

**PROCEEDINGS OF THE**

**ENTOMOLOGICAL  
SOCIETY OF  
MANITOBA**

**VOLUME 38**

**1982**

Proceedings of the  
ENTOMOLOGICAL SOCIETY OF  
MANITOBA

Volume 38  
1982

Philip S. Barker  
Editor  
Winnipeg, Manitoba

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## ENTOMOLOGICAL SOCIETY OF MANITOBA

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An official publication of the Entomological Society of Manitoba, printed by the Society and distributed, free of charge, to members in good standing.

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## MINUTES OF THE 38 ANNUAL MEETING

## ENTOMOLOGICAL SOCIETY OF MANITOBA

14:00 h., 5 November, 1982

Seminar Room

Freshwater Institute, 501 University Crescent, Winnipeg,

R3T 2N6, Manitoba

The President, Dr. W. B. McKillop, presided. A quorum being present, the President called the meeting to order and asked the Secretary, Dr. N. D. G. White, to take minutes of the meeting.

Present

Executive: Dr. W. B. McKillop, President; Dr. A. G. Robinson, Past-President; Dr. G. R. B. Webster, President-Elect; Dr. T. D. Galloway, Regional Director; Dr. M. Chance, Member-at-Large.

Executive staff: Dr. N. D. G. White, Secretary; W. L. Askew, Treasurer; Dr. T. D. Galloway, Editor of the Newsletter; Dr. P. S. Barker, Editor of the Proceedings.

<u>Members:</u> Smith, D. L.	Turnock, W. J.
McGuinnis, K.	Flannagan, J. F.
Fingler, B.	Batulla, B. A.
Guthrie, J.	Arntfield, P.
Lamb, R. J.	Wylie, H. G.
Brust, R.	Friesen, M. K.
Flannagan, P. M.	Bracken, G. K.
Reichardt, T. R.	Conroy, J. C.
Burton, D. K.	Smith, L. B.
Ayre, G. L.	Holliday, N. J.
Loschiavo, S. R.	MacKay, P.
Buth, J. L.	

1. Agenda (Appx. A)

Motion - Gerber/Conroy: Adoption of the Agenda.

Carried

2. Minutes of the last Annual Meeting

Motion - Conroy/Ayre: Adoption of the minutes of the 37th Annual Meeting of the Entomological Society of Manitoba Incorporated, held on 6 November, 1981, and published in the Proceedings of the Entomological Society of Manitoba (Vol. 37, 1981).

Carried

Note was made of a typographical error in the table of contents of the Proceedings. The authors of an abstract on page 5 are listed as B. A. Batula and A. G. Robinson. Corrected spelling is B. A. Batulla and A. G. Robinson.

3. Business arising from the minutes

Motion - Holliday/Chance: That the new executive investigate the possibility of a future joint annual meeting with the Entomological Society of Saskatchewan.

Amended motion - Conroy/Braken: That the Entomological Society of Saskatchewan be invited to share a future joint annual meeting in Winnipeg.

Amendment - Defeated.

Original Motion -

Carried

## EXECUTIVE REPORTS

4(a). President (Appx. B)

Motion - Guthrie/L. Smith: Acceptance of the President's report as read.

Carried

4(b). Treasurer (Appx. C)

The Treasurer presented the Auditor's Report. A net income was recorded for the first time since 1979.

4(b). Treasurer (Appx. C) (Continued)

Motion - Gerber/Loschiavo: Acceptance of the Auditor's Report for the fiscal year ending 31 August, 1982.

Carried

4(c). Appointment of Auditors

Motion - Askew/Turnock: That Ms. H. Samboluk be re-appointed to audit the Society's accounts and financial records.

Carried

4(d). Editor - The Manitoba Entomologist (Appx. D)

The Editor presented his report. It was suggested that automatic publication of guest speaker's addresses not be done. Page charges and subscription rates were considered to be too low; the gift and exchange program is expensive, mainly because of postage costs, and the Society should decide if the present practice is to be continued.

Motion - Gerber/Conroy: To accept the written report of the Editor of the Manitoba Entomologist.

Carried

4(e). Inclusion of Scientific Papers in the Proceedings

Motion - Turnock/Conroy: The Editorial Board is directed to discuss with the Editors of the Proceedings possible formats, page charges, criteria for accepting material, and editorial policy, and make recommendations to the Executive of the Society by the end of December, 1982.

Carried

4(f). Editor - The Proceedings (Appx. E)

Question: The costs of publishing the Proceedings arose.

Answer: The new printing costs are reflected in the current prices listed.

Motion - Barker/Guthrie: To accept the report of the Editor of the Proceedings of the Entomological Society of Manitoba.

Carried

4(g). Regional Director to the E. S. C. (Appx. F)

Comment: The Governing Board of E. S. C. has not yet officially decided on a joint meeting with E. S. M. in 1986.



4(g). Regional Director to the E. S. C. (Appx. F) (Continued)

Answer: Only a letter of acceptance in principle has been received from the President of E. S. C.

Motion - Galloway/Burton: To accept the report of the regional director.

Carried

BOARD REPORTS

5(a). Endowment Fund Board (Appx. G)

Motion - D. Smith/Galloway: To accept the report of the endowment fund board.

Carried

5(b). Editorial Board (Appx. H)

Motion - Braken/Turnock: To accept the Editorial Board report as presented in Appendix H-1.

Carried

Discussion on problems associated with publishing scientific papers in the Proceedings followed.

Question: Has the committee enquired about the costs of galley proofs, figures and tables for the Proceedings?

Answer: No. No papers have been received and it is unlikely that there will be any. All copy submitted for publication in the current format must be camera ready and this would minimize costs.

Comment: Recommendations on possible publication of guest speakers' presentations should be given.

Discussion concerning who decides on what is acceptable for publication, both in terms of length and quality, continued. The responsibilities of the Editorial Board and Editors were reviewed.

Motion - Bracken/Friesen: That the format of the Proceedings be as outlined in Appendix H-2 to the end of article 6. Article 5 must be included, articles 1, 2, 3, 4, and 6 may be included. Following discussion the membership was divided on the motion.

Motion to Table - Conroy/MacKay: That the previous motion be tabled for consideration and action by the Executive within 3 months.

Carried (6 dissenters)

## COMMITTEE REPORTS

6(a). Publicity (Appx. I)

Motion - Galloway/Flannagan: To accept the report of the Publicity Committee.

Carried

6(b). Youth and Education (Appx. J)

Motion - Arntfield/Lamb: To accept the report of the Youth and Education Committee.

Carried

Permission was granted to the chairman to submit a copy of his report to the Youth and Education Committee of the Entomological Society of Canada. A grant of \$200.00 has been received from the E. S. C. and a further \$515.00 has been authorized but has not been received.

6(c). Social (Appx. K)

Motion - Buth/Braken: To accept the report of the Social Committee.

Carried

6(d). E. S. C. Insect Common Names: No report (A. G. Robinson, chairman).6(e). Manitoba Environmental Council (Appx. L)

Motion - Arntfield/Galloway: To accept the report of the E. S. M. members to the Manitoba Environmental Council.

Carried

6(f). Winnipeg Insect Pest Management Advisory: No report (G. Ayre, chairman).

Carried

6(g). E. S. C. Honorary Members

The Committee recommended and received approval that Dr. A. G. Robinson be nominated as an honorary member of the Entomological Society of Canada.

Motion - Conroy/Batulla: To accept the report of the E. S. C. Honorary Members Committee.

Carried

6(h). Awards (Appx. M)

Motion - Fingler/Guthrie: To accept the report of the Awards Committee.

Carried

6(i). Archivist: No report (J. Heron, Chairman).

6(k). Scientific Programme

J. C. Conroy (Chairman) thanked the members of his committee for their assistance, and also thanked the Freshwater Institute for the use of their facilities.

Motion - Conroy/L. Smith: To accept the report of the Scientific Program Committee.

Carried

The President extended the thanks of the Society to J. C. Conroy and his committee for the excellence of the arrangements and facilities for the programme. Thanks were also extended to J. Buth for arranging the annual banquet. The thanks of the Society were given to the Freshwater Institute for the use of their facilities.

6(l). E. S. C. Fellowship and Awards (Appx. N)

Motion - Brust/Chance: To accept the report of the E. S. C. Fellowship Awards Committee.

Carried

ELECTION OF EXECUTIVE

7. 1982-1983 Executive

A report was made by N. White on the Executive Election held in 1982. The President accepted the report and instructed that the ballots be destroyed.

The 1982-1983 Executive will be:

President	- B. Webster
President Elect	- G. Bracken
Past President	- B. McKillop
Member-at-Large	- A. Kolach
Regional Director to E. S. C.	- T. Galloway

TRANSFER OF OFFICE

8. The President, B. McKillop, thanked the Executive and the Executive staff for their assistance throughout the year. The office of President was transferred to Dr. B. Webster.

OTHER BUSINESS

9. There being no further business, B. Webster called for adjournment.

ADJOURNMENT

- 10(a). Motion - Conroy: That the 38th Annual Meeting of the Entomological Society of Manitoba be adjourned.

Carried

- 10(b). The meeting was adjourned at 16:10 h of 5 November, 1982.

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N. D. G. White  
Secretary

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W. B. McKillop  
President

Appendix A

38th Annual Business Meeting

5 November 1982

AGENDA

1. Adoption of Agenda
2. Adoption of Minutes of 37th Annual Business Meeting held 6 November 1981
3. Business arising from the Minutes
4. Executive Reports
5. Board Reports
6. Committee Reports
7. Notice of 1986 ESC Meeting in Manitoba
8. 1982-83 Election Mail Ballot Results
9. Transfer of Office
10. Other Business
11. Adjournment

## Appendix B

## 38th Annual Meeting

## PRESIDENT'S REPORT

Over the past year Canada's economic productivity has been marginal; nevertheless our way of life continues to improve. Similarly, during the past year, the Society's activity has been limited, thereby stopping deficit spending, yet we have been relatively active socially. We were most active in the evolution of a new publication format for the Proceedings, and ensuing by-law changes involved much deliberation by our Editorial Committee, the Editors, the Executive and members. Our luncheons and accompanying guest speakers have been enthusiastically applauded.

Some of the reports that follow inform us that volunteers are needed in key areas. I ask you to contribute some of your time to these areas thereby improving our society.

I wish to thank you, the membership, for allowing me to serve as your President. Collectively, our thanks go to the Executive Staff, Board Members and Committee Members for their contribution of long hours and hard work for the betterment of the Society. Dr. Conroy and Ms. Buth are to be commended for their efforts in making arrangements for these meetings and tonight's banquet. In addition, Joanne deserves special thanks for her excellent social arrangements during the year. I thank you both on behalf of the Society.

Lastly, I wish to honour our friend and colleague, the late Dr. Gordon Bucher. Please rise for a moment of remembrance.

11

Thank you.

W. B. McKillop  
President 1981-1982

.29

Appendix C-1

ENTOMOLOGICAL SOCIETY OF MANITOBA INC.

AUDIT REPORT FOR THE YEAR ENDED

AUGUST 31, 1982

I have examined the records of the Entomological Society of Manitoba for the year ended August 31, 1982.

In my opinion the attached financial statements present fairly the financial position of the Society as at the year ended August 31, 1982 and the results of its operations for the year then ended in accordance with generally accepted accounting principles.

Helen Samboluk

## Appendix C-2

## ENTOMOLOGICAL SOCIETY OF MANITOBA INC.

## STATEMENT OF RECEIPTS AND DISBURSEMENTS

FOR THE YEAR ENDING AUGUST 31, 1982

## RECEIPTS:

Membership	\$ 828.00	
Subscriptions	563.20	
Page Charges	1,575.00	
Reprints	676.00	
Committees	300.25	
Annual Meeting	1,059.00	
Current Account Credits	49.52	
		\$5,050.97

## DISBURSEMENTS:

Printing	\$3,899.02	
Stationery	39.35	
Typing	472.50	
Postage	488.01	
Bank Charges	14.21	
Committee Expenses	376.35	
Meetings - Annual	1,446.74	
- Other	39.12	
Miscellaneous	60.81	
		6,836.11

Net Loss from Operations	(\$1,785.14)	
G.I.R. Investment Income	1,564.66	
Investment Interest	706.77	

NET INCOME for year ending August 31, 1982 \$ 486.29



## Appendix C-3

## ENTOMOLOGICAL SOCIETY OF MANITOBA INC.

## BALANCE SHEET

FOR THE YEAR ENDING AUGUST 31, 1982

## ASSETS:

Current Account Bank Balance		\$ 1,377.43
Savings Account Bank Balance		3,610.61
Investments: #Q95692	\$2,000.00	
#Q77695	3,000.00	
#Q0889G	3,000.00	
#JC5048	2,000.00	
#RC5523	2,200.00	
#GE0069	2,000.00	
#CH6727	2,000.00	
	<hr/>	16,200.00
Petty Cash: Treasurer		25.00
Secretary		50.00
		<hr/>
		\$21,263.04

## LIABILITIES AND SURPLUS:

Liabilities	nil	
Surplus Account		
Balance as at 31/8/81	\$20,776.75	
Net Income for Period	486.29	
	<hr/>	\$21,263.04

## Appendix D

## REPORT OF THE EDITOR OF THE MANITOBA ENTOMOLOGIST

Volume 13 of The Manitoba Entomologist was published in May, 1982. Since the cutoff date for Volume 13 (January 1982), the Editor has not received any scientific papers for the new Proceedings of the Entomological Society of Manitoba.

Three hundred and ten copies of Volume 13 were printed and were distributed as follows:

Members	150
Subscribers	79
Gifts and Exchanges	59
	288

The cost of publishing and mailing Volume 13 were \$3,004.65. Revenue from Volume 13 was:

Subscriptions	\$ 632.00
Page Charges	345.00
Reprints	234.00
	\$1,211.00

The Society, therefore, had to pay out \$1,793.65 from its funds to cover the costs of this volume.

At the time the journal was mailed, I sent a letter to the Subscribers asking them if they wanted to receive the new Proceedings of the Entomological Society of Manitoba. To date, only 5 Subscribers have indicated that they do not want to receive the new Proceedings.

George H. Gerber, Editor,  
The Manitoba Entomologist, 26 October, 1982

## Appendix E

## ANNUAL REPORT OF THE EDITOR OF THE PROCEEDINGS OF THE SOCIETY

Volume 37 of the Proceedings was distributed early in 1982. The membership saw for itself what it looked like.

The membership did not, however, see the costs of production. These costs should be compared to those of the previous year. Volume 36 consisted of an issue of 200 copies, at 48 pages per copy and cost CDN\$ 1097.37. Volume 37 consisted of 195 copies (180 were requested), at 38 pages per copy, and cost \$ 1060.07.

The cost per copy was essentially the same for Volume 36 and Volume 37 ( \$5.49 and \$5.43, respectively), though Volume 37 contained 20% fewer pages per copy. Thus Volume 37 was about 20% more expensive than Volume 36.

Part of the increase in expense can be attributed to inflation which ran at about 13% at that time. Stamps cost about twice as much in early 1982 as in 1981; stamps, however, were only a small item in the total picture. The rest of the increased cost can only be attributed to the fact that it is more expensive per page to print few pages than to print many pages.

Next year I hope to further reduce the total number of pages in the Proceedings.

P. S. Barker,  
Editor, Proceedings

#### Appendix F

#### E.S.C. REGIONAL DIRECTOR'S REPORT - 1982

The Annual Meeting of the E.S.C. Governing Board is not scheduled until 28-29 November, 3 December, so little information can be conveyed by a report at this time.

Of greatest importance to E.S.M. is the letter from E.S.C. President, G. B. Wiggins, dated 15 June, 1982, confirming acceptance of our invitation to E.S.C. to hold a joint annual meeting in 1986. The 1985 meeting of the Biological Council of Canada and its constituent societies was also confirmed for the last two weeks of June, 1985 at the University of Western Ontario.

At the request of the E.S.C. Public Education Committee Chairman, the names and areas of expertise of 5 E.S.M. members were submitted to be included in a directory of entomologists where projects may be of interest to the Science Writers Association of Canada.

T. D. Galloway  
Regional Director, E. S. C.  
5 November 1982

## Appendix G

## ENTOMOLOGICAL SOCIETY OF MANITOBA

## ANNUAL REPORT OF THE ENDOWMENT FUND BOARD

Investments, in the form of Royal Trust Guaranteed Investment Certificates are as follows.

<u>REG. NO.</u>	<u>AMOUNT</u>	<u>INTEREST</u>	<u>MATURITY</u>	<u>ANNUAL INCOME</u>
Q77695	\$ 3,000	9.375	November, 1982	\$ 281.25
Q95962	2,000	9.625	April, 1983	192.50
Q0889G	3,000	10.375	December, 1983	311.25
JC5048	2,000	10.125	April, 1984	202.50
RC5523	2,200	12.375	November, 1984	272.25
GE0069	2,000	11.875	July, 1985	237.50
CH6727	2,000	18.625	October, 1986	372.50
	<u>\$16,200</u>			<u>\$1,869.75</u>

D. L. Smith, Chairman  
5 November 1982

## Appendix H-1

## REPORT OF THE EDITORIAL BOARD, 1982

Following a decision by the membership at a special general meeting in January of 1982 to discontinue publication of the Manitoba Entomologist, the Editorial Board is proposing a revised format for the Proceedings of the Entomological Society of Manitoba. The board reviewed quotations from 4 alternative printers and recommends that Rinella Printers Ltd. be retained as printers of the Proceedings.

G. K. Bracken  
Chairman  
26 October 1982

Appendix H-2

REPORT ON THE MEETING OF THE EDITORIAL BOARD, ENTOMOLOGICAL SOCIETY  
OF MANITOBA, HELD AT THE RESEARCH STATION, AGRICULTURE CANADA, AT  
14:00 h, Oct. 24, 1982

Present: Ayre, Friesen, Holliday, Smith, Bracken.

Topics of the enclosed agenda were discussed and the following recommendations agreed upon.

1. The Society retain Rinella Printers Ltd. as printers of the Proceedings on the basis of their quotation of \$2.31/copy as based on the 1981 Proceedings. The UMSU Printshop should be a second choice (\$2.10/copy). Rinella Printers was recommended over the lesser UMSU quotation because they are a known quality and our present Editor is familiar with them.
2. The format of the Proceedings of The Entomological Society of Manitoba have the following sections and that these appear in the following order.
  1. Guest Speaker's Address
  2. Refereed Publications
  3. Special Articles. These are to be by invitation or selection by the Editor in consultation with the Program Committee. These articles will be edited but not refereed and the material, in total or in part, may have been or may be published elsewhere.
  4. Abstracts of Papers Presented
  5. Minutes and Committee Reports
  6. Membership List

The Editor may, at his discretion, enter other material as appendices.

If this new format is approved in this or amended form by the membership, the Editorial Board will compile a new definitive set of instructions to contributors for approval by the Executive Committee. It is the consensus of the Editorial Board that when these instructions are approved by the Executive Committee that any further instructions to contributors must be approved by the Editorial Board.

G. K. Bracken  
Chairman  
26 October 1982

## Appendix I

## ANNUAL REPORT OF THE PUBLICITY COMMITTEE - 1982

Two issues (February and October) for Volume 9 of the Entomological Society of Manitoba Newsletter were sent to members in 1982. Additional copies were submitted to Dr. H. Liu, Editor of the E.S.C. Bulletin, National Library of Canada and to E.S.B.C. in exchange for copies of Boreus (their newsletter). Vol. 9, No. 2 included a copy of the E.S.M. membership list.

The number of issues in 1982 was reduced from three to two because of a shortage of material submitted by the membership for No. 2. The Newsletter is dependent on active participation by the members and hopefully three issues will be possible in 1983.

T. D. Galloway  
Editor, E.S.M. Newsletter  
5 November 1982

## Appendix J

## ENTOMOLOGICAL SOCIETY OF MANITOBA PUBLIC EDUCATION AND YOUTH

## ENCOURAGEMENT COMMITTEE ANNUAL REPORT

1981-1982

This year we talked to several groups of Beavers, Cubs, Scouts, Guides and school children in the city and surrounding communities. I would like to thank Kathy McGinnis, Barbara Batulla, Dave Burton, and Terry Galloway for their help. The committee was invited to talk with members of the Manitoba Camera Club. Thanks to Bill Preston and his mastery of insect photography, we managed to keep the camera bugs entertained.

For the Young Entomologists we held two film nights which were well attended. The films were good and the discussion spirited. A workshop on making insect collecting equipment was held in May for Young Entomologists and their parents who attended. This year we were able to offer for sale insect pins at half price, thanks to Brian McKillop and the Museum of Man and Nature.

For their willing and able help this year I want to thank Sharon Leonard and Kathy, Barbara, Dave, and Terry. Without their support this committee would not have been able to function. Our finances are in good

shape, thanks to generous assistance from the Entomological Society of Canada, but we need more volunteers to help with committee work in the coming year.

Peter Arntfield  
Chairman

Appendix K

SOCIAL COMMITTEE REPORT - 1982

Three types of functions were held during the past year:

1) NEW MEMBERS' SOCIAL

About 65 people attended the New Members' Social held in the Faculty Club at the University of Manitoba. Mr. Doug Ross, City of Winnipeg Naturalist, gave a very informative and enjoyable slide presentation on tall grass prairie.

2) LUNCHEONS

Three noon hour luncheons were held with the average attendance of 30 members. One luncheon was followed by a special meeting to discuss the future of the Manitoba Entomologist. Two luncheons were followed by speakers who gave slide presentations.

3) ANNUAL BANQUET

This event was held at Holiday Inn on November 5, 1982. Dinner was followed by a dance with music provided by a music man. Attendance for this event was 56 members and guests.

J. L. Buth  
Chairperson

Appendix L

ENTOMOLOGICAL SOCIETY OF MANITOBA - MANITOBA ENVIRONMENTAL

COUNCIL ANNUAL REPORT 1981-1982

The Manitoba Environmental Council submitted a report by Dr. W. Turnock

on Mosquito Control Programs in Manitoba to the Clean Environment Commission public hearings on mosquito control in Manitoba in May. The Clean Environment Commission's Report on Mosquito Control Programs in Manitoba was released in October. The report listed 13 recommendations covering among other things, detailed investigation into the long term effects of Baygon, permits required for using insecticides to control mosquitoes on public and private land, year end reports of control programs, training programs for operators and supervisors and public relations. The environmental minister, Mr. Cowan, has asked the Manitoba Environmental Council to comment on the report.

The Environmental Chemical Committee of the Manitoba Environmental Council is going to review insect control programs in Manitoba and aerial spraying of pesticides for non-emergency mosquito control.

Our representation on the Manitoba Environmental Council expires on February 2, 1983. I recommend that the Society renew its membership on the Council at that time.

For personal reasons, I would like to submit my resignation as your representative to the Council. I will represent the Society until someone is appointed to replace me.

P. Arntfield  
Chairman

#### Appendix M

##### ANNUAL REPORT OF THE AWARDS COMMITTEE

Nominations for the 1982 Undergraduate Student Achievement Award were requested from the Department of Entomology, University of Manitoba; Department of Zoology, University of Manitoba; Department of Biology, University of Winnipeg; Department of Zoology, University of Brandon.

Mr. Todd Reichardt, Department of Entomology, University of Manitoba was selected to receive this award. Mr. Reichardt will be continuing his studies toward a M.Sc. in entomology at the University of Manitoba.

B. Fingler  
Chairman



Appendix N

REPORT OF THE ENTOMOLOGICAL SOCIETY OF CANADA AWARDS COMMITTEE

The Committee met and selected names for 3 awards of the Entomological Society of Canada: Gold Medal, C. Gordon Hewitt Award, and Honourary Membership. The names which we submitted for the C. Gordon Hewitt Award and Honourary Membership were selected to receive these awards in 1982. The C. Gordon Hewitt Award winner is Dr. S. Tobe of the University of Toronto. Dr. A. G. Robinson will be made an Honourary Member of the E.S.C. at its meeting in Toronto in November.

This committee was set up on an ad hoc basis in 1982. The committee recommends that this committee be made a continuing committee of the E.S.M.

R. P. Bodnaryk  
Chairman

ABSTRACTS OF PAPERS PRESENTED TO THE THIRTY-EIGHTH ANNUAL  
MEETING OF THE ENTOMOLOGICAL SOCIETY OF MANITOBA  
NOVEMBER 4 - 5, 1982  
SEMINAR ROOM, FRESHWATER INSTITUTE, 501 UNIVERSITY CRESCENT  
WINNIPEG

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EFFECT OF APHID (ACYRTHOSIPHON PISUM HARRIS) POPULATIONS ON  
YIELD OF FIELD PEAS IN MANITOBA

G. A. MAITEKI

Department of Entomology, University of Manitoba, Winnipeg,  
R3T 2N2, Manitoba

ABSTRACT: Plants in field cages were infested with aphids at densities to mimic natural populations. Resulting yields were affected by aphid density and plant growth stage at time of infestation. Natural infestation started in late May and peaked in mid-July. Insecticides gave best control when applied at flower and pod stages.

THE LONGEVITY AND ORIENTATION OF DRONE HONEY BEES (APIS MELLIFERA L.)

R. W. CURRIE

Department of Entomology, University of Manitoba, Winnipeg,  
R3T 2N2, Manitoba

ABSTRACT: The longevity and survival of drones introduced into honey bee colonies, along with the effects of age, apiary layout and coloured hives on number distance that drones "drift" were examined in this study.

Drones of known ages were marked and introduced into colonies of honey

bees. These colonies were examined on a regular basis before the time of drone flight and the numbers of marked drones were recorded.

The mean longevity of adult drones was  $13 \pm 3.3$  days. The longevity of drones in queenless colonies was similar to that found in queenright colonies.

Drones first drifted at 5 days of age but generally began drifting at 7 days of age. Large proportions of drones drifted more than once; some drifted to as many as three hives. Drones continued to drift until at least 24 days of age.

Drones drifted between hives that were spaced up to 150 m. apart and some drifted to other apiary layouts up to 450 m. away.

The proportion of 13-15 day old drones that drifted from the parent colony was 48%. Apiary layouts with coloured boards, horse shoe layouts, or paired colony layouts reduced the numbers of drones that drifted. However, none of the apiary layouts tested controlled drift completely.

LARVAL DIAPAUSE IN AEDES HENDERSONI COCKERELL AND AEDES  
TRISERIATUS (SAY) (DIPTERA: CULICIDAE) FROM MANITOBA

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ABSTRACT: Eggs of the sibling species Aedes hendersoni and Aedes triseriatus were collected from tree holes in the Winnipeg area during the spring of 1982. To test for larval diapause, the eggs were hatched and the larvae raised at short photoperiod (8L:16D) or long photoperiod (16L:8D). Larval diapause was measured by the number of larvae pupating during a period of 50 days from the time of hatch. A. triseriatus larvae from eggs collected and hatched in April exhibited diapause when kept at 20°C 8L:16D, with only 10.8% (7/65) pupating during the 50-day period. A. hendersoni larvae from the same collection had a lower percentage diapause when kept at 20°C 8D:16L, with 66.7% (18/27) pupating during the 50-day period. In subsequent collections the percent diapause was lower in both species, but A. triseriatus always has a higher percent diapause than A. hendersoni. When kept at 20°C, 16L:8D both species showed 100% pupation within 50 days. Delayed development during the early instars in A. triseriatus appears to be important in the development of larval diapause. This is the farthest north that larval diapause has been recorded in these species, although at this latitude it is of no importance in overwintering.

THE EFFECT OF PHOTOPERIOD AND TEMPERATURE ON THE INDUCTION OF  
EMBRYONIC DIAPAUSE IN AEDES TOGOI (THEOBALD) (DIPTERA:  
CULCIDIIDAE) AND OVERWINTERING

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ABSTRACT: Egg batches from individual females of A. togoi (first cycle oviposition) were examined and experiments were conducted at temperatures of 22°C and 24°C (all temperatures  $\pm$  0.5°C) at different combination of long photoperiods (16L:8D or 17,5L:6.5D) and short photoperiods (12L:12D and 8L:16D). When all stages were reared at 12L:12D, 24°C, females laid egg batches showing variable hatching responses. Embryonic diapause was induced by a short photoperiod (12L:12D) and 100% hatch occurred 43-48 days after repeated flooding at 24°C. Egg batches kept at 30°C, 12L:12D for 2-4 weeks showed similar responses as eggs kept at 24°C. Rearing all stages at a long photoperiod (16L:8D; 17.5L:6.5D) prevented embryonic diapause at 22°C and 24°C.

When larvae and pupae were reared at 24°C, 16L:8D and adults and eggs subjected to 12L:12D, the percentage hatch did not exceed 38%. Both the adult and the egg stages appear to be sensitive to the photoperiodic conditions. When the pupae, adults and eggs were kept at a long photoperiod (16L:8D) at 22°C and larvae at a short photoperiod (12L:12D), 70-97% hatch occurred after three floodings. When all life stages were reared under a photoperiod of 8L:16D, and 24°C, eggs showed a low percentage hatch (less than 20% after 4 floodings).

Larvae and eggs overwintered at Lighthouse Park, Vancouver, B. C. during 1980-81.

LIFE HISTORIES OF SOME WINTER-ACTIVE SPIDERS IN MANITOBA

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ABSTRACT: Juveniles and/or adults of at least 38 species of Manitoba spiders

are winter-active under snow between  $-3^{\circ}$  and  $-10^{\circ}\text{C}$  for five to six months of the year. Of these species, eight appear to be eurychronous with adults present at all seasons (e.g. Ceraticelus laetus); seventeen are stenochronous reproducing in spring/summer and with overwintering juveniles (e.g. Perdosa distincta); eight are diplochronous with adult males present twice a year (e.g. Agroeca ornata); and five appear to be winter-mature with reproduction occurring at low temperatures (e.g. Centromerus sylvaticus). Approximately half of the species appear to have biennial life histories.

LIFE HISTORY STRATEGIES AND NEARTIC DISTRIBUTION OF THE WINTER  
STONEFLIES (PLECOPTERA: CAPNIIDAE, TAENIOPTERYGIDAE, NEMOURIDAE)  
FOUND IN THE WHITEMOUTH RIVER, HADASHVILLE, MANITOBA

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ABSTRACT: Five species of winter stoneflies were collected from the Whitemouth River between March 23 and April 23, 1982. One of these species, the taeniopterygid Strophopteryx fasciata (Burmeister) is a new record for the province. The other four species collected were the capniid Allocapnia granulata (Claassen), the taeniopterygids Taeniopteryx nivalis (Fitch) and Taeniopteryx parvula Banks and the nemourid Shipsa rotunda (Claassen). The life history strategies and Nearctic distribution of all five species are discussed.

EMERGENCE OF PLECOPTERA (STONEFLIES) FROM SOUTH DUCK RIVER AND COWAN  
CREEK IN THE DUCK MOUNTAIN PROVINCIAL FOREST, MANITOBA

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ABSTRACT: Emergence periods and abundance of Plecoptera were studied using  $1\text{m}^2$  emergence traps, along two small streams in the Duck Mountain Provincial

Forest, Manitoba, from mid-May to mid-September, 1980. Eight species were collected, including two species, Malenka californica and Suwallia pallidula, not previously recorded from Manitoba. Over 95% of the emergence consisted of Hastaperla brevis, which emerged during late spring to the end of July, and of M. californica which emerged mainly during the spring and autumn. Density of animals emerging during the sampling period ranged from 49 to 328 adults/m<sup>2</sup>.

LIFE CYCLE OF NEOAPECTANA CARPOCAPSAE WEISER 1955 (NEMATODA: STEINERMATIDAE) IN WAS MOTH LARVAE, GALLERIA MELLONONELLALL. (LEPIDOPTERA).

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ABSTRACT: Neoaplectana carpocapsae, Breton strain, infecting late instar larvae of Galleria mellonella showed two distinct life cycle variants, depending on size of the initial infection. Heavy infections (90+) matured and produced offspring which developed to L<sub>3</sub> dauer larvae and emerged. Light infections (1-12) matured and produced a second generation which matured and gave rise to a third generation. Later F<sub>2</sub> and all F<sub>3</sub> developed to the L<sub>3</sub> stage and emerged. Two full generations are thus possible. Intermediate infections showed some F<sub>2</sub> development to L<sub>4</sub>, but failed to mature. First generation females from light infections were significantly ( $p < 0.001$ ) larger than those from heavy infections; males were not significantly different. Ratio of males to females was 1:1.3 for F<sub>1</sub> and 1:1.6 for F<sub>2</sub>.

HISTOLOGICAL DEGRADATION AS A CAUSE OF BARK BEETLE MORTALITY IN  
NEMATODE INFECTIONS

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ABSTRACT: Sphaerulid nematodes infect third instar larval beetles and emerge as juveniles of the next generation. Field and laboratory observations revealed that four of eleven species of bark beetles died prior to, or during, oviposition as a result of nematode parasitism. Presence of parasites in the haemocoel during beetle development caused numerous abnormalities in insect organogenesis, especially of the gonads, but this usually did not prevent the bark beetles from invading a new tree. Dramatic histological changes in the infested beetle following the colonization of the tree led to the almost complete degradation of the tissue and often to the death of the insect. Degradation of tissue resulted from the direct feeding of the nematode juveniles on the host haemolymph and organs. Insect activity and behaviour in the construction of the egg galleries were external manifestations of the rapidly developing histopathological process in the bark beetle.

BIOLOGICAL CONTROL OF THE ELM BARK BEETLE, HYLURGOPINUS RUFIPES:

EFFECTIVENESS OF NEMATODES (DD-136) APPLIED IN TENOGUM  $\odot$

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ABSTRACT: The native elm bark beetle, Hylurgopinus rufipes, is a vector of Dutch Elm disease, and can be infected and killed in the laboratory by the nematode Neoapectana carpocapsae (DD-136). The successful use of DD-136 in biological control depends upon the creation of a moist microenvironment capable of sustaining live nematodes until they can enter the insect host. An hydrophilic colloid, Tenogum  $\odot$  was found to be non-toxic to DD-136, and potentially useful against H. rufipes when sprayed with DD-136 in suspension.

Further refinements and planned field tests are discussed, as are other methods of nematode application.

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NOTICE OF AMENDMENTS OF THE BY-LAWS OF THE  
ENTOMOLOGICAL SOCIETY OF MANITOBA INC.

Two articles of the BY-LAWS, Article X, and Article XIII, were amended

during 1982. They are now as follows:

ARTICLE X - THE EXECUTIVE STAFF

1. The Executive Staff of the Society shall be the Secretary, the Treasurer and the Editors of the publications of the Entomological Society of Manitoba.

2. The Executive Staff shall be appointed annually by the Executive. They shall conduct the affairs of the Society according to the instructions and policies determined by the Executive and by Active Members at annual, general, or special meetings. Consecutive annual appointments are permitted.

3. The Executive Staff shall serve as advisors to the Executive but are not members of the Executive.

ARTICLE XIII - PUBLICATIONS

1. The official publications of the Society shall be The Proceedings of the Entomological Society of Manitoba and such other publications as the membership shall approve.

2. The Society may publish a newsletter. Its title, frequency and method of publication shall be determined by the Executive.

NOTICE OF CHANGE OF

EDITORS

My responsibilities as editor of The Proceedings of the Entomological Society of Manitoba come to an end with the distribution of Volume 38 (1982) to the members of the Entomological Society of Manitoba.

Your new editor will be R. E. Roughley. Please give him your generous support.

Philip S. Barker  
Editor