

A STRUCTURAL HERMAPHRODITE *MICROPSECTRA* (DIPTERA: CHIRONOMIDAE)

By PETER H. LANGTON*

With 1 Figure

ABSTRACT: A pharate imago *Micropsectra atrofasciata* from the River Chew, England, possessing well-developed male and female genitalia is described.

RESUMO: Uma pupa farada de *Micropsectra atrofasciata* do Rio Chew, Inglaterra, possuindo genitália bem desenvolvida de macho e fêmea é descrito.

INTRODUCTION

Chironomid material collected in a drift net from the River Chew, Somerset, south west England, by R.S. Wilson on 25 April 1973 contained a pharate imago *Micropsectra atrofasciata* (Kieffer) with unusual genitalia.

METHOD

The specimen was heated in strong potassium hydroxide solution at 100°C for five minutes to remove internal tissues, neutralised in glacial acetic acid, dehydrated in 100% isopropanol and mounted in Euparal dorsal surface uppermost.

RESULTS

The pupal armament of tergites III and IV determine the species to be *Micropsectra atrofasciata* (Kieffer 1911)(see LANGTON & VISSER 2003, STUR & EKREM 2006).

*University Museum of Zoology, Cambridge, Downing Street, Cambridge (address for correspondence: 5, Kylebeg Avenue, Coleraine, Northern Ireland, BT52 1JN, Tel. (+44) 2870328028, Fax. (+44) 2870328028, PHLangton@kylebegave.fsnet.co.uk)

The head and thorax are typically male (Fig. 1F), the antennae with a full complement of 13 flagellomeres and fore metatarsus long. However, the posterior abdomen has a vertical succession of male and female genital structures. The most dorsal are the female cerci (Fig. 1A), followed by the male superior volsella and digitus (Fig. 1B). Below these are the male median and inferior volsellae (Fig. 1C). Ventrally are the gonapophyses of segment VIII and vagina of the female genitalia (Fig. 1D). Situated further forward in the abdomen are the seminal capsules, notum and spermathecal ducts complete to the vaginal area (Fig. 1E).

DISCUSSION

Hermaphroditism is almost unknown in insects apart from occasional developmental anomalies (NORMARK 2003). Partial hermaphrodites and gynandromorphs have been reported for the Chironomidae (e.g. ANDERSEN & WANG 1997, SÆTHER & GALLOWAY 1980), but this would appear to be the first specimen to be reported with a full complement of male and female genital structures. It is possible because the female appendages are derived from segment X (cerci) and ventrally on segment VIII (SÆTHER 1977) while those of the male originate mainly from segment IX (SÆTHER 1980). Many abnormalities of development of the sexual apparatus of Chironomidae are induced by mermithid parasitism, but no evidence of this is detected in this specimen. Because the specimen was macerated before mounting it is not possible to determine whether it was a true hermaphrodite bearing both ovaries and testes.

ACKNOWLEDGEMENTS

I am grateful to Dr. R.S. Wilson for providing me with this specimen.

BIBLIOGRAPHY

ANDERSEN, T. & WANG, X.:

1997. Darkwinged *Heleniella* Gowin, 1943 from Thailand and China (Insecta, Diptera, Chironomidae, Orthoclaadiinae). *Spixiana* **20**: 151-160.

LANGTON, P. H. & VISSER, H:

2003. Chironomidae exuviae. A key to pupal exuviae of the West Palaearctic Region. Amsterdam: Biodiversity Center of ETI (CD-ROM).

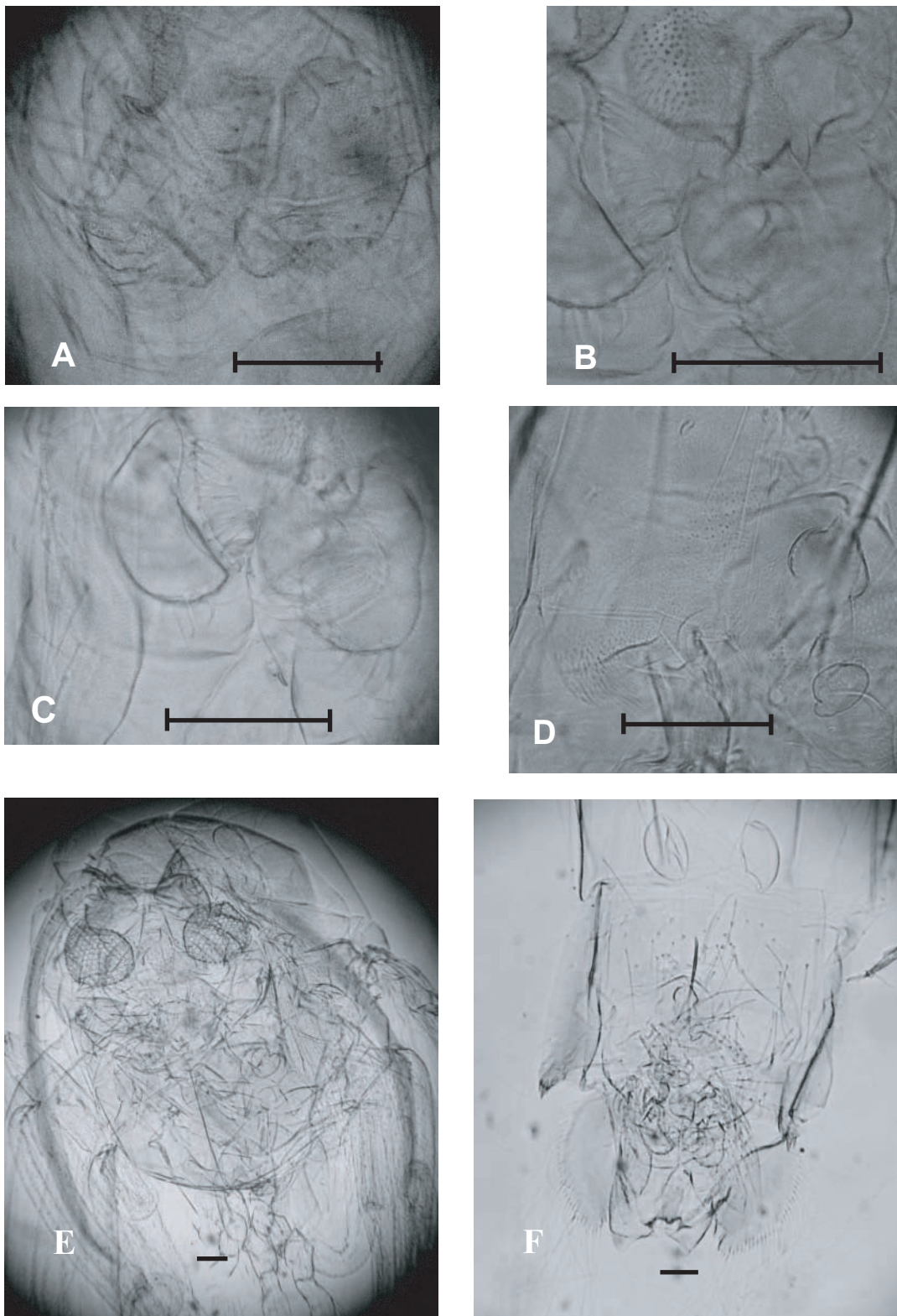


Fig. 1. *Micropsectra atrofasciata* hermafroditic A. cerci, B. superior volsella and digitus, C. median and inferior volsellae, D. gonapophysis VIII and vagina, E. cephalothorax, F. posterior abdomen, general view. (scale line = 0.1mm)

NORMARK, B. B.:

2003. The Evolution of Alternative Genetic Systems in Insects. *Annual Review of Entomology*, **48**: 397-423.

SÆTHER, O. A.:

1977. Female genitalia in Chironomidae and other Nematocera: morphology, phylogenies, keys. *Bulletin of the Fisheries Research Board of Canada* **197**: 1-209.
1980. Glossary of chironomid morphology terminology (Diptera: Chironomidae). *Entomologica Scandinavica, Supplement* **14**: 1-51.

SÆTHER, O. A. & GALLOWAY, T. D.:

1980. Sexual anomalies in Chironomini (Chironomidae: Diptera) from Lake Winnipeg, Manitoba, with observations on mermithid (Nematoda) parasites. *Acta Universitatis Carolinae – Biologica*, **1978**: 193-211.

STUR, E. & EKREM, T.:

2006. A revision of West Palaearctic species of the *Micropsectra atrofasciata* species group (Diptera: Chironomidae). *Zoological Journal of the Linnaean Society*, **146**:165-225.