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PROCEEDINGS OF THE
ENTOMOLOGICAL
SOCIETY OF
MANITOBA

VOLUME 39

1983

Proceedings of the
ENTOMOLOGICAL SOCIETY OF
MANITOBA

Volume 39
1983

Robert E. Roughley
Editor
Winnipeg, Manitoba

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MINUTES OF THE 39TH ANNUAL MEETING
ENTOMOLOGICAL SOCIETY OF MANITOBA

14:00 h., 4 November, 1983
Seminar Room
Freshwater Institute
501 University Crescent
Winnipeg, Manitoba R3T 2N2

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

Present

Executive: Dr. G.R.B. Webster, President; Dr. T.D. Galloway, Regional Director.

Executive staff: Dr. N.D.G. White, Secretary; W.L. Askew, Treasurer; Dr. R.E. Roughley, Editor of the Proceedings.

Members:

J. Buth	G. Ayre
M. Friesen	S. Lochiavo
G. Wylie	L. Smith
B. Galloway	B. Fingler
R. Brust	D. Smith
W. Preston	G. Gerber
R. Ellis	J. Guthrie
A.G. Robinson	P. MacKay
N. Holliday	R. Lamb

1. Agenda (Appx. A)

Motion - MacKay/Guthrie: Adoption of the agenda.

Carried

2. Minutes of the last Annual Meeting

Motion - MacKay/Wylie: Adoption of the minutes of the 38th Annual Meeting of the Entomological Society of Manitoba Incorporated, held on 5 November, 1982, and published in the Proceedings of the Entomological Society of Manitoba (Vol. 38, 1982).

Carried

3. Business arising from previous minutes

None.

4. EXECUTIVE REPORTS

4(a). President (Appx. B)

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

Carried

4(b). Treasurer/Auditor (Appx. C)

Motion - Buth/Galloway: That the auditor's report be accepted.

Carried

Motion - Askew/Guthrie: That H. Samboluk be reappointed as the auditor for the Entomological Society of Manitoba for the fiscal year ending in 1984.

Carried

4(c). Editor - The Proceedings of the E.S.M. (Appx. D)

Motion - Galloway/Lamb: That the report of the editor of the Proceedings be accepted as circulated.

Carried

4(d). Regional Director to E.S.C. (Appx. E)

Report presented by T.D. Galloway.

Question - What is the status of common names of insects published by E.S.C.?

Answer - Changes to the By-Laws have been approved by the Society. The final editing of the material is in progress.

Motion - Holliday/Lamb: That the Regional Director's report be accepted.

Carried

5. BOARD REPORTS

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

Motion - MacKay/Galloway: That the report of the Endowment Fund be accepted.

Question - What is being done with the Endowment Fund?

Answer - Interest is being used to cover the costs of the Proceedings and the operation of the Society.

Carried

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

Motion - Loschiavo/Brust: That the Editorial Report be accepted as presented.

Carried

6. COMMITTEE REPORTS

Motion - Guthrie/Gerber: That all reports submitted be approved.

6(a). Publicity/Newsletter (Appx. H)

T. Galloway thanked all those who had contributed to the Newsletter in the past.

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

T. Galloway thanked those who had participated in various youth and education programs on behalf of P. Arntfield.

6(c). Social (Appx. J)

J. Buth enquired if all of the present social functions were wanted or needed since attendance was often poor.

A brief discussion on poor attendance at the AGM and social functions followed. Several members suggested that the excuses made by those not attending (i.e. costs) were usually not justified.

6(d). Insect Common Names - no report.

6(e). Manitoba Environmental Council (Appx. K): Copies of report circulated.

6(f). Insect Pest Management Advisory: - no report.

This Committee has been inactive for several years but R. Ellis, as representative for the city of Winnipeg, suggested that the city will determine if the committee, which is sponsored by the municipal government, should continue.

- 6(g). E.S.C. Honorary Members - no report.
 6(h). Awards: (Appx. L) - copies of report circulated.
 6(i). Archivist: - no report.

A letter to the Secretary from R. Heron indicated that statistics on membership, etc. and a file of the newsletter of the Society were compiled. The original records of the Society are now on file in the Department of Entomology, University of Manitoba.

- 6(j). Scientific Program: - no formal report.

Comments made by G. Gerber reflected a need for greater input of ideas by Society members into the scientific program, and greater willingness on the part of members to present papers at the Annual Meeting.

- 6(k). E.S.C. Fellowship and Awards (Appx. M)

R. Brust thanked the Committee members for their contributions.

- 6(l). E.S.C. Scholarship (Appx. N) - report circulated.

The motion for acceptance of all reports was addressed.

Carried

ELECTION OF EXECUTIVE

7. 1983-84 Executive

A report was made by B. Webster on the results of the annual election of officers. The executive are:

President	-	G.K. Bracken
Past-President	-	G.R.B. Webster
President-Elect	-	R.A. Ellis
Member-at-Large	-	R.A. Brust
Regional Director to E.S.C.	-	T.D. Galloway

Motion - Preston/Holliday: That the ballots be destroyed.

Carried

8. TRANSFER OF OFFICE

The office of the President was transferred from B. Webster to G. Bracken. Since the new President was unable to attend the meeting, B. Webster retained the chair for the remainder of the meeting.

The members present applauded the contributions made by B. Webster to the society during the past year.

OTHER BUSINESS

9(a). Fee increase

The operating cost of the Society is not being covered by current membership fees.

Motion - Gerber/Guthrie: That the membership fee for the Entomological Society of Manitoba be raised from \$5.00 to \$10.00 effective for September 1, 1984.

Discussion followed and it was concluded that an increase to \$10.00 would still result in the use of Endowment Fund interest for the operation of the Society.

Amendment - Guthrie: That the membership fee for the Entomological Society of Manitoba be raised to \$15.00 effective September 1, 1984.

Amendment - Carried (2 opposed)

Motion - Carried (1 opposed)

Motion - Jay/Wylie: That student membership remain at \$2.50 and life membership remain at \$100.00.

Carried

9(b). Integrated Pest Management Seminar

An announcement was made of the seminar to be held December 14, 1983 in the Agriculture Bldg. auditorium, University of Manitoba. The seminar is part of the Agronomist Conference sponsored by MDA.

Motion - Buth/Holliday: That the thanks of the Society be extended to P. MacKay and B. Lamb for holding the annual mixer at their home.

Carried

ADJOURNMENT 15:23 h of 4 November, 1983.

Appendix A
39th Annual Business Meeting
November 4, 1983

AGENDA

1. Appointment of Secretary to record the proceedings of the Annual Business Meeting.
2. Acceptance of agenda.
3. Minutes of the last Annual Meeting.
4. Business arising from the minutes.
5. Executive reports
 - a) President G.R.B. Webster
 - b) Treasurer W. Aske
(Auditors)
 - c) Appointment of Auditors
 - d) Editor Proceedings R.E. Roughley
 - e) Regional Director to E.S.C. T.D. Galloway
6. Board Reports
 - a) Endowment Fund Board D. Smith
 - b) Editorial Board G. Ayre
7. Committee Reports
 - a) Publicity, Newsletter T.D. Galloway
 - b) Youth and Education P. Arntfield
 - c) Social J. Buth
 - d) E.S.C. Insect Common Names A.G. Robinson
 - e) Manitoba Environmental Council M. Friesen
 - f) Winnipeg Insect Pest Management Advisory ---
 - g) E.S.C. Honorary Membership J.C..Conroy
 - h) Awards B. Fingler
 - i) Archivist R. Heron
 - j) Scientific Program G. Gerber
 - k) E.S.C. Fellowship and Awards R. Brust
 - l) E.S.C. Scholarship M. Chance
8. Announcement of 1983-84 Executive Election Results.
9. Transfer of Office.

10. Other Business.
11. Adjournment.

Appendix B

39th Annual Meeting

PRESIDENT'S REPORT

The 1982-83 year has been an interesting one for the Society. Although activities have taken place on a number of fronts, I have chosen a few for special mention.

The transition to the new Proceedings-only format from the former Proceedings plus Manitoba Entomologist publication duo has been completed with the appointment of our new Proceedings editor, Dr. Rob Roughley. Dr. Phil Barker's service in this role for many years is greatly appreciated. The high quality and excellent organization of the Proceedings under his editorship provides a first class model for us to follow and assist Rob as we contribute and assemble material for future issues.

The Editorial board has sorted out the new format for the Proceedings and has decided on important administrative details for its publication under the very capable leadership of Dr. Gord Ayre.

The Social Committee, Jo-Anne Buth, has excelled once again in providing us with an engaging and stimulating series of luncheon meetings, and in arranging for us a superb New Members' Social. Following the Annual Banquet this evening, Jo-Anne will be finishing her term in the Social Committee chair.

The Newsletter has again been efficiently edited by Dr. Terry Galloway. Terry also will be stepping down, but leaving an excellent performance model for his successor.

Dr. George Gerber has assembled for us an excellent scientific program after a good deal of hard work and individual encouragement to members. Programs don't just happen; they take organization, a good committee, and effective leadership, and we have seen the results this year of a combination of all three.

Our Secretary, Dr. Noel White, has looked after many of the day to day details of the Society. Noel has always been ready to recommend what needs to be done next, has prodded me when I needed it, and has helped to keep the executive accountable with his well organized minutes including notes of who agreed to do what by when, in addition to the usual records of motions moved and carried.

These and many others have helped to make the 1982-83 year of the Society function smoothly.

The Entomological Society of Manitoba is no different from other professional societies in that it runs on volunteer effort and dedication. When our new president, Dr. Garth Bracken, asks for your support in leading our committees this coming year, please give him the enthusiastic support so vital to the continued functioning of the ESM.

It has been a pleasure to serve as your president.

G.R. Barrie Webster
President 1982-83.

Appendix C

ENTOMOLOGICAL SOCIETY OF MANITOBA INC.

AUDIT REPORT FOR THE YEAR ENDED

AUGUST 31, 1983

I have examined the records of the Entomological Society of Manitoba for the year ended August 31, 1983.

In my opinion the attached financial statements present fairly the financial position of the Society as at the year ended August 31, 1983 and the results of its operations for the year then ended in accordance with generally accepted accounting principles.

Helen Samboluk.

ENTOMOLOGICAL SOCIETY OF MANITOBA INC.

STATEMENT OF RECEIPTS AND DISBURSEMENTS

FOR THE YEAR ENDING AUGUST 31, 1983.

RECEIPTS:

Membership	\$ 619.07	
Subscriptions	263.55	
Committees	81	
Annual Meeting	1,145.00	
Current Account Credits	33.94	
		\$2,142.56

DISBURSEMENTS:

Printing	\$ 863.19	
Stationery	24.94	
Typing	67.35	
Postage	314.33	
Bank Charges	25.00	
Committee Expenses	293.90	
Meetings - Annual	1,502.23	
Miscellaneous	30.00	
		\$3,120.94

Net Loss from Operations	(978.38)
G.I.R. Investment Income	1,917.38
Investment Interest	428.28

NET INCOME for year ending August 31, 1983
\$1,367.28

ENTOMOLOGICAL SOCIETY OF MANITOBA INC.
BALANCE SHEET
FOR THE YEAR ENDING AUGUST 31, 1983

ASSETS

Current Account Bank Balance		\$ 399.05
Savings Account Bank Balance		5,931.94
Investments:		
Q0889G	\$3,000.00	
JC5048	2,000.00	
RC5523	2,200.00	
GE0069	2,000.00	
CH6727	2,000.00	

	HK9093	3,024.33	
	XK5133	2,000.00	
			16,224.33
Petty Cash:	Treasurer		25.00
	Secretary		50.00
			\$22,630.32

LIABILITIES AND SURPLUS:

Liabilities		nil	
Surplus Account			
Balance as of 31/8/82	\$21,263.04		
Net Income for Period	1,367.28		
			\$22,630.32

Appendix D
ANNUAL REPORT OF THE EDITOR OF THE
PROCEEDINGS OF THE SOCIETY

We ordered 300 copies of Volume 38 (1982) and distributed about 279 of them. About 150 went to members in good standing, 70 to subscribers and another 59 copies went to those institutions with which we have agreements for exchanges.

The cost of last year's Proceedings (Vol. 38 of 1982) was \$918.19, or \$3.06 per copy, nearly at the level of cost of the 1977 issue. (If we consider the ravages of inflation, our costs have, in fact, been a lot lower than they were in 1977). We have fortunately been able to reduce costs dramatically compared to the two previous years when costs of production amounted to more than \$5.00 per copy. On the other hand, mailing costs, such as stamps and envelopes, account for 20% of production costs.

It has been a privilege for me to be Editor of the Proceedings for over a decade, but it is now my pleasure to hand over the Editorship to Dr. Roughley. Please give him your unstinting support.

Philip S. Barker.

Appendix E

E.S.C. REGIONAL DIRECTOR'S REPORT - 1983

The Annual Meeting of the Governing Board of the Entomological Society of Canada was held on 1-2 and 5 October in Regina this year.

It now appears final that the joint Annual Meeting for the ESM and ESC will be held in 1986. All the necessary courtesies have been observed and we can finally get down to the business of making the local arrangements and planning the program.

In the Report of the ESC Public Education Committee, it was pointed out that only 4 of the affiliate societies requested support for regional projects; the ESM was not among these four. At the present time, the affiliates' allotments may be carried over for up to 3 years. Also, the Board agreed that the maximum amount for affiliate support be raised from \$100 to \$200 per year. This information will be directed to the 1983-84 Chairman of the ESM Youth and Public Education Committee.

T.D. Galloway
Regional Director, E.S.C.
27 October, 1983.

Appendix F

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>
HK9093	\$ 3024.33	12.375	December, 1987	\$ 374.26
XK5133	2000.00	11.375	June, 1988	225.00
Q0889G	3000.00	10.375	December, 1983	311.25
JC5048	2000.00	10.125	April, 1984	202.50
RC5523	2200.00	12.375	November, 1984	272.25
GE0069	2000.00	11.875	July, 1985	237.50
CH6727	2000.00	18.625	October, 1986	372.50
	\$16224.33			\$1,995.26

D.L. Smith, Chairman
4 November, 1983.

Appendix G
THE ENTOMOLOGICAL SOCIETY OF MANITOBA
REPORT OF THE EDITORIAL BOARD, 1983

The Editorial Board considered questions which arose at the Annual General Meeting, 1982, regarding publication policy for the Proceedings, Entomological Society of Manitoba. Recommendations on the inclusion of scientific papers and on possible formats for future editions were given to the Executive in April, 1983.

G.L. Ayre
Chairman.

Appendix G-1
EDITORIAL BOARD MEETING
23 March, 1983

Purpose: To draft recommendations re inclusion of scientific papers in Proceedings and to outline possible formats for future editions of the Proceedings. (A response to motions made in sections 4(c) and 5(b) of the minutes of the Annual General Meeting, 5 November, 1982).

Present: G. Ayre, P. Barker, G. Bracken, M. Friesen, N. Holliday, R. Roughley, D. Smith.

The meeting was called to order at 1:30 PM and opened with a discussion of the purpose of the Proceedings.

Motion - Bracken/Barker: To recommend that the Proceedings be discontinued in their present format and be distributed as a Newsletter.

Defeated

Further discussion indicated that the general opinion of the board was the same as expressed in their submission to the Annual General Meeting, 1982. In response to concerns and enquiries raised at the AGM the following modifications were made.

Motion - Friesen/Smith: To recommend that the Bracken/Friesen motion under section 5(b) of the AGM be expanded to read: 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 at the discretion of the Editor on consultation with the Executive Committee.

Amendment - Holliday/Bracken: That article 3 of appendix H-2 be amended by omitting the phrase "in consultation with the Program Committee".

Amendment - Carried

Motion - Carried

Motion - Barker/Friesen: To recommend that the physical format of the Proceedings be the same as that used in 1981.

Carried

Motion - Friesen/Holliday: To recommend that the criteria for accepting scientific papers and the editorial policies applied to them be the same as previously established for the Manitoba Entomologist.

Carried

Motion - Holliday/Bracken: To recommend that page charges for referred material shall be such that they cover all expenses incurred in the final preparation and printing of the article. These charges shall be set by the Executive Committee after consultation with the Editor on current costs.

Carried

Motion - Holliday/Bracken: To recommend that a budget be submitted annually by the Editor for approval by the Executive Committee at its first meeting following the annual meeting.

Carried

Meeting adjourned at 3:10 PM.

G.L. Ayre
Chairman, Editorial Board
Entomological Society of Manitoba.

Appendix G-2

THE MANITOBA ENTOMOLOGIST (NOTICE TO CONTRIBUTORS)

These instructions now pertain to scientific papers submitted to the Proceedings of the Entomological Society of Manitoba.

1. The Proceedings of the Entomological Society of Manitoba is printed annually and publishes articles on all phases of entomology. Each paper should contain the results of original research, or review, in depth, some aspect of entomology. While the primary aims are to publish material of regional interest, papers of interest to other geographic areas or of general interest will also be considered.
2. Manuscripts should be prepared according to instructions described in the CBE Style Manual, Third Edition, and in the most recent issue of the Proceedings.
3. Manuscripts should be submitted in triplicate, including the original and two copies, on 8 1/2" x 11" paper, double spacing the entire manuscript. For the correct format, please consult a recent issue of the Proceedings or Ecology. For each manuscript two typescript pages should include an abstract not exceeding 200 words.
4. Tables and figures should be clear and concise, and should not repeat material presented in the text. Tables should be typed on to a page, and placed at the end of the manuscript. Notations identifying the author and title should be made lightly in pencil on the back of each figure. Figures should be on glossy paper and not larger than 6" x 9".
5. Each manuscript is reviewed by at least two referees who will check for scientific content, originality, and clarity of presentation. Upon completion of the review procedures, a copy of the galley proof will be sent to the author(s).
6. Arrangements for reprints should be made through the editor.

Appendix H

ANNUAL REPORT OF THE PUBLICITY COMMITTEE - 1983

Three issues of the Entomological Society of Manitoba Newsletter were prepared for Vol. 10 in 1983, appearing in February, July and October. A current list of ESM members was published in Vol. 10, No. 3 at the request of the Executive.

T.D. Galloway
Editor, E.S.M. Newsletter
27 October, 1983.

Appendix I

**ANNUAL REPORT OF THE PUBLIC EDUCATION
AND YOUTH ENCOURAGEMENT COMMITTEE - 1983**

The Committee assisted by numerous students from the Department of Entomology has been very active this year with visits to Beaver and Cub groups, as well as in the schools. Special thanks go to Barbara Batulla, Kathy McGinnis, Martha Farkas, Wendy Ralley, Todd Reichardt, Nina Bertholet, Kevin Nixon and Terry Galloway for their help.

The entomology display at St. Vital Centre, held on 19-21 May, was a smashing success this year. The efforts of Wendy Ralley and Donna Giberson in the organization and all the members who volunteered time, energy and material are greatly appreciated.

At the recent NSTA-STAM International Science Educator's Conference held in Winnipeg, Terry Galloway presented a paper entitled "Insects - centre attraction for the biology class" on 20 October and Brian McKillop discussed "Techniques for studying the aquatic environment" on 22 October.

P.A. Arntfield
Chairman, P.E. & Y.E.C.
27 October, 1983.

Appendix J

SOCIAL COMMITTEE REPORT - 1983

Three types of functions were held during the past year:

I) NEW MEMBERS' SOCIAL.

About 40 people attended this function at the University of Manitoba Faculty Club. Dr. Jennifer Shay gave a slide presentation on the "Delta Marsh".

II) LUNCHEONS.

Three noon-hour luncheons with guest speakers were held with the average attendance of 33 people.

III) ANNUAL BANQUET.

This event was held at the Holiday Inn South on November 4, 1982. Dinner was followed by a dance with a music man. Attendance was 50 members and guests.

J.L. Buth, Chairperson.

Appendix K

REPORT ON THE MANITOBA ENVIRONMENTAL COUNCIL

November 4, 1983.

I was appointed to represent the Entomological Society of Manitoba on the Manitoba Environmental Council (MEC) at the beginning of Feb., 1983. At this time I joined the Environmental Chemicals/Water and Waste Committee. I have been serving as Secretary of the Council since May, 1983.

A total of ten briefs, presented and approved at the Annual Meeting held in May, 1983, have been forwarded to the Environment Minister, Hon. J. Cowan. Briefs which may be of particular interest to ESM members are those recommending inclusion of learning modules on insect control into high school curricula, emphasis by the Environment Department on public education with respect to insect pest control, and establishment of a Pesticide Control Branch within the Environmental Management Division to regulate the use of and provide information on pesticides in Manitoba.

Future activities include providing input on the proposed legislation on Hazardous Chemicals and possibly making a presentation at the Clean Environment Commission hearings on this issue, reviewing the government report on the aerial

spray program carried out last summer, planning a Forum on Wildlife (tentatively planned for March, 1984), possibly holding a Forum on the aerial and fogging program for mosquito control (perhaps in late spring, 1984), updating of Noxious Weeds Act, and holding an E.T. (Environmental Trivia) contest (no cartoon contest this year). A brief may be presented at the Semi-annual meeting, to be held 3 Dec., 1983, on the Cruise Missile and Nuclearism.

Council's organization and activities have been reviewed by the Social Planning Council. The Board of Directors of MEC have forwarded a number of recommendations, based on this review, to the Minister and have drawn up recommendations re operation of MEC for presentation to Council as a whole at the Semi-annual Meeting. Council's productivity has been affected by the loss of the Executive Secretary. Steps are being taken to resolve this issue.

Margaret K. Friesen
ESM representative on MEC.

Appendix L

ANNUAL REPORT OF THE AWARDS COMMITTEE

The 1983 Awards Committee consisted of Mr. B. Fingler, Chairman, Manitoba Agriculture; Dr. R.J. Lamb, Canada Agriculture; Dr. W.B. McKillop, Manitoba Museum of Man and Nature and Dr. A.G. Robinson, Professor Emeritus, University of Manitoba.

Nominations for the 1983 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 and the Department of Zoology, University of Brandon.

Ms. Michele Quaglia, Department of Biology, University of Winnipeg was selected to receive this award. Ms. Quaglia will be continuing her studies toward a M.Sc. in Entomology beginning in September, 1984.

B. Fingler, Chairman
Awards Committee
Entomological Society of Manitoba.

Appendix M**REPORT OF THE ENTOMOLOGICAL SOCIETY OF MANITOBA COMMITTEE****RE. ESC AWARDS**

In November, 1982, the Committee nominated a very worthy candidate for the Entomological Society of Canada Gold Medal Award for Outstanding Achievement in Canadian Entomology. Although our candidate was not selected in 1983, we feel that it is important that Canadian entomologists with outstanding records of achievement in research, administration and/or teaching be nominated by our Society's members for the Gold Medal and the Hewitt Awards.

We congratulate the 1983 winner of the Gold Medal Award, Dr. Freeman McEwen, and we also congratulate the E.S.C. Awards Committee for their choice of one of Canada's truly great entomologists!

In the fall of 1983, members of the Entomological Society of Manitoba nominated very worthy candidates for both the 1984 Gold Medal and Hewitt Awards.

R.P. Bodnaryk
G.H. Gerber
R.A. Brust, Chairman.

Appendix N**REPORT OF THE ENTOMOLOGICAL SOCIETY OF CANADA
SCHOLARSHIPS COMMITTEE**

Two awards were given this year. The recipients are Mr. Y. Bouchard of Ste. Foy, Quebec, and Mr. R.J. Martin of Waterloo, Ontario. Both winners are M.Sc. candidates.

The Scholarship Committee received 10 applications this year -- 1 each from British Columbia, Alberta and Manitoba; 3 from Quebec and 4 from Ontario. This is 5 more than last year but still not a very good response.

M.M. Galloway (Chance)
ESM Affiliate Member.

ABSTRACTS OF PAPERS PRESENTED TO THE THIRTY-NINTH ANNUAL
MEETING OF THE ENTOMOLOGICAL SOCIETY OF MANITOBA

3-4 NOVEMBER, 1983

SEMINAR ROOM, FRESHWATER INSTITUTE, 501 UNIVERSITY CRESCENT
WINNIPEG

LIFE HISTORY AND PRODUCTION OF EPHORON ALBUM
(EPHEMEROPTERA:POLYMITARCIDAE) IN THE VALLEY RIVER,
MANITOBA.

DONNA J. GIBERSON AND T.D. GALLOWAY
University of Manitoba, Winnipeg,
Manitoba R3T 2N2

ABSTRACT: The Valley River is a fourth order prairie river which originates in Duck Mountain Provincial Park, Manitoba and empties into Dauphin Lake. Ephoron album is the dominant summer mayfly found in riffles in the agricultural zone, reaching densities of more than 3000/m². Total annual production at one riffle site for 1982 was calculated at 1.5g/m²/yr. (dry weight) during a growth period of only 2 1/2 months during the summer.

PRELIMINARY LIFE HISTORY AND PRODUCTION STUDIES OF THE
BURROWING MAYFLIES OF DAUPHIN LAKE, MANITOBA

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ABSTRACT: Studies in 1982 using length frequency histograms and wing pad developmental stages found that the life cycles of Ephemera simulans Walker and Hexagenia limbata (Serville) were one and two years respectively. Annual production of H. limbata, using three methods, was estimated as ranging from 6.1 to 6.5 g/m²wet weight, with a P/B ratio of 1.6.

TAXONOMY AND DISTRIBUTION OF PLATEUMARIS THOMS

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ABSTRACT: Donaciinae (Coleoptera, Chrysomelidae) is a virtually cosmopolitan group consisting of 5-7 genera (depending on author). The genus Plateumaris seems poorly defined and its relationship to other members of the subfamily is unclear. As presently conceived the genus includes 16 Nearctic species (2 new) and about 34 worldwide. Distribution patterns show full glacial displacement southwards, as evidenced by southern higher altitude populations. Populations isolated in eastern and western refugia during the Pleistocene have diverged slightly and complete introgression is prevented by a grassland barrier.

LONG-DISTANCE MOVEMENTS IN POPULATIONS OF PEA APHID,
ACYRTHOSIPHON PISUM.

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ABSTRACT: The hypothesis that pea aphids arriving in Manitoba field crops in mid-summer originate in the south was tested using a photoperiodic response as a physiological marker. Preliminary data from clones collected locally indicate that aphids from the south make up a significant proportion of summer pea-aphid populations, but that most of these migrants probably do not contribute overwintering eggs to the population.

PARASITE OVERCROWDING AND ITS EFFECT ON THE NEMATODES
INFESTING BARK BEETLES

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ABSTRACT: Negative effects of overcrowding of hosts by parasites were observed in bark beetles infested with nematodes. These effects were caused by:

(1) Overexploitation of the host, where excessive intensity of infection and injuries of the host organs lead to the entire infrapopulation of the parasite.

(2) The immune response of the host, elicited above a limit of host tolerance, leading to the reduction in parasite individuals by melanization of the nematodes.

(3) Strong intraspecific competition between parasites for food resources and space, leading to development of smaller individual nematodes and lower production of eggs per female parasite.

These observations suggest that regulation of the host-parasite system in bark beetles and nematodes also takes place at the level of infrapopulation.

A PRELIMINARY REPORT ON THE EFFECTS OF TWO RECENT
(1981, 1983) WIDESPREAD MOSQUITO CONTROL PROGRAMS
ON THE MANITOBA BEEKEEPING INDUSTRY.

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ABSTRACT: On two recent occasions the Government of Manitoba has conducted widespread mosquito control programs involving the aerial application of propoxur (1981) and malathion (1983). Monitoring of the effects of these insecticide applications on honey bees have indicated bee losses and disruption of normal honey bee colony behaviour resulting in reduced honey production. The government has responded by offering compensation to beekeepers who experienced financial losses resulting from the spraying.

BRAIN CHOLINESTERASE ENZYME ACTIVITIES IN FISH
FOLLOWING APPLICATIONS OF MALATHION IN WINNIPEG-1983

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ABSTRACT: It is well established in the published scientific literature and in our own experience that organophosphorus insecticides can cause reductions in cholinesterase enzymes. Brain cholinesterase activities were measured in fish from two locations in Winnipeg before and after aerial application of malathion. Adult yellow perch from the Ft. Whyte Nature centre and immature walleye from storm water retention ponds along Bishop Grandin Boulevard were captured shortly before spraying and then at intervals afterwards. There was little or no response in the perch but walleye captured 12 hours and 36 hours after spraying, with continued recovery thereafter. A similar pattern of enzyme inhibition was observed in the walleye again following the second spraying.

Both perch and walleye are known to be sensitive to malathion, with LC_{50} values reported as 263 and 64 $\mu\text{g/L}$ (ppb) respectively. Reasons why the walleye did respond and the perch did not are speculative, but may be related to the depths of the different ponds. The Ft. Whyte ponds reportedly average 9 m in depth and the Bishop Grandin ponds 1.5 m. Theoretical fully mixed water concentrations associated with a spray at 210 g/ha (3 oz/acre) would range from about 21 $\mu\text{g/L}$ in water 1 m deep down to only 2.1 $\mu\text{g/L}$ in water 10 m deep. Based on this calculation, the Bishop Grandin ponds may have approached a malathion concentration near half the LC_{50} for walleye, but the Ft. Whyte ponds should have experienced only about 1% of the LC_{50} for perch.

DIAPAUSE IN THREE POTENTIAL VECTORS OF WESTERN EQUINE ENCEPHALITIS

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ABSTRACT: Culex tarsalis Coquillett, the primary vector of western equine encephalitis, and two potential vectors, Culex restuans Theobald and Culiseta inornata Williston, overwinter as inseminated adult females in a state of ovarian diapause. In laboratory studies, the stage of follicular development in the ovaries and the follicle: germarium ratio were chosen as the criteria for differentiating between diapausing and non-diapausing females. Photoperiod was the

main factor affecting the number of females entering diapause. Onset of diapause was also examined under natural conditions.

ON CLAY POTS AND SWALLOW BUGS: AN HYPOTHESIS ON
ENDEMICITY OF WEE IN MANITOBA

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ABSTRACT: The clay nest pot of the cliff swallow, Petrochelidon pyrrhonote (Vieillot), offers ideal conditions for maintenance and development of several species of parasitic arthropods. A cimicid, a calliphorid, four species of Ceratophyllidae and at least two species of blood-feeding mites (Dermanyssidae) are commonly encountered in Manitoba. In addition, a pteromalid parasite of the calliphorid is widespread. The introduced house sparrow, Passer domesticus (L.), is a frequent entrepreneur of vacated cliff swallow pots. From an analysis of overwintering strategies, feeding behaviour and species interactions within cliff swallow communities, an hypothesis for endemicity and dispersal of WEE in Manitoba is proposed.

A LIST OF PREDATORS OF APHIDS (HOMOPTERA:APHIDIDAE)
COLLECTED IN MANITOBA, 1980-1981

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ABSTRACT

About 80 species of aphid predators from 21 arthropod families were collected in Manitoba in 1980-81. Their prey, host plants, localities, dates and habitats are given. Twenty-six species of parasitoids were reared from the predators.

INTRODUCTION

Information on invertebrate predators of aphids in Manitoba has been scantily restricted to some records from the genus *Cinara* (Bradley 1961), to Melvin (1966), and some miscellaneous observations in theses by Malyk (1971) and Bakker (1974). Batulla (1983) reported on a comprehensive study made in 1980-81, and the following information on predators, their prey, host plants, localities, dates and habitats is from that study, and includes a list of parasitoids of the predators. The predators are listed by order and family, and then alphabetically by species name. In a number of instances the predator, prey or host plant are identified to genus only, either because the genus is undergoing taxonomic revision, or because for some other reason a positive determination could not be made.

Colonies of aphids with their enemies were collected in the field and reared in the laboratory. Except for a few samples from Urban Winnipeg (WPG), collections were made in areas where pesticide chemicals are not normally used. The sampling areas were non-random, chosen because they had native flora undisturbed by agriculture (mostly in provincial parks or forests), and were within two hours drive from Winnipeg. This method of sampling produced aphids and their predators, but is not representative of what might be found in other parts of Manitoba which were not visited, and it does not produce data which allow for meaningful statistical interpretations. In all cases the predator larvae were offered pea aphids, *Acyrtosiphon pisum* (Harris) on which to complete their larval development. If they were successfully reared to the adult stage on pea aphids, this is designated in the text as "fed on PA". In some cases larvae pupated and became adults by feeding on the colonies with

which they were found. In a few cases the larvae would not feed on pea aphids and adults could not be reared for identification of the predator.

Abbreviations used for localities and habitats are: Northwest Angle Provincial Forest NAPP, Whitemouth Lake WL, Whiteshell Provincial Park WPP, Agassiz Provincial Forest APF, Pine Grove Halt PGH, Sandilands Provincial Forest SPF, Birds Hill Provincial Park BHPP, Urban Winnipeg WPG, Spruce Woods Provincial Park SWPP, Clear Lake (Riding Mountain National Park) CL, Hecla Island Provincial Park HIPP, Grand Beach Provincial Park GBPP, Belair Provincial Forest BPF.

Predators of aphids

DIPTERA:SYRPHIDAE

Allograpta obliqua (Say): fed on PA; Hyadaphis tataricae (Aizenberg) on Lonicera tatarica L., WPG 19 June 1981, 24 July 1981, 11 August 1981, urban habitat; Cavariella pastinacae (L.) on Heracleum lanatum Michx., CL 12 July 1981, roadside; Meliarhizopagus fraxinifolii (Riley) on Fraxinus pennsylvanica Marsh., SWPP 14 July 1981, deciduous forest.

Epistrophe emarginata (Say): fed on PA; Uroleucon ambrosiae (Thomas) on Solidago sp., SWPP 14 July 1981, mixed forest; Aphis maculatae Oestlund on Populus balsamifera L., SWPP 28 July 1981, mixed forest; Chaitophorus populicola Thomas on Populus balsamifera, SWPP 28 July 1981, mixed forest; Chaitophorus nudus Richards on Populus tremuloides Michx., BHPP 21 August 1981, deciduous forest.

Eupeodes volucris Osten Sacken: Aphis neogillettei Palmer on Cornus alba L., CL 12 July 1981, roadside; Aphis barberae Robinson on Arctium minus (Hill) Bernh., GBPP 19 July 1981, roadside.

Melanogyna fisherii (Walton): Hyperomyzus lactucae (L.) on Sonchus arvensis L., SWPP 12 August 1980, roadside; Aphis heraclella Davis on Cicuta maculata L., St. Ambrose 26 August 1981, marsh.

Melanogyna triangulifera (Zetterstedt): fed on PA; Pterocomma smithiae (Monell) on Salix sp; SPF 4 September 1981, marsh.

Metasyrphus americanus (Wiedemann): fed on PA; Aphis maculatae on Populus tremuloides, WPG 1 September 1980, urban; Chaitophorus populicola on Populus balsamifera, CL 16 September 1980, roadside; Aphis pomi DeGeer on Cotoneaster acutifolia Turcz., WPG 22 May 1981, urban; Periphyllus nequendi-

nis (Thomas) on Acer negundo L., WPG 5 June 1981, urban; Nasonovia (Kakimia) borealis Heie on Heuchera sp., WPG 20 June 1981, urban; Aphis maculatae on Populus tremuloides BHPP 6 July 1981, deciduous forest; Cavariella pastinacae on Heracleum lanatum, CL 12 July 1981, roadside; Aphis farinosa Gmelin on Salix sp., Hanson Creek 21 July 1981, deciduous forest; Hyperomyzus lactucae on Sonchus arvensis, Hanson Creek 21 July 1981, roadside; Uroleucon sp. on Solidago sp., WPG 11 August 1981, urban, open prairie.

Metasyrphus lapponicus (Zetterstedt): Prey and host plant unidentified, Churchill 7 August 1981, tundra.

Metasyrphus perplexus (Osburn): fed on PA; Hyperomyzus lactucae on Sonchus arvensis, BPF 26 July 1980, roadside; Macrosiphum subarcticum Robinson on Epilobium angustifolium L., Churchill 4 August 1981, 6 August 1981, tundra; Sitobion avenae (Fabricius) on Calamagrostis canadensis (Michx.) Beauv., Churchill 6 August 1981, roadside; Uroleucon erigeronensis (Thomas) on Erigeron sp., Hanson Creek 11 September 1981, roadside; Aphis oenotherae Oestlund on Oenothera biennis L., Lilypond WPP 11 September 1981, rocky lakeshore.

Metasyrphus pomus (Curran): fed on PA; Chaitophorus populicola on Populus tremuloides, SPF 10 June 1980, deciduous forest; Aphis helianthi Monell on Cornus alba, SWPP 12 August 1980, deciduous forest; Hyperomyzus lactucae on Sonchus arvensis, CL 16 August 1980, roadside; Aphis oenotherae on Epilobium angustifolium, CL 16 August 1980, roadside; Macrosiphum pseudorosae Patch on Rosa sp., SWPP 14 July 1981, river bank; Chaitophorus populicola on Populus sp., GBPP 19 July 1981, deciduous forest; Hyadaphis tataricae on Lonicera tatarica, WPG 24 July 1981, urban; Cinara canatra Hottes and Bradley on Pinus banksiana Lamb., SPF 4 September 1981, coniferous forest.

Metasyrphus spp.: fed on PA; Sitobion manitobensis (Robinson) on Cornus alba, WPG 21 May 1980, urban; Uroleucon ambrosiae on Solidago sp., GBPP 22 June 1980, roadside; Chaitophorus populicola on Populus balsamifera SPF 21 July 1980, mixed forest; Hyperomyzus lactucae on Sonchus arvensis, SPF 21 July 1980, roadside; Chaitophorus nigrae Oestlund on Salix sp., Morden 30 July 1980, lakeshore; Aphis maculatae on Populus tremuloides, WPG 1 August 1980, urban; Hyperomyzus lactucae on Sonchus arvensis, LaBarriere Park 6 August 1980, muddy river bank; Sitobion avenae on Triticum aestivum L., Glenlea 7 August 1980, cultivated field; Hyperomyzus lactucae on Sonchus arvensis, SWPP 12 August 1980, mixed forest; Aphis helianthi and/or Aphis neogillettei on Cornus alba, WPG 22 May 1981, urban; Rhopalosiphum insertum (Walker) on Crataegus rotundifolia Borckh., WPG 22 May 1981, 26 May 1981, riverbank; Aphis citricola van der Goot on Spiraea

alba Du Roi, WPG 9 June 1981, urban; Aphis fabae Scopoli on Rumex sp. WPG 19 June 1981, riverbank; Nasonovia (Kakimia) borealis on Heuchera sp., WPG 20 June 1981, urban; Asiphonaphis pruni Wilson and Davis on Prunus virginiana L., SPF 24 June 1981, mixed forest; Aphis neoqillettei on Cornus alba, CL 12 July 1981, roadside; Aphis citricola on Cicuta maculata, SWPP 14 July 1981, marsh; Aphis neoqillettei on Cornus alba, WPG 19 July 1981, urban; Acyrtosiphon caraganae (Cholodkovsky) on Caragana arborescens Lam., Hanson Creek 21 July 1981, mixed forest; Hyperomyzus lactucae on Sonchus arvensis, Hanson Creek 21 July 1981, roadside; Aphis maculatae on Populus balsamiferae, SWPP 28 July 1981, mixed forest; Uroleucon erigeronensis on Erigeron sp., Hanson Creek 11 September 1981, roadside.

Paraqus (Pandasyopthalmus) sp.; fed on PA; Aphis sp. on Diervilla lonicera Mill., BPF 18 June 1980, mixed forest; Apthargelia symphoricarpi (Thomas) on Symphoricarpos albus (L.) Blake, SPF 24 June 1981, mixed forest; Aphis oestlundii Gillette on Oenothera biennis, Telford 21 July 1981, roadside.

Platycheirus hyperboreus (Say): Hyperomyzus lactucae on Sonchus arvensis, St. Ambroise 26 August 1981, lake beach.

Platycheirus scambus Staeg: fed on PA; Hyperomyzus pallidus Hille Ris Lambers on Sonchus arvensis, La Barriere Park 6 August 1980, open river bank.

Sphaerophoria contigua Macquart: fed on PA; Rhopalosiphum cerasifoliae (Fitch) on Prunus virginiana, SPF 10 June 1980, mixed forest; Apthargelia symphoricarpi on Symphoricarpos albus, SPF 10 June 1980, mixed forest; Uroleucon sp. on Solidago sp., BPF 18 June 1980, open area in forest; Myzus cerasi (Fabricius) on Prunus pensylvanica L.f., APF 26 June 1980, deciduous forest; Chaitophorus populicola on Populus balsamifera, APF 26 June 1980, deciduous forest; Aphis spiraeophila Patch on Spiraea sp., APF 26 June 1980, deciduous forest; Aphis oestlundii on Oenothera biennis, Lilypond WPP 26 June 1980, rocky lakeshore; Hyperomyzus lactucae on Sonchus arvensis, SPF 21 July 1980, roadside; Asiphonaphis pruni on Prunus virginiana, SPF 24 June 1981, mixed forest; Uroleucon ambrosiae on "Compositae", Brokenhead 25 June 1981, river bank; Aphis neoqillettei on Cornus alba, CL 12 July 1981, roadside; Rhopalosiphum padi (L.) on Prunus virginiana, SWPP 14 July 1981, deciduous forest; Aphis sp. on Prunus virginiana, Rathwell 14 July 1981, mixed forest; Chaitophorus populicola on Populus balsamifera, CL 12 July 1981, roadside.

Sphaerophoria philanthus (Meigen): fed on PA; Asiphonaphis pruni on Prunus virginiana, SPF 24 June 1981, mixed forest.

Sphaerophoria sp. Nasonovia (Kakimia) houghtonensis similis Heie on Ribes oxycanthoides L., Churchill 5 August 1981, tundra.

Syrphus rectus Osten Sacken: fed on PA; Aphis helianthi on Cornus alba, WPG 17 May 1981, urban; Rhopalosiphum insertum on Crataegus rotundifolia, WPG 26 May 1981, river bank; Rhopalosiphum insertum on Crataegus sp., La Barriere Park 11 June 1981, deciduous forest; Myzus cerasi on Prunus pennsylvanica, SPF 24 June 1981, mixed forest; Pachypappa tremulae (L.) on Populus tremuloides, SPF 24 June 1981, mixed forest; Pachypappa sacculi (Gillette) on Populus tremuloides, PGH 24 June 1981, deciduous forest; Macrosiphum pseudorosae on Rosa sp., BHPP 6 July 1981, deciduous forest; Cavariella konoi Takahashi on Cicuta maculata, CL 12 July 1981, roadside; Cavariella pastinacae on Heracleum lanatum, CL 12 July 1981, roadside; Hyperomyzus lactucae on Sonchus arvensis, Hanson Creek 21 July 1981, roadside.

Syrphus ribesii (L.): fed on PA; Myzus cerasi on Prunus virginiana, BHPP 11 June 1980, deciduous forest; Rhopalosiphum cerasifoliae on Prunus virginiana, SPF 10 June 1980, mixed forest; Myzus cerasi on Prunus virginiana, GBPP 18 June 1980, aspen parkland; Rhopalosiphum cerasifoliae on Prunus virginiana, BHPP 23 June 1980, aspen parkland; Hysteronura setariae (Thomas) on Prunus nigra Ait., WPG 15 August 1980, urban; Hyperomyzus lactucae on Sonchus arvensis, CL 16 August 1980, roadside; Chaitophorus populicola on Populus balsamifera, CL 16 August 1980, roadside; Aphis fari-nosa on Salix sp., CL 16 August 1980, roadside; Prociphilus (Parapro-ciphilus) tessellatus (Fitch) on Alnus viridis (Chaix.), St. Claude 10 October 1980, urban; Macrosiphum euphorbiae on Asclepias sp., SPF 24 June 1981, open area in mixed forest; Pachypappa tremulae on Populus tremuloides, SPF, open area in mixed forest; Pachypappa sacculi on Populus tremuloides, PGH 24 June 1981, mixed forest; Rhopalosiphum cerasifoliae on Prunus virginiana, BHPP 6 July 1981, deciduous forest; Cavariella pastinacae on Heracleum lanatum, CL 12 July 1981, roadside; Prociphilus (Parapro-ciphilus) tessellatus on Alnus viridis (Chaix.), Rathwell 14 July 1981, mixed forest; Hyalopterus pruni (Geoffroy) on Phragmites sp., SWPP 14 July 1981, marsh and Morden 16 July 1981, lakeshore beach, and host unidentified, Churchill 7 August 1981; Uroleucon sp. on Solidago sp., WPG 11 August 1981, open prairie; Hyadaphis tataricae on Lonicera tatarica, WPG 11 August 1981, urban; Uroleucon sp. on Aster sp., Patricia Beach 30 August 1981, marsh and Souris 6 September 1981, deciduous forest.

Syrphus torvus Osten Sacken: fed on PA; Hyperomyzus lactucae on Sonchus arvensis, CL 16 August 1980, roadside; Chaitophorus populicola on Populus tremuloides, CL 16 August

1980, roadside; Nearctaphis crataegifoliae (Fitch) on Crataegus rotundifolia, Zhoda 18 August 1980, deciduous forest; Aphis salicariae Koch on Cornus alba, PGH 24 June 1981, deciduous forest.

Syrphus vitripennis Meigen: fed on PA; Aphis neogillettei and/or Aphis helianthi on Cornus alba, WPG 22 May 1981, urban; Rhopalosiphum insertum on Crataegus sp., WPG 26 May 1981, riverbank.

Syrphus vitripennis or S. rectus: fed on PA; Myzus persicae (Sulzer) on Zebrina pendula, WPG 23 August 1980, urban; host unidentified CL 16 August 1980, roadside; Hyperomyzus pallidus on Ribes americanum Mill., WPG 26 May 1981, urban; Rhopalosiphum padi (L.) on Prunus nigra, WPG 27 May 1981, urban; Rhopalosiphum insertum on Crataegus sp., WPG 26 May 1981, river bank; Myzus cerasi on Prunus pensylvanica, SPF 24 June 1981, mixed forest; Pachypappa sacculi on Populus tremuloides PGH 24 June 1981, deciduous forest; Chaitophorus essiqi Gillette and Palmer on Populus balsamifera, PGH 24 June 1981, deciduous forest; Pachypappa tremulae on Populus tremuloides, PGH 24 June 1981, deciduous forest; Rhopalosiphum cerasifoliae on Prunus virginiana, BHPP 6 July 1981, aspen parkland; Aphis maculatae on Populus tremuloides, BHPP 6 July 1981, aspen parkland; Cavariella pastinacae on Heracleum lanatum, CL 12 July 1981, roadside; Myzus cerasi on Prunus pensylvanica, Hanson Creek 21 July 1981, deciduous forest; Acyrtosiphon caraganae on Caragana arborescens, Hanson Creek 21 July 1981, roadside.

Syrphus sp.: fed on PA; Chaitophorus nudus on Populus tremuloides, SPF 4 September 1981, deciduous forest; Acyrtosiphon caraganae on Caragana arborescens, Hanson Creek 21 July 1981, deciduous forest.

Toxomerus geminatus (Say): fed on PA; Uroleucon nigrotuberculatum (Olive) on Solidago sp., BHPP 6 July 1981, aspen parkland.

DIPTERA: CHAMAEMYIIDAE

Leucopis albipunctata complex: Rhopalosiphum cerasifoliae on Prunus virginiana, SPF 10 June 1980, BPF 18 June 1980, BHPP 23 June 1980, logged areas in deciduous forest; Myzus cerasi on Prunus pensylvanica, APF 26 June 1980, deciduous forest; Aphis oestlundii on close up

Oenothera biennis, Lilypond WPP 26 June 1980, roadside; Aphis spiraeophila on Spiraea alba, Lilypond WPP 26 June 1980, rocky lake shore; Sipha kurdjumovi Mordwilko on "Graminae", WPG 7 July 1980, cultivated field; Asiphonaphis pruni on Prunus virginiana, SPF 21 July 1980; logged area in deciduous forest; Myzus cerasi on Prunus pensylvanica, SPF 21 July 1980, logged area in deciduous forest; Aphis vibur-

niphila Patch on Viburnum rafinesquianum Schultes, SPF 21 July 1980, mixed forest; Aphis pomi on Cotoneaster acutifolia, WPG 21 July 1980, urban; Chaitophorus saliciniger (Knowlton) on Salix sp., Morden 30 July 1980, sandy lake shore; Hayhurstia atriplicis (L.) on Chenopodium album L., Morden 30 July 1980, sandy lake shore; Aphthargelia symphoricarpi on Symphoricarpos albus, Morden 30 July 1980, deciduous forest; Aphis maculatae on Populus tremuloides, WPG 1 August 1980 urban; host unidentified on Prunus virginiana, SWPP 6 August 1980, deciduous forest; Hyperomyzus lactucae on Sonchus arvensis, SWPP 12 August 1980, tall grass prairie; host unidentified on Salix sp., CL 16 August 1980, roadside; Aphis oenotherae on Epilobium angustifolium, CL 16 August 1980 roadside; Aphis neoqillettei on Cornus alba, CL 16 August 1980, roadside; Rhopalosiphum padi on Prunus nigra, WPG 27 May 1981, urban; Myzus cerasi on Prunus pennsylvanica SPF 24 June 1981, logged area in deciduous forest; Macrosiphum euphorbiae on Asclepias sp., SPF 24 June 1981, roadside; Rhopalosiphum cerasifoliae on Prunus virginiana, BHPP 6 July 1981, deciduous forest; Aphis viburniphila on Viburnum rafinesquianum, BHPP 6 July 1981, deciduous forest; Macrosiphum pseudorosae on Solidago sp., Beaver Creek 9 July 1981, bank of stream; Rhopalosiphum padi on Prunus virginiana, SWPP 14 July 1981, deciduous forest; Nearctaphis crataegifoliae on Crataegus rotundifolia, Morden 16 July 1981, deciduous forest; Aphis farinosa on Salix sp., Hanson Creek 21 July 1981, roadside; Hyperomyzus lactucae on Sonchus arvensis, Hanson Creek 21 July 1981, roadside; host unidentified on Epilobium angustifolium, Hanson Creek 21 July 1981, bank of stream; Aphis oestlundii on Oenothera biennis, Telford 21 July 1981, roadside; Hyadaphis tataricae on Lonicera tatarica, WPG 24 July 1981, 20 August 1981, urban; Uroleucon sp. on Solidago sp., WPG 11 August 1981, urban; Aphis maculatae on Populus balsamifera, St. Ambroise 26 August 1981, beach area; Aphis oenotherae on Oenothera biennis, Lilypond WPP 11 September 1981, roadside.

Leucopis albipunctata complex "b": Rhopalosiphum cerasifoliae and Myzus cerasi on Prunus virginiana, BHPP 11 June 1980, deciduous forest; Asiphonaphis pruni on Prunus virginiana, SPF 21 June 1980, logged area in deciduous forest; Aphthargelia symphoricarpi on Symphoricarpos albus, Morden 30 July 1980, aspen parkland; host unidentified on Prunus virginiana, SWPP 6 August 1980, deciduous forest.

Leucopis americana Malloch: Aphis viburniphila on Viburnum sp., WPG 26 May 1980, urban; Rhopalosiphum cerasifoliae and Myzus cerasi on Prunus virginiana, BHPP 11 June 1980, deciduous forest; Aphis spiraeophila on Spiraea alba, Lilypond WPG 26 June 1980, rocky lake shore; Aphis neoqillettei on Cornus alba WPG 3 July 1980, urban; Chaitophorus populi-cola on Populus tremuloides, Arnes Park 4 July 1980, mixed

forest; Aphis varians on Epilobium angustifolium, SPF 21 July 1980, mixed forest; Aphthargelia symphoricarpi on Populus balsamifera, SPF 21 July 1980, mixed forest; Aphis pomi on Cotoneaster acutifolia, WPG 21 July 1980, urban; Chaitophorus saliciniger on Salix sp., Morden 30 July 1980, sandy lake shore; Nearctaphis sp. on Crataegus rotundifolia, Morden 30 July 1980, deciduous forest; Aphthargelia symphoricarpi on Symphoricarpos albus, Morden 30 July 1980, deciduous forest; Aphis heracleella on Heracleum lanatum, Morden 30 July 1980, river bank; Aphis neoqillettei on Cornus alba, WPG 1 August 1980, urban; host unidentified on Prunus virginiana, SWPP 6 August 1980, deciduous forest; Aphis maculatae on Populus tremuloides, WPG 7 August 1980, urban; Aphis spiraeophila on Spiraea alba, SWPP 12 August 1980, deciduous forest; Pterocomma smithiae on Populus balsamifera, BHPP 6 July 1981, aspen parkland; Aphis viburniphila on Viburnum rafinesquianum, BHPP 6 July 1981, deciduous forest; Nearctaphis crataegifoliae on Crataegus sp., BHPP 6 July 1981, deciduous forest; Aphis varians on Epilobium angustifolium, Lilypond WPG 21 July 1981, rocky lake shore; Aphis neoqillettei on Cornus alba, Rathwell 14 July 1981, mixed forest; Chaitophorus nigrae on Salix sp., SWPP 14 July 1981, bog area; Aphis barberae on Arctium minus, GBPP 19 July 1981, roadside; host unidentified on Epilobium angustifolium, Hanson Creek 21 July 1981, stream bank; Aphis oestlundii on Oenothera biennis, Telford 21 July 1981, roadside; Asiphonaphis pruni on Prunus virginiana, SWPP 28 July 1981, deciduous forest.

Leucopis sp. (possibly L. americana): Asiphonaphis pruni on Prunus virginiana, SPF 4 September 1981, deciduous forest; Chaitophorus saliciniger on Salix sp., SPF 4 September 1981, marshy lake shore.

Leucopis sp. (variants of L. americana?) Chaitophorus populicola on Populus balsamifera, St. Ambroise 26 August 1981, beach area; Chaitophorus nigrae on Salix sp., Morden 16 July 1981, sandy lake shore.

Leucopis sp. IV: Chaitophorus saliciniger on Salix sp., SPF 4 September 1981, marshy lake shore.

Leucopis sp. (new species?): Periphyllus nequundinis on Acer negundo, Morden 30 July 1980, deciduous forest.

Leucopis sp. (new species?) Aphthargelia symphoricarpi on Symphoricarpos albus, Morden 30 July, 1980, deciduous forest; host unidentified on Salix sp., CL 16 August 1980, roadside; Aphis oenotherae on Epilobium angustifolium, CL 16 August 1980.

Leucopis sp. (new species): Hyalopterus pruni on Phragmites sp., Morden 16 July 1981, sandy lake shore; St. Ambroise 26 August 1981, marsh; SPF 4 September 1981 marsh.

Megaselia sp.: Thecabius affinis (Kaltenbach) on Populus balsamifera, GBPP 18 June 1980, deciduous forest.

DIPTERA:CECIDOMYIIDAE

Aphidoletes aphidimyza (Rondani): Hyperomyzus lactucae on Sonchus arvensis, La Barriere Park 6 September 1980, open riverbank; Hyalopterus pruni on Phragmites sp., Morden 16 July 1981, marsh; Uroleucon ambrosiae on Solidago sp., Morden 16 July 1981, sandy lakeshore; Hyadaphis tataricae on Lonicera tatarica, WPG 24 July 1981, 11 August 1981, urban.

COLEOPTERA:COCCINELLIDAE

Adalia bipunctata L.: fed on PA, all records from WPG (urban); Rhopalosiphum insertum on Cotoneaster acutifolia, 21 May 1980; Sitobion manitobensis on Cornus alba, 21 May 1980; Aphis citricola on Spiraea alba, 28 July 1980; Aphis viburniphila on Viburnum sp., 2 June 1980, Uroleucon sp. on Ambrosia trifida L., 28 July 1980, Aphis maculatae on Populus tremuloides, 1 August 1980, 7 August 1980; Aphis helianthi and/or A. neogillettei on Cornus alba, 22 May 1981; Aphis pomi on Cotoneaster acutifolia, 11 August 1981; Hyadaphis tataricae on Lonicera tatarica, 20 August 1981.

Adalia sp.: fed on PA; Pachypappa tremulae on Populus tremuloides, PGH 24 June 1981, deciduous forest; Aphis neogillettei on Cornus alba, Rathwell, 14 July 1981, mixed forest.

Adalia sp.: on Cinara laricifex (Fitch) on Larix laricina (Du Roi) K. Koch, Churchill, 4 August 1981, taiga.

Anatis labiculata (Say): fed on PA; Prociphilus (Parapro-ciphilus) tessellatus on Alnus viridis, PGH 24 June 1981, deciduous forest; Meliarhizopagus fraxinifolii on Fraxinus pennsylvanica, SWPP 14 July 1981; deciduous forest; Aphis neogillettei on Cornus alba, Rathwell 14 July 1981, mixed forest; Aphis viburniphila on Viburnum trilobum, SWPP 28 July 1981, deciduous forest.

Calvia guattuordecimquattata (L.): Periphyllus negundinis on Acer negundo, WPG June 1981, urban.

Coccinella transversoquattata richardsoni Brown: fed on PA; Chaitophorus populicola on Populus tremuloides, WPG 6

June 1980, urban; Myzus cerasi on Prunus virginiana, BHPP 11 June 1980, deciduous forest; Rhopalosiphum cerasifoliae on Prunus virginiana, BPF 18 June 1980, mixed forest; Therioaphis riehmi (Borner) on Melilotus alba Medic., SPF 21 July 1980, roadside; Uroleucon spp. on Erigeron sp., BPF 26 July 1980, roadside; Capitophorus elaeagni (del Guercio) on Cirsium arvense (L.) Scop., Whitemouth Lake 19 August 1980, lake beach; Rhopalosiphum cerasifoliae on Prunus virginiana, BHPP 6 July 1981, deciduous forest; Aphis sp. on Prunus virginiana, Rathwell 14 July 1981, mixed forest; Rhopalosiphum padi on Prunus virginiana, SWPP 14 July 1981, mixed forest; Uroleucon ambrosiae on Solidago sp., Morden 16 July 1981, lake beach; Sitobion avenae on Calamagrostis canadensis, Churchill 5 August 1981, tundra; Plectrarchophorus pseudopantonus Corpuz-Raros and Cook and/or Macrosiphoniella tapuskae (Hottes and Frison) on Achillea millefolium L., Churchill 8 August 1981, tundra; Uroleucon spp. on Solidago spp., WPG 11 August 1981, urban, BHPP 21 August 1981, deciduous forest, St. Ambroise 26 August 1981, sandy beach; Aphis heraclella on Cicuta maculata, St. Ambroise 26 August 1981, marsh; Aphthargelia symphoricarpi on Symphoricarpos albus, SPF 4 September 1981, mixed forest.

Coccinella trifasciata perplexa Muls.: fed on PA; Uroleucon sp. on Erigeron sp., BPF 26 July 1980, roadside; Uroleucon sp. on Solidago sp., BHPP 21 August 1981, deciduous forest.

Hippodamia convergens Guerin: fed on PA; host unidentified on Aster sp., St. Ambroise 9 June 1980; lake beach; Aphis pomi on Cotoneaster acutifolia, WPG 22 May 1981, urban; Rhopalosiphum insertum on Crataegus rotundifolia, WPG 26 May 1981, urban; Aphis citricola on Spiraea alba, WPG 9 June 1981, urban; Cinara pinea (Mordwilko) on Pinus banksiana Lamb., La Barriere Park 11 June 1981, park; Uroleucon obscuricaudatum (Olive) on Aster sp., WPG 19 June 1981, urban; Macrosiphum euphorbiae on Rosa sp., PGH 24 June 1981, deciduous forest; Rhopalosiphum cerasifoliae on Prunus virginiana, BHPP 6 July 1981, deciduous forest; Uroleucon nigrotuberculatum and/or U. ambrosiae on Solidago sp., BHPP 6 July 1981, deciduous forest; Macrosiphum rosae on Solidago sp., Beaver Creek 9 July 1981, bank of small stream; Cinara pinea on Pinus banksiana, Morden 16 July 1981, park; Acyrtosiphon caraganae on Caragana arborescens, Hanson Creek 21 July 1981, roadside; Uroleucon ambrosiae on Crepis tectorum L., WPG 21 July 1981, roadside; Cinara laricifex on Larix laricina, Nasonovia (Kakimia) houghtonensis similis Heie on Ribes oxycanthoides, Sitobion avenae on Calamagrostis canadensis, Churchill 5 August 1981, taiga; Uroleucon sp. on Solidago sp., WPG 11 August 1981, urban; Hyalopterus pruni on Phragmites sp., Hyperomyzus lactucae on Sonchus arvensis, and Aphis heraclella on Cicuta maculata, St. Ambroise, 26

August 1981, marsh; Rhopalosiphum maidis (Fitch) on Zea mays L., Glenlea 2 September 1981, cultivated crop; Aphthargelia symphoricarpi on Symphoricarpos alba, SPF 4 September 1981, deciduous forest; Uroleucon paucosensoriatum (Hille Ris Lambers) on Aster ciliolatus Lindl; SPF 4 September 1981, roadside; Uroleucon sp. on Aster sp., APF 11 September 1981, roadside.

Hippodamia tredecimpunctata tibialis (Say): fed on PA; Rhopalosiphum insertum on Crataegus rotundifolia, La Barriere Park 11 June 1981, park; Sitobion avenae on Triticum aestivum, Glenlea 7 August 1980, cultivated crop; Chaitophorus populicola on Populus tremuloides, Hanson Creek 21 July 1981, mixed forest; host unidentified on Ulmus americana, WPG 20 August 1981, urban; Hyalopterus pruni on Phragmites sp., St. Ambroise 26 August 1981, marsh; Rhopalosiphum maidis on Zea mays, Glenlea 2 September 1981, cultivated crop; Hyalopterus pruni on Phragmites sp., SPF 4 September 1981, roadside ditch; Uroleucon sp. and/or Macrosiphoniella absinthii (L.) on Artemisia sp., Lilypond WPP, 11 September 1981, rocky lakeshore.

Hyperaspis binotata (Say); Unidentified host on Ulmus americana, WPG 20 August 1981, urban.

Scymnus (Pullus) brullei Muls.: Rhopalosiphum cerasifoliae on Cotoneaster acutifolia, WPG 21 May 1981, urban; Aphis helianthi and/or A. neogillettei on Cornus alba, WPG 22 May 1981, urban; Eriosoma lanigerum (Hausmann) on Ulmus americana, WPG 30 May 1980, urban and La Barriere Park 11 June 1981, Eriosoma americana (Riley) on Ulmus americana, WPG 15 June 1981, urban;

Scymnus (Pullus) iowensis Casey: Rhopalosiphum cerasifoliae on Prunus virginiana, BHPP 11 June 1980, 23 June 1980, aspen parkland; Aphis varians Patch on Epilobium angustifolium, Lilypond WPP 26 June 1980, 21 July 1981, rocky lakeshore; Aphis oestlundii on Oenothera biennis, Lilypond WPP 26 June 1980, rocky lakeshore; Myzus cerasi on Prunus pennsylvanica, SPF 21 July 1980, mixed forest; host unidentified on Prunus virginiana, SWPP 6 August 1980, mixed forest; Asiphonaphis pruni on Prunus virginiana, SPF 24 June 1981, mixed forest; Aphis farinosa on Salix sp., Hanson Creek 21 July 1981, mixed forest.

Scymnus (Pullus) lacustris LeConte: Rhopalosiphum cerasifoliae on Prunus virginiana, BHPP 11 June 1980, 30 June 1980, 6 July 1981, SPF 10 June 1980, SPF 18 June 1980, Hanson Creek 26 June 1980, mixed forest. Aphthargelia symphoricarpi on Symphoricarpos albus, SPF 10 June 1980, mixed forest; Myzus cerasi on Prunus pennsylvanica, BHPP 11 June 1980, SPF 21 July 1980, 24 June 1981, APF 26 June 1980, deciduous

forest; host unidentified on Prunus virginiana, SWPP 6 June 1980, mixed forest; host unidentified on Populus tremuloides, SPF 21 July 1980, mixed forest; Aphis helianthi on Cornus alba, GBPP 18 June 1980, deciduous forest; Aphis manitobensis Robinson and Rojanavongse on Ribes rubrum L., SWPP 12 August 1980, deciduous forest; Rhopalosiphum padi on Prunus virginiana, SWPP 14 July 1981, mixed forest; Aphis viburniphila on Viburnum rafinesquianum BHPP 6 July 1981, mixed forest; Aphis neogillettei on Cornus alba, Beaver Creek 7 July 1981, sandy lakeshore; Asiphonaphis pruni on Prunus virginiana, SPF 24 June 1981, mixed forest; Aphis varians on Epilobium angustifolium, Hanson Creek 21 July 1981, stream bank.

Scymnus (Pullus) spp.: Rhopalosiphum cerasifoliae on Prunus virginiana, BHPP 6 July 1981, deciduous forest; Asiphonaphis pruni on Prunus virginiana, SPF 24 June 1981, mixed forest; Myzus cerasi on Prunus pensylvanica, PGH 24 June 1981, deciduous forest; Aphis varians on Epilobium angustifolium, Hanson Creek 21 July 1981, stream bank; Alphitoaphis lonicericola (Williams) on Lonicera dioica L., SPF 4 September 1981, mixed forest.

LEIDOPTERA:LYCAENIDAE

Feniseca tarquinius (Fabricius): Prociphilus (Paraprociophilus) tessellatus on Alnus viridis, SPF 21 July 1980, deciduous forest; PGH 24 June 1981, 4 September 1981, deciduous forest; Rathwell 14 July 1981, mixed forest.

NEUROPTERA:CHRYSOPIDAE

Chrysoperla carnea (Stephens): fed on PA, Hyperomyzus lactucae on Sonchus arvensis, La Barriere Park 6 August 1980, river bank; Macrosiphoniella absinthii on Artemisia biennis, La Barriere Park, 6 August 1980, riverbank; Acyrtosiphon caraganae on Caragana arborescens, WPG 1 August 1980, urban; Sitobion avenae on Triticum aestivum, Glenlea 7 August 1980, cultivated crop; Hyalopterus pruni on Phragmites sp., St. Ambroise 26 August 1981, marsh; Hvadaphis tataricae on Lonicera sp., WPG 20 August 1981, urban; Uroleucon ambrosiae on Solidago sp., Morden 16 July 1981, sandy lakeshore; Aphis heraclella on Cicuta maculata, St. Ambroise 26 July 1981, marsh; Eriosoma lanigerum on Ulmus americana, WPG 10 June 1981, urban; Macrosiphum pseudorosae on Ranunculus sp., Hanson Creek 21 July 1981, deciduous forest; Aphis neogillettei on Cornus alba, WPG 20 August 1981, urban; Macrosiphum pseudorosae on Solidago sp., Beaver Creek 9 July 1981, stream bank; Hvadaphis tataricae on Lonicera tatarica, Aweme 28 July 1981, cultivated area; Hyalopterus pruni on Phragmites sp., SWPP 14 July 1981, marsh Macrosiphum pseudorosae on Rosa sp., Lilypond WPG 21 July 1981, rocky lake-

shore; Prociphilus (Paraprociophilus) tessellatus on Alnus viridis, Rathwell 14 July 1981, deciduous forest; Meliarhizophagus fraxinifolii on Fraxinus pennsylvanica, SWPP 14 July 1981, deciduous forest.

Chrysopa oculata Say: fed on .PA; Sitobion avenae on Triticum aestivum, Glenlea 7 August 1980, cultivated crop; Aphis sp. on Prunus virginiana, Rathwell 14 July 1981, mixed forest; Macrosiphoniella ludoviciana (Oestlund) on Artemisia sp., BHPP 6 July 1981, mixed forest.

NEUROPTERA:HEMEROBIIDAE

Hemerobius humulinus L.: fed on PA; Sitobion manitobensis (Robinson) on Cornus alba, WPG 21 May 1980, urban; Chaitophorus populifolii on Populus tremuloides, SPF 24 June 1981, mixed forest; Eriosoma lanigerum on Ulmus americana, WPG 10 June 1981, river bank; Hyadaphis tataricae on Lonicera tatarica, Aweme 28 July 1981, cultivated area; Ceruraphis viburnicola (Gillette) on Viburnum trilobum Marsh, BHPP 21 August 1981, deciduous forest; Aphis salicariae Koch on Cornus alba, PGH 24 June 1981, deciduous forest; Hyadaphis tataricae on Lonicera tatarica, WPG 11 August 1981, urban; Aphis farinosa on Salix sp., Hanson Creek 21 July 1981, stream bank; Aphis neoqillettei on Cornus alba, CL 12 July 1981, roadside; Aphis neoqillettei (probably stray migrants) on Amelanchier alnifolia, CL 12 July 1981, roadside; Asiphonaphis pruni on Prunus virginiana, SPF 24 June 1981, mixed forest; Aphis neoqillettei on Cornus alba, Rathwell 14 July 1981, mixed forest; Hyperomyzus pallidus on Sonchus arvensis, GBPP 1 September 1981, roadside; Meliarhizophagus fraxinifolii on Fraxinus pennsylvanica, SWPP 14 July 1981, mixed forest; Uroleucon paucosensoriatum on Aster ciliolatus, SPF 4 September 1981, roadside; Pachypappa tremulae on Populus tremuloides, SPF 24 June 1981, mixed forest; Aphis salicariae on Cornus alba, PGH 24 June 1981, mixed forest.

Micromus anquilatus (Stephens): fed on .PA; Uroleucon ambrosiae on Solidago sp., SWPP 14 July 1981, mixed forest; Chaitophorus populicola on Populus tremuloides, Whitemouth Lake 19 August 1980, deciduous forest; Uroleucon sp. on Solidago sp., WPG 11 August 1981, urban.

Micromus posticus (Walker): Uroleucon ambrosiae on Solidago sp., SWPP 14 July 1981, mixed forest.

HEMIPTERA:NABIDAE

Nabis fesus (L.): fed on PA; Sitobion avenae on Triticum aestivum, Glenlea 7 August 1980, cultivated crop.

Nabis sp. (larva): fed on :PA; Hyadaphis tataricae on Lonicera sp., WPG 20 August 1981, urban.

HEMIPTERA:REDUVIIDAE

Zelus socius Uhler: Cinara pergandei (Wilson) on Pinus banksiana Lamb., Hanson Creek 21 July 1981, mixed forest.

HEMIPTERA:MIRIDAE

Lygus elisus Van Duzee: fed on :PA; Uroleucon sp. on Aster sp., Souris 6 September 1981, deciduous forest.

Lygus sp.: fed on :PA; Hyadaphis tataricae on Lonicera sp., WPG 20 August 1981, urban.

HEMIPTERA:ANTHOCORIDAE

Anthocoris musculus (Say): fed on :PA; Hyadaphis tataricae on Lonicera tatarica, WPG 11 August 1981, 20 August 1981, urban; Aphis helianthi on Humulus lupulus L., SWPP 28 July 1981, mixed forest; Meliarhizophaqus fraxinifolii on Fraxinus pennsylvanica, SWPP 14 July 1981, deciduous forest.

Deraecoris sp.: fed on :PA; Rhopalosiphum insertum on Cotoneaster acutifolia, WPG 31 May 1980, urban.

Eriosoma americanum on Ulmus americana, GBPP 18 June 1980, aspen parkland and WPG 2 June 1980, urban.

Orius tristicolor (White): fed on :PA; Uroleucon ambrosiae on Solidago sp., Morden 16 July 1981, creek bank; Uroleucon (Lammersius) sp. on Aster sp., APF 11 September 1981, roadside; Uroleucon erigeronensis on Erigeron sp., Hanson Creek 11 September 1981.

Tetraphleps uniformis Parsh: Cinara laricifex on Larix laricina, Churchill 5 August 1981, taiga.

ACARI:ERYTHRAEIDAE

Imagochrysalis (genus unidentified): Nearctaphis crateg-
ifoliae on Crataegus rotundifolia, and Uroleucon solirostratum (Richards) on Solidago sp., Zhoda 19 August 1980, mixed forest.

Bochartia sp. (larva): Uroleucon ambrosiae on Solidago sp., Treesbank 28 July 1981, roadside.

Leptus sp. (larva): Macrosiphum pseudorosae on Rosa sp., BHPP 6 July 1981, deciduous forest.

ACARI:TROMBIDIIDAE

Allothrombium sp. (larva): Uroleucon sp. on Solidago sp., WPG 11 August 1981, urban.

Podothrombium sp. (larvae): Asiphonaphis pruni on Prunus virginiana, SPF 24 June 1981, mixed forest; Macrosiphum pseudorosae on Potentilla sp., PGH 24 June 1981, deciduous forest.

ACARI:ANYSTIDAE

Anystis sp. (larva): Macrosiphum pseudorosae on Ranunculus sp., Hanson Creek 21 July 1981, deciduous forest.

ARANEIDA:DICTYNIDAE

Dictyna alaskae Chamberlin and Ivie: Symydobius americanus Baker on Betula sp., Beaver Creek 9 July 1981, stream bank; Uroleucon ambrosiae on Solidago sp., Morden 16 July 1981, lake sandy beach.

Dictyna sublata (Hentz): fed on PA; Rhopalosiphum insertum on Crataegus rotundifolia, WPG 22 May 1981, urban.

Dictyna spp.: fed on PA; Aphis viburniphila on Viburnum trilobum, SWPP 28 July 1981, mixed forest; Uroleucon ambrosiae on Solidago sp., St. Ambroise 26 August 1981, lake sandy beach; Uroleucon eupatoricolens (Patch) on Eupatorium sp., Aphis neogillettei on Cornus alba, Uroleucon sp. on Aster sp., Patricia Beach 30 August 1981, marsh; Aphis neogillettei on Cornus alba, Brandon 6 September 1981, mixed forest; Aphis neogillettei on Cornus alba, Alf Hole Goose Sanctuary WPP 11 September 1981, mixed forest; Uroleucon sp. on Solidago sp., Hanson Creek 11 September 1981, stream bank.

ARANEIDA:THERIDIIDAE

Theridion frondeum Hentz: fed on PA; Eriosoma americana on Ulmus americana, WPG 2 June 1980, urban; Thecabius affinis (Kaltenbach) and/or Chaitophorus populifolii on Populus balsamifera, BHPP 23 June 1980, mixed forest; Aphis neogillettei on Cornus alba, Brandon 6 September 1981, mixed forest.

ARANEIDA:ARANEIDAE

Neoscona arabesaca (Walkenaer): Meliarhizophaqus fraxinifolii on Fraxinus pensylvanica, SWPP 14 July 1981, deciduous forest.

Nuctena cornuta (Clerck): fed on PA; Meliarhizophaqus fraxinifolii on Fraxinus pennsylvanica, SWPP 14 July 1981, deciduous forest.

ARANEIDA:TETRAGNATHIDAE

Tetragnatha sp. (juvenile); fed on PA; Uroleucon ambrosiae on Solidago sp., St. Ambroise 26 August 1981, lake sandy beach.

ARANEIDA:CLUBIONIDAE

Clubiona spp.: fed on PA; Aphis helianthi on Humulus lupulus, SWPP 28 July 1981, bog; Aphis neogillettei on Cornus alba, CL 12 July 1981, roadside; Meliarhizophaqus fraxinifolii on Fraxinus pennsylvanica SWPP 14 July 1981, deciduous forest; Nasonovia (Kakimia) borealis Heie on Heuchera sp., WPG 20 June 1981, urban.

ARANEIDA:THOMISIDAE

Misumena vatia (Clerck) (juveniles): fed on PA; Uroleucon nigrotuberculatum (Olive) on Solidago sp., BHPP 6 July 1981, deciduous forest; Macrosiphum pseudorosae on Solidago sp., Beaver Creek 9 July 1981, roadside; Uroleucon sp., on Solidago sp., GBPP 25 July 1981, roadside WPG 11 August 1981, urban, and BHPP 21 August 1981, mixed forest; Uroleucon paucosensoriatum on Aster sp., SPF 4 September 1981, roadside; Uroleucon pieloui (Richards) on Solidago sp., Alf Hole Goose Sanctuary 11 September 1981, deciduous forest; Uroleucon russellae (Hille Ris Lambers) on Anaphalis margaritacea (L.) C.B. Clarke, Lilypond WPP 11 September 1981, roadside.

Philodromus rufus Walckenaer (juveniles): fed on PA; Chaitophorus populicola on Populus tremuloides, Whitemouth Lake 19 August 1980, deciduous forest; Uroleucon sp. on Solidago sp. BHPP 21 August 1981, mixed forest.

Philodromus cespitum (Walckenaer) juvenile: fed on PA; Aphis helianthi on Cornus alba, WPG 17 May 1981, urban.

ARANEIDA:SALTICIDAE

Eris marginata (Walkenaer): fed on PA; Myzus cerasi on Prunus pennsylvanica, BHPP 6 July 1981.

Metaphidippus protervus (Walkenaer): undetermined host on Crataegus sp., BHPP 6 July 1981.

PARASITIDS OF APHID PREDATORS

Parasitoids of aphid predators reared during the 1980-1981 survey in Manitoba are listed in Table 1. Predators are given by family name only. Locations and collection dates may be found in Batulla (1983).

Table 1. Parasitoids of predators of aphids in Manitoba, 1980-1981.

Aphid predator	Parasitoid
Syrphidae	Ichneumonidae
	<u>Diplazon angustus</u> Dasch
	<u>Diplazon laetatorius</u> (Fabricus)
	<u>Diplazon pectoratorius</u> (Thunberg)
	<u>Diplazon scutellaris</u> (Cresson)
	<u>Diplazon tetragonus</u> (Thunberg)
	<u>Homotropus maculifrons</u> (Cresson)
	<u>Homotropus nigritarsus</u> (Gravenhorst)
	<u>Homotropus</u> spp.
	<u>Syrphoctonus citropectoralis</u> Schmiedeknecht
	<u>Syrphoctonus flavolineatus</u> (Gravenhorst)
	<u>Syrphophilus bizonarius</u> (Gravenhorst)
	Encyrtidae
	<u>Bothriothorax</u> sp.
	Figitidae
	<u>Callaspidia</u> sp.
	Megaspilidae
	<u>Trichosteresis foersteri</u> Kieffer
Chamaemyiidae	Encyrtidae
	<u>Coccidencyrtus</u> spp.
	<u>Paralitomastix</u> spp.
	Pteromalidae
	<u>Eunera lechni</u> (Ashmead)
	<u>Pachyneuron</u> sp.
	Figitidae
	<u>Melanips iowensis</u> Ashmead
	<u>Melanips</u> spp.
	Megasphilidae
	<u>Dendrocerus</u> new species)
Eggs in aphid colony	Mymaridae
	<u>Polynema</u> sp.

	Trichogrammatidae
	<u>Trichogramma</u> sp.
	Eulophidae
	<u>Tetrastichus</u> sp.?
Chrysopidae	Encyrtidae
<u>Chrysopa oculata</u>	<u>Homalotylus</u> sp.
Coccinellidae	Encyrtidae
<u>Coccinella</u> sp.	<u>Homalotylus terminalis californicus</u> Girault

DISCUSSION

Four hundred and seven samples representing at least 108 species from 42 genera of aphids were collected in 1980-81 from 71 plant species. At least 80 species of predators from 21 arthropod families were present in the aphid colonies. If all immature stages could have been successfully reared, this number would have been increased to 84. A few aphid species had no predators, but the absence of predators in the collections does not mean that they are never attacked. Twenty-six species of parasitoids were reared from the various stages of the predators. Forty-three of the species of predators fed on the pea aphid when confined in petri dishes, but this figure does not mean that they normally feed on pea aphids, only that they may under artificial or hunger conditions. The most definite non-feeders on pea aphids were all species of Leucopis (Chamaemyiidae) and all species of Scymnus (Coccinellidae).

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