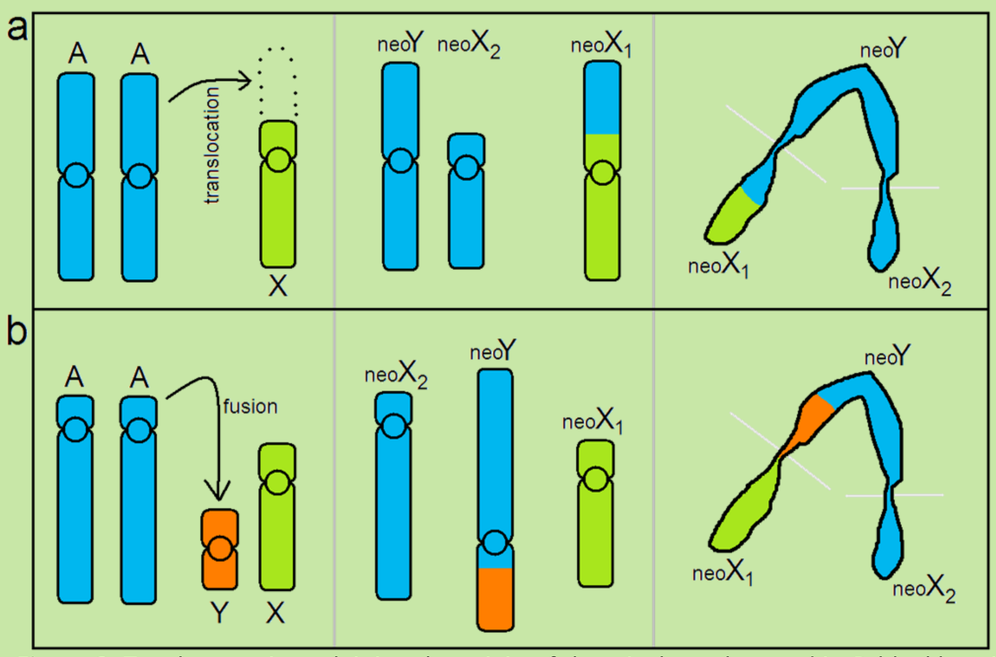

Figure 3: Two hypotesis explaining the origin of the trivalent observed in *P. blackburni*

Material and methods. Specimens of *P. blackburni*, *P. australis* and *P. whelani* were collected in South Australia (2004). The gonads were subjected to the method of "squash" and photographed. One fragment of the citocrome oxidase III gene was amplified and sequenced. The sequences obtained, together with those from the work of Zerm *et al.* (3), were aligned and analyzed by Neighbor-Joining, Maximum Parsimony and Bayesian Inference.

Results. The cytogenetic data available (1) for *P. whelani* is confirmed, with a karyotypic formula n = 12 + XY. For *P. australis* a karyotype n = 11 + XY has been found, while in *P. blackburni* 10 pairs of autosomes plus a trivalent (n = 10 + III) are observed (Figure 2). The trivalent is hypothetized to be the result of either a translocation or a fusion in which heterosomas are involved (Figure 3). The phylogenetic analysis (Figure 4) confirmed the taxonomic identity of *P. australis* and *P. whelani* and the validity of the *blackburni/murchisona* complex as proposed by Sumlin (2). The phylogenetic position of some specimens (43, 49 and 163; Figure 4) morphologically assigned to *P. blackburni* likely suggests the existence of two undescribed taxa.

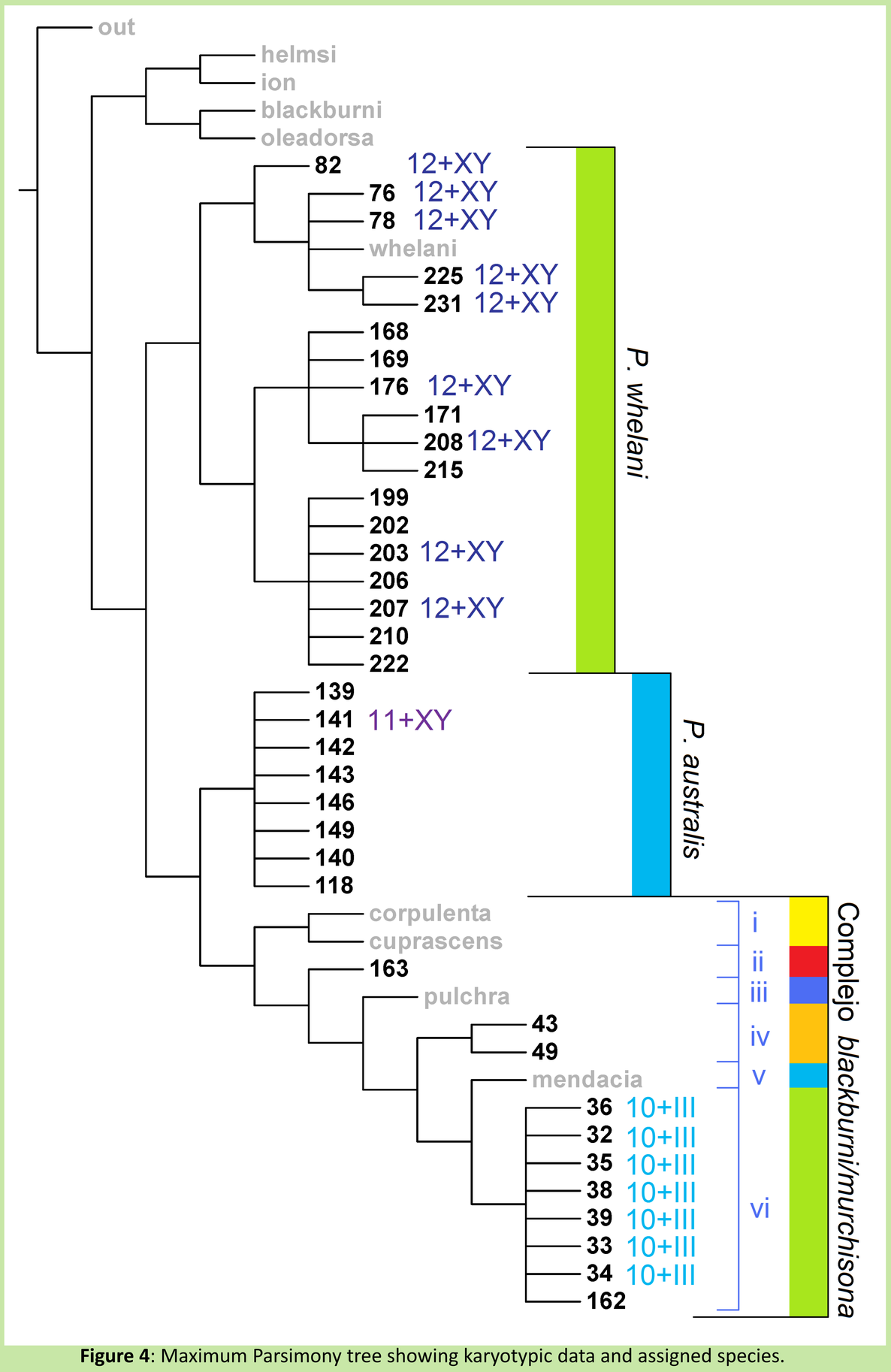

Figure 4: Maximum Parsimony tree showing karyotypic data and assigned species.

Acknowledgements
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References

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