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Tsetse Biology and Ecology: Their Role in the Epidemiology and Control of Trypanosomosis

Elliot Krafur

Iowa State University, eskrafur@gmail.com

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Tsetse Biology and Ecology: Their Role in the Epidemiology and Control of Trypanosomosis

Abstract

Tsetse flies (*Glossina* spp) are classified in a mono generic taxon of 32 species and subspecies, the Glossinidae. Most unusual and interesting insects, tsetse are confined to sub-Saharan Africa, but fossils from the Oligocene have been found in North America. Tsetse flies have an extremely low rate of reproduction. Females require two weeks to develop, and deposit their first mature larva, which almost immediately burrows into the soil and pupates. Additional larvae are produced maximally at ten-day intervals in well-fed flies. Thus tsetse are K-selected insects, and mortality rates must remain low if tsetse populations are to continue.

Disciplines

Entomology | Other Ecology and Evolutionary Biology | Population Biology

Comments

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Review

Author(s): Elliot Krafstur

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TSETSE BIOLOGY AND ECOLOGY: THEIR ROLE IN THE EPIDEMIOLOGY AND CONTROL OF TRYPANOSOMOSIS.

By S G A Leak. Published by CABI Publishing, Wallingford (UK) and New York, in association with the International Livestock Research Institute; distributed by Oxford University Press, New York. \$120.00. xxiii + 1 568 p; ill.; index. ISBN: 0-85199-300-1. 1999.

Tsetse flies (*Glossina* spp) are classified in a monogeneric taxon of 32 species and subspecies, the Glossinidae. Most unusual and interesting insects, tsetse are confined to sub-Saharan Africa, but fossils from the Oligocene have been found in North America. Tsetse flies have an extremely low rate of reproduction. Females require two weeks to develop, and deposit their first mature larva, which almost immediately burrows into the soil and pupates. Additional larvae are produced maximally at ten-day intervals in well-fed flies. Thus tsetse are K-selected insects, and mortality rates must remain low if tsetse populations are to continue.

Tsetse flies are exclusively blood feeders. They are important because they are the vectors of trypanosomes that cause nagana in domestic animals and "sleeping sickness" in man. Trypanosomiasis greatly inhibits or altogether prevents animal husbandry in about 10 million km² of territory, thereby denying society milk, meat, and draft animals. About 50 million people are at risk for trypanosomiasis.

Tsetse Biology and Ecology is comprehensive, covering all aspects of tsetse fly biology and trypanosomiasis. Its chief strength is that it reviews ecology and trypanosomiasis epidemiology in breadth and depth. Some tsetse species are among the best understood animals ecologically. Indeed, tsetse flies are among the best understood insects from virtually any point of view. Readers are bound to be impressed by the sheer quality and scope of investigations carried out on tsetse flies.

The book contains a detailed table of contents, list of figures and tables, and is unusually well indexed. It affords a thorough guide to the literature, with 115 pages of citations. A glossary of uneven quality is provided.

Tsetse Biology and Ecology is timely and likely to be well received. It reviews in some depth modern developments in *Glossina* and *Trypanosoma brucei* biology. It supplements, but does not displace, Ford's *The Role of Trypanosomiasis in African Ecology: A Study of the Tsetse Fly Problem* (1971. Oxford (UK): Clarendon Press) and Jordan's *Trypanosomiasis Control and African Rural Development* (1986. London: Longman). The present volume will prove most useful to field and bench scientists in medical entomology and parasitology. It will be an indispensable reference for scientists involved in tsetse and trypanosomiasis research and control programs. Animal health staff in the international agencies will find it essential.

Tsetse Biology and Ecology will become the standard reference on tsetse for years to come.

ELLIOT KRAFSUR, *Entomology & Genetics, Iowa State University, Ames, Iowa*

STREPTOCOCCI AND THE HOST. Proceedings of a symposium held in Paris, France, 16–20 September 1996. Advances in Experimental Medicine and Biology, Volume 418.

Edited by Thea Horaud, Anne Bouvet, Roland Lelercq, Henri de Montclos, and Michel Sicard. New York: Plenum Press. \$195.00. xxx + 1 1064 p; ill.; index. ISBN: 0-306-45603-6. 1997.

This volume contains 249 articles that summarize original research on streptococci and enterococci. The articles are grouped into the following sections: the history of streptococcal research (5 papers); streptococcal and enterococcal infections (42 papers); epidemiology (25 papers); new methodologies for epidemiology, taxonomy, and diagnosis (28 papers); antibiotic resistance (18 papers); bacterial cellular and extracellular components (34 papers); oral streptococci (16 papers); pathogenicity factors (18 papers); animal models (11 papers); vaccines (8 papers); immune response and host defense (20 papers); and genetics (24 papers).

Many of the articles addressed the epidemiology of Group A streptococci and the bacterial or host factors that may contribute to vast increases seen in serious invasive disease. The mechanisms and potential for genetic transfer of antibiotic resistance in streptococci and enterococci are elaborated. The compilation of articles on pathogenic factors (toxins, plasma protein binding factors, adhesion proteins) reveals many common virulence mechanisms and homologous virulence genes and proteins between different streptococcal serogroups. The biologic role of bacterial surface proteins and their immunogenicity and protective efficacy as vaccine components was a recurring and promising theme for articles on both Group A and Group B streptococcal vaccine development. Novel genetic approaches to the study of streptococci and enterococci are evident in all sections of this volume, and a progress report on the *Streptococcus pyogenes* genome sequencing project, and its impact on future streptococcal research, is included. This volume will be of most value to researchers in specific areas, but because of the broad coverage of streptococcal and enterococcal topics, both academic and clinical microbiologists will find this a useful resource.

KENNETH J GOODRUM, *Biomedical Sciences, Ohio University College of Osteopathic Medicine, Athens, Ohio*