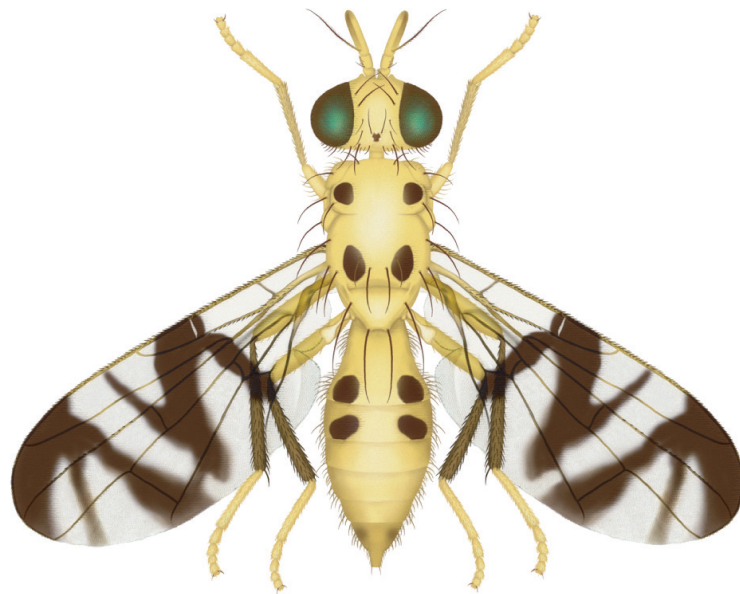


ISRAEL JOURNAL OF ENTOMOLOGY, VOLUME 35-36, 2005/6

Biotaxonomy *of* Tephritoidea

EDITED BY A. FREIDBERG



Proceedings of the First Tephritidologist Meeting
Israel, 28 May–2 June, 2000

THE ENTOMOLOGICAL SOCIETY OF ISRAEL

P.O. Box 6, Bet Dagan 50250, Israel
Tel: 972-3-9683729; Fax: 972-3-9604428

HONORARY OFFICERS FOR 2006

President: Ada Rafaeli, Agricultural Research Organization
Honorary President: Manes Wysoki, Agricultural Research Organization
Secretary: Victoria Soroker, Agricultural Research Organization
Editor: Amnon Freidberg, Tel Aviv University
Treasurer: Moshe Coll, The Hebrew University of Jerusalem
Comptroller: Moshe Inbar, University of Haifa
Comptroller: Shai Morin, The Hebrew University of Jerusalem
Committee Member: Yoel Dreishpon, Extension Service, Ministry of Agriculture

ISRAEL JOURNAL OF ENTOMOLOGY

Vol. 35-36, 2005/6

EDITOR-IN-CHIEF

A. Freidberg Department of Zoology
Tel Aviv University, Tel Aviv 69978
Tel: 972-3-6408660; Fax: 972-3-6409403
E-mail: afdipter@post.tau.ac.il

CO-EDITOR

Y. Ben Dov Department of Entomology and Nematology
Agricultural Research Organization
The Volcani Center, Bet Dagan

Printed in Israel, August 31, 2006
ISSN: 0076-1243
ISBN: 965-7177-01-4

Typesetting: N. Avitan, E. Weiss, S. Levine
Cover design: S. Levine; Cover illustration: T. Litvak

Copyright © 2006 by The Entomological Society of Israel
For subscription, special order, and advertising information, write to:
The Entomological Society of Israel, P.O. Box 6, Bet Dagan 50250, Israel
Tel: 972-3-9683729; Fax: 972-3-9604428

Published in cooperation with Tel Aviv University and SCIENCE FROM ISRAEL—A Division of LPPLtd.

P.O. Box 34299, Jerusalem 91341, Israel
Tel: 972-2-652 2226; Fax: 972-2-652 2277
E-mail: info@israelsciencejournals.com; Website: www.israelsciencejournals.com

Also publishers of the Israel Journals of
Chemistry • Earth Sciences • Ecology & Evolution • Plant Sciences

Dedication

We fondly dedicate this book to the memory of Richard “Dick” H. Foote, a specialist in the taxonomy of New World fruit flies and a genial colleague and mentor to a generation of tephritid workers. In addition to his research on fruit flies, Dick was also an innovator in the use of computer technology in systematics, and a long-time leader of what is now the Systematic Entomology Laboratory of the USDA. Details of his career can be found in the obituary by Norrbom and Thompson (2003, Proceedings of the Entomological Society of Washington 105: 508-516). Here we focus on his contributions to the taxonomy of the Tephritidae.

In 45 publications on fruit flies, Dick described 12 genera and 49 species and revised most of the fauna of the United States and Canada, culminating in the *Handbook of the fruit flies (Diptera: Tephritidae) of America North of Mexico* (1993). In 1980, he provided the first comprehensive review of and key to the Neotropical genera of Tephritidae since Hendel in 1914. Dick cataloged much of the world’s fruit fly fauna, authoring or co-authoring the tephritid sections of four of the six regional catalogs (for the Nearctic, Neotropical, Palearctic, and Australasian Regions). Dick also led the first attempt to use computer technology to catalog flies, which both inspired and greatly aided our later efforts to produce a world database of fruit flies. These efforts were extremely helpful to his colleagues and succeeding taxonomists, providing a clear knowledge base upon which to build.

Dick also aided or influenced many contemporary and younger fruit fly biologists. He was generous with his advice, ranging from his suggestion to Guy Bush that the Nearctic *Rhagoletis* would be an interesting project, to answering numerous specific questions from students and post-docs such as Freidberg and Norrbom. Dick never failed to respond with pleasure to colleagues’ discoveries, and his enthusiasm greatly encouraged taxonomists such as Louie Blanc and George Steyskal, and many other scientists, including Dick Goeden, Gary Steck, Gary Dodson, and Marty Condon, to pursue studies of fruit fly biology, systematics, and evolution.

Allen L. Norrbom
Amnon Freidberg

PUBLICATION OF THE ISRAEL JOURNAL OF ENTOMOLOGY

IS SUPPORTED BY

THE H. BYTINSKI-SALZ ENDOWMENT FUND

THE SHOSHANA YATHOM ENDOWMENT FUND

&

THE RACHEL AND ELIAHU SWIRSKI ENDOWMENT FUND

Acknowledgments

I am grateful to the following organizations and individuals for their donations that made the conference and the publication of its proceedings possible: Prof. I. Rabinovich, President, Tel Aviv University (TAU); Prof. N. Cohen, Former Rector, TAU; Prof. I. Barash, Former Dean, and Prof. Eliora Ron, Former Dean, Faculty of Life Sciences, TAU; Prof. Dan Levanon, Chief Scientist, Department of Agriculture; Mr. Eldad Landshut, Director, Plant Protection Services, Department of Agriculture; Vegetable Board of Israel; Fruit Board of Israel; Citrus Marketing Board of Israel; Dr. Manes Wisoky, Former President, The Entomological Society of Israel; Prof. Guy L. Bush, Michigan State University; Mr. Martin Frost, Tel Aviv; and an anonymous organization.

I am also grateful to the Nature and Parks Authority for issuing collecting permits; Hedva and Rani Kasher, Rosh Pinna; and Dr. Taiseer Maraee, The Centre for Agricultural Services, Majdal Chams, for their hospitality; Prof. I. Choshniak, Former Chairman, Department of Zoology, TAU, and Prof. Tamar Dayan, Director, Zoological Collections, TAU, for making the facilities of these collections available to the delegates; the technicians of the entomological collections, TAU, in particular Leonid Friedman, Tova Feler, Alex Shlagman and Dr. Ora Manheim; my students, in particular Dr. Netta Dorchin, Dr. Yariv Malihi and Hanan Ackerman, for their important help throughout the conference; Naomi Paz, Scientific Editor, TAU, for reviewing the entire book; and Amikam Shoob, for the photographs.

Finally, a great thank you to my wife, Pnina, whose constant encouragement and hospitality to the delegates contributed much to the success of both the conference and the present proceedings.

Amnon Freidberg

Contents

Preface — Biotaxonomy and Tephritoidea	<i>A. Freidberg</i>	1
Morphology and Phylogenetic Relationships of Species Groups of the Genus <i>Hexachaeta</i> Loew (Diptera: Tephritidae: Trypetinae)	<i>V. Hernández-Ortiz</i>	9
A Revision of the Neotropical Genera <i>Molynocoelia</i> Giglio-Tos, <i>Pseudophorellia</i> Lima, and <i>Alujamyia</i>, n. gen. (Diptera: Tephritidae)	<i>A.L. Norrbom</i>	35
<i>Prochetostoma</i>, a New Genus Proposed as a Basal Group of the Subtribe Chetostomatina (Diptera: Tephritidae)	<i>H.-Y. Han</i>	147
Catalog and Revised Classification of the Gastrozonini (Diptera: Tephritidae: Dacinae)	<i>D. Kovac, P. Dohm, A. Freidberg, and A.L. Norrbom</i>	163
Revision of the Subgenus <i>Ceratitís</i> (<i>Pterandrus</i>) <i>Bezzi</i> (Diptera: Tephritidae)	<i>M. De Meyer and A. Freidberg</i>	197
Analysis of Mitochondrial DNA and Morphological Characters in the Subtribe Carpomyina (Diptera: Tephritidae)	<i>J.J. Smith, M. Jaycox, M.R.B. Smith-Caldas, and G.L. Bush</i>	317
A Revision of the <i>quadrátula</i> Group of the Genus <i>Terellia</i> Robineau-Desvoidy (Diptera: Tephritidae)	<i>V. Korneyev</i>	341
A Revision of the <i>Gymnosagena</i> Group of Genera (Diptera: Tephritidae: Tephritinae)	<i>A. Freidberg and B. Merz</i>	367
Comparative Morphology of Immature Stages of Some Frugivorous Species of Fruit Flies (Diptera: Tephritidae)	<i>D. Frías, V. Hernández-Ortiz, N.C. Vaccaro, A.F. Bartolucci, and L.A. Salles</i>	423
Taxonomy and Biology of Economically Important Fruit Flies of India	<i>V.C. Kapoor</i>	459
Comparative Morphology of the Male Terminalia of Tephritidae and Other Cyclorrhapha	<i>M. Sueyoshi</i>	477
Myennidini, a New Tribe of the Subfamily Otitinae (Diptera: Ulidiidae), with Discussion of the Suprageneric Classification of the Family	<i>E. Kameneva and V. Korneyev</i>	497
Index of Fly Names		587
Index of Plant Names		597



Participants at the First Tephritidologist Meeting. Israel (back to front, left to right). Back row: Yariv Malihi, Masahiro Sueyoshi, Itzhak Choshniak, Judita Kinkorova, Tamar Dayan, Vladimir Chikhatunov, Pnina Freidberg, Jehoshua Kugler, Ora Manheim, Hanan Ackerman. Second row: James J. Smith, Bernhard Metz, Sabine Steghaus-Kovae, Damir Kovac, Vijay Kapoor, Wayne N. Mathis, Allen L. Norrbom, Vicente Hernández-Ortiz, Kyung E. Ro, Ho-Yeon Han. Third row: Dorie Bush, Guy L. Bush, Daniel Frías, Valery Kornejev, Dianne Mathis, Ilan Yarom, Netta Dorchin, Alex Shlagman. Front row: Amnon Freidberg, Elena Kameneva, Tova Feiler.

IMPRESSIONS FROM THE FIRST TEPHRITIDOLOGIST MEETING, ISRAEL



The Conference Room, Tel Aviv University (TAU)



Panorama Street, Haifa



Dinner at the Dan Hotel, Haifa



Morning in Rosh Pinna



On Mt. Hermon (2000 meters)



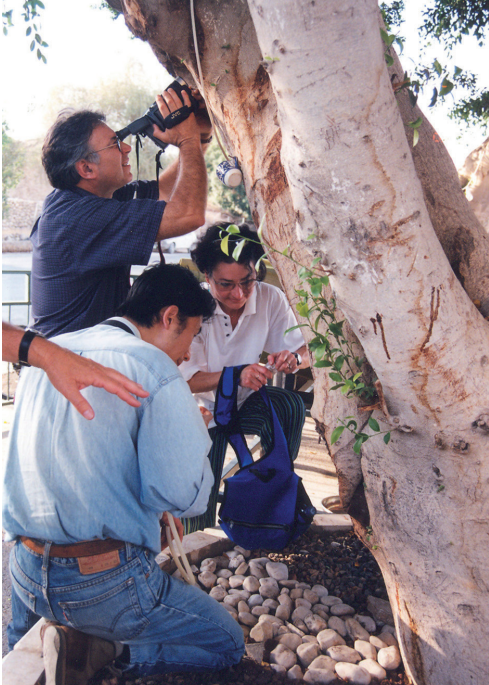
Listening to a lecture on Druze life, Majdal Chams



The restored area of Rosh Pinna



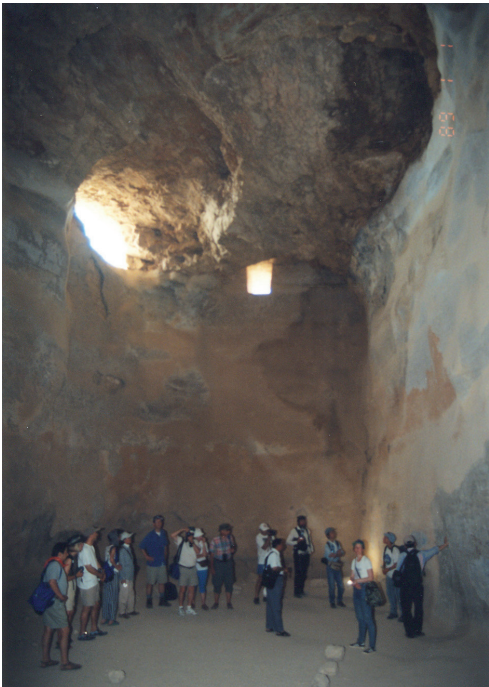
A viewpoint from a former Syrian fortress on the Golan Heights overlooking Lake Kinnereth



Observing medflies on a fig tree trunk, Jericho



The entrance to the "hanging monastery" on Mt. Temptation, Jericho



Inside a ~2000-year-old water cistern, Mezada



Mud bath at the Dead Sea



Seeking shelter from the heat at Nahal Arugot, 'En Gedi



The tour bus



Studying the TAU fly collection