

Bulletin

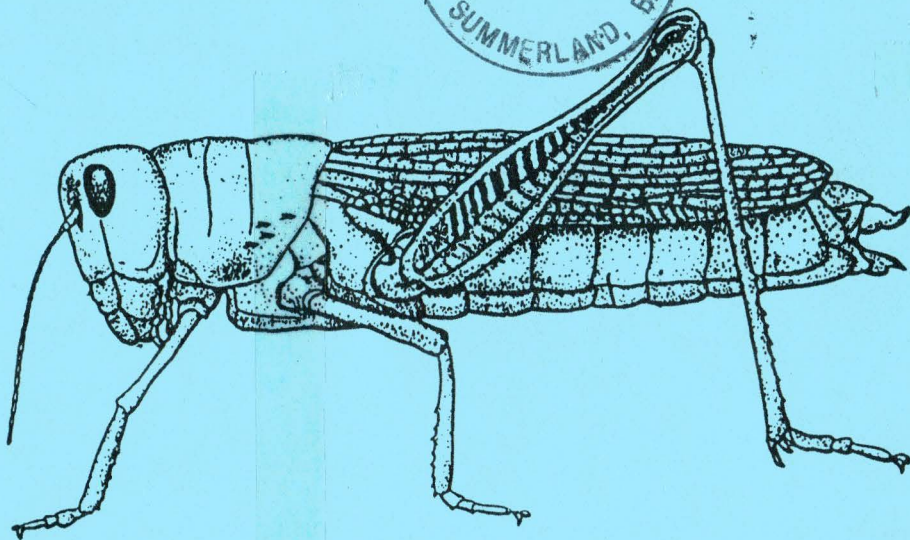
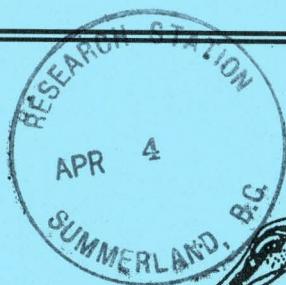
Entomological Society
of Canada

Société d'Entomologie
du Canada

Volume 29

No. 1

March/mars 1997



Entomological Society of Canada
Société d'Entomologie du Canada

393 Winston Avenue, Ottawa,
Ontario, Canada K2A 1Y8

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des matières sur la couverture-arrière

Date of issue/Date de publication:
March/mars 1997

The **Bulletin of the Entomological Society of Canada**, published since 1969, presents quarterly entomological news, opportunities and information, details of Society business, matters of wider scientific importance and book reviews.

Le **Bulletin de la Société d'Entomologie de Canada**, publié depuis 1969, présente trimestriellement des informations entomologiques, des occasions, des renseignements sur les opérations de la Société, des dossiers scientifiques d'importance, et des analyses d'ouvrages.

Illustrated on the front cover is a female *Melanoplus bivittatus* (Say) (Orthoptera: Acrididae). The two-striped grasshopper occurs widely in North America. It prefers locations that are relatively moist. It is polyphagous and feeds on many kinds of plants, but prefers forbs. This grasshopper is a major crop pest causing great damage to small grains, algalga, and corn. [Drawing courtesy of R.E. Pfadt, Laramie, Wyoming.] La page couverture illustre la femelle adulte de *Melanoplus bivittatus* (Say) (Orthoptera: Acrididae). Le criquet birayé est très répandu en Amérique du Nord. On le retrouve surtout dans les endroits relativement humides. C'est un polyphage qui se nourrit de plusieurs sortes de plantes mais montre une préférence pour les herbacées. Ce criquet est un important ravageur des petits grains, de la luzerne et du maïs. [Le dessin est une gracieuseté de R. E. Pfadt, Laramie, Wyoming].

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The **Entomological Society of Canada** was founded in 1863 primarily to study, advance and promote entomology. It supports entomology through publications, meetings, advocacy and other activities.

La **Société d'Entomologie du Canada** a été établie en 1863 principalement pour promouvoir l'étude et l'avancement de l'entomologie. Elle soutient l'entomologie par l'entremise de publications, de réunions et d'autres activités.

SOCIETY BUSINESS/AFFAIRES DE LA SOCIÉTÉ

Notice of Executive Council Meeting

The mid-term meeting of the Executive Council will be held at the Entomological Society of Canada office in Ottawa on April 19, 1997.

La réunion de mi-session du Conseil Exécutif aura lieu au Siège social de la Société d'entomologie du Canada le 19 avril, 1997.

47th Annual General Meeting

The Annual General Meeting of the Entomological Society of Canada will be held at the *Crowne Plaza Hotel* in Edmonton, Alberta, on October 5-7, 1997.

La réunion annuelle générale de la Société d'entomologie du Canada aura lieu au *Crowne Plaza Hôtel* à Edmonton, Alberta, le 5-7, octobre 1997.

Governing Board Meeting

The Annual Meeting of the Governing Board will be held at the *Crowne Plaza Hotel* in Edmonton, Alberta on October 4 & 8, 1997.

La réunion annuelle du conseil d'administration se tiendra au *Crowne Plaza Hôtel* à Edmonton, Alberta, le 4 & 8 octobre 1997.

Matters for consideration at any of the above meetings should be sent to the secretary at the address below:

Veuillez faire part au secrétaire de tout sujet pouvant faire l'objet de discussion à l'une ou l'autre de ses réunions en communiquant à l'address suivante:

Dr. Peggy Dixon
Agriculture and Agri-Food Canada, Box 37
Mount Pearl, Newfoundland A1N 2C1
Tel: 709-772-4763
Fax: 709-772-6064
E-mail: dixonpl@em.agr.ca

Please send all correspondence concerning
the Bulletin to:

Dr. Hugh J. Barclay
Bulletin Editor
Pacific Forestry Centre
506 West Burnside Road
Victoria, B.C.
V8Z 1M5
Tel: (250) 363-0736
Fax: (250) 363-0775
E-mail: hbarclay@pfc.forestry.ca

Please send all correspondence concerning
Book Reviews for the Bulletin to:

Dr. Sheila Fitzpatrick
Chair, Publications Committee
Pacific Agri-Food Research Centre
6947 #7 Hwy, P.O. Box 1000
Agassiz, B.C.
V0M 1A0
Tel: (604) 796-2221
Fax: (604) 796-0359
E-mail: fitzpatrick@em.agr.ca

The deadline for submissions to be included in the next issue (Vol. 29(2)) is **May 1, 1997**
La date limite pour recevoir vos contributions pour le prochain numéro (Vol. 29(2)) est le **1 mai 1997**

**The Joint Meeting of the
Entomological Society of Canada and the
Entomological society of Alberta**

Crowne Plaza/Chateau Lacombe Hotel, Edmonton, Alberta,
October 4-7, 1997

TENTATIVE PROGRAM

Saturday, October 4, 1997

08:30-17:30 Entomological Society of Canada Governing Board Meeting

Sunday, October 5, 1997

10:00-15:00 Registration
13:00-17:00 Workshops (2)
17:00-18:30 Linnean Games
18:30-19:30 Plenary Lecture
19:30-20:30 Students Meet the Board
20:30-23:00 Wine and Cheese

Monday, October 6, 1997

08:00-10:00 Registration
08:30-10:00 Opening Remarks, ESC Awards, Gold Medal Address
10:00-12:00 Plenary Symposium "Biodiversity: What's next?" (Langor)
13:30-15:00 Submitted Papers/Graduate Student Papers (Presidents's Prize)
13:30-16:30 Workshop(1)
15:30-16:30 Poster Session
15:30-16:30 Heritage Lecture
16:30-17:30 Entomological Society of Alberta General Meeting
19:00-22:00 President's Reception (by invitation only)
17:00-21:00 Linnean Games: Finals

Tuesday, October 7, 1997

09:00-12:00 Symposium "Insects and Ecosystem Productivity" (Spence)
Workshop, Submitted Papers
13:30-16:00 Submitted Papers, Poster Session
16:30-17:30 Entomological Society of Canada General Meeting
18:30-23:00 Banquet

Wednesday, October 8, 1997

09:00-12:00 Symposium "Fluctuating Asymmetry" (Floate)
Submitted Papers, Workshop
12:00-13:00 Entomological Society of Canada Governing Board Meeting

TENTATIVE WORKSHOPS

Communicating Entomology
Lygus Bug Management
Biocontrol of Field Crop Pests

For additional information, please contact: Dr. Bruce Hemming, Dept. of Biological Sciences, University of Alberta, Edmonton, AB, T6G 2E9. Tel: (403) 492-4173; Fax: (403) 492-9234; E-mail: bheming@gpu.srv.ualberta.ca

Volume 29 (1), March - mars, 1997
**La Réunion conjointe de la
Société d'entomologie du Canada et la
Société d'entomologie de l'Alberta**

Crowne Plaza/Chateau Lacombe Hôtel, Edmonton, Alberta, 4-7 Octobre 1997

PROGRAMME PROVISOIRE

Samedi, 4 Octobre, 1997

08:30-17:30 Réunion du Conseil d'administration de la S.E.C.

Dimanche, 5 Octobre 1997

10:00-15:00 Inscription
13:00-17:00 Ateliers (2)
17:00-18:30 Jeux linnéens
18:30-19:30 Allocution générale
19:30-20:30 S.E.C. rencontre les étudiants
20:30-23:00 Vin et Fromage

Lundi, 6 Octobre 1997

08:00-10:00 Inscription
08:30-10:00 Ouverture, Prix de la S.E.C., Discours, Médaille d'Or
10:00-12:00 Symposium général "La Biodiversité: et puis quoi encore?" (Langor)
13:30-15:00 Communications scientifiques et celles des Etudiants (Prix du Président)
13:30-16:30 Atelier (1)
15:30-16:30 Session des affiches
15:30-16:30 Allocution: Héritage des Anciens
16:30-17:30 Réunion générale annuelle de la Société d'entomologie de l'Alberta
19:00-22:00 Réception du Président (sur invitation seulement)
17:00-21:00 Jeux linnéens (finale)

Mardi, 7 Octobre 1997

09:00-12:00 Symposium "Les Insectes et la productivité des Écosystèmes" (Spence)
Ateliers, communications scientifiques
13:30-16:00 Communications scientifiques et session des affiches
16:30-17:30 Réunion générale annuelle de la Société d'entomologie du Canada
18:30-23:00 Banquet

Mercredi, 8 Octobre 1997

09:00-12:00 Symposium "Les Asymétries Fluctuantes" (Floate)
Communications scientifiques, Atelier
12:00-13:00 Réunion du Conseil de la Société d'entomologie du Canada

ATELIERS PROVISOIRES

Faire connaître l'entomologie
Gestion des punaises Lygus
Contrôle biologique des insectes nuisibles des récoltes

Pour plus de renseignements, veuillez communiquer avec: Dr. Bruce Heming, Dept. of Biological Sciences, University of Alberta, Edmonton, AB, T6G 2E9. Tél: (403) 492-4173; tél: (403) 492-9234; E-mail: bheming@gpu.srv.ualberta.ca

The 1997 Joint Meeting
of the Entomological Society of Canada
and the Entomological Society of Alberta

Edmonton, October 4 - 8, 1997
Crowne Plaza Hotel

REGISTRATION FORM

Check one: Regular Student

Name:

Last First Initial(s)

Title:

Address:

City: Province/State:

Postal Code: Telephone:

Fax: E-mail:

Registration fees (in \$CDN) include banquet ticket and GST. For late registration (after August 8, 1997), add \$25.00. Cheque should be payable to **ESA/ESC joint account**.

Please remember to register for the associates program if desired. For more information on activities, refer to associates program form.

Registration, regular	\$110	Associates Activities	
Registration, student	\$60	1. Poet's stroll	# persons
Registration, accompanying	\$50	2. West Edmonton Mall	# persons
		3. Ukrainian Village	# persons

Name of accompanying person Total.....

Accommodations: Rooms can be reserved at the Crowne Plaza Hotel at \$92.00 single/double occupancy. 20 rooms have been set aside for student members at a special rate of \$59.00 single/double occupancy. Student space is limited, so reserve as soon as possible. For a list of other accommodations, check the Greater Edmonton Visitors Guide website at: <http://www.tym.com/>

Reservations are available through:
Crowne Plaza/Chateau Lacombe Hotel
10111 Belamy Hill
Edmonton, AB
T5J 1N7
1-800-227-6963
Tel. (403) 428-6611; Fax. (403) 425-6564

Return this form and registration fees to:
Daryl J. Williams
ESC/ESA joint meeting
Canadian Forest Service
Northern Forestry Centre
5320-122 st., Edmonton, Alberta
T6H 3S5

Please inform the hotel that you are attending the ESC/ESA meeting when registering.

La Réunion Conjointe de 1997
de la Société Entomologique du Canada
et de la Société Entomologique de l'Alberta

Edmonton, du 4 au 8 octobre 1997
Crowne Plaza Hôtel

FORMULAIRE D'INSCRIPTION

Indiquez: régulier ou étudiant

Nom:
Nom de famille Prénom Initiale(s)

Titre:

Adresse:.....

Ville:..... Province/Etat:.....

Code postal:..... Téléphone:.....

Télécopieur:..... Email:.....

Frais d'inscription (en monnaie canadienne) incluent un billet pour le banquet et la TPS.
Inscription tardive (après le 8 août 1997) ajouter \$25.00. Chèque fait à l'ordre de "ESA/ESC joint account". Veuillez ne pas oublier de vous inscrire aux programmes associés si désiré. Pour plus d'information sur ces activités, vous référer au formulaire des programmes associés.

Frais d'inscription, régulier	\$110	Activités Associées	
Frais d'inscription, étudiant	\$60	1. Promenade des poètes	#personnes
Frais d'inscription, conjoint	\$50	2. West Edmonton Mall	#personnes
		3. Village Ukrainien	#personnes

nom du conjoint..... TOTAL.....

Hébergement: Vous pouvez réserver une chambre au Crown Plaza Hotel à \$92.00 occupation simple ou double. 20 chambres ont été mises de côté pour les membres étudiants au taux spécial de \$59.00 occupation simple ou double. Le nombre de chambres pour étudiants étant limité, réserver le plus tôt possible. Pour une liste d'hébergement, visiter le "Greater Edmonton Visitors guide website" au: <http://www.tym.com/>

Réservation disponible auprès de:
Crown Plaza/Château Lacombe Hôtel
10111 Belamy Hill
Edmonton, AB T5J 1N7
1-800-227-6963
téléphone: (403) 428-6611
télécopieur: (403) 425-6564

Veuillez retourner ce formulaire
ainsi que les frais d'inscription à:
Daryl J. Williams
ESC/ESA joint meeting
Canadian Forest Service
Northern Forestry Centre
5320-122 st, Edmonton, AB
T6H 3S5

**Veuillez informer l'hôtel que vous assisterez
à la réunion ESC/ESA.**

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SUBMITTED PAPER, STUDENT PAPER, AND POSTER PRESENTATION FORM

DEADLINE: Postmarked on June 30, 1997

Author(s):

Address:

Title:

Abstract

Abstracts should be 50 words or less; submission by E-mail or on diskette is much preferred.

Form of presentation (Check one):

Oral presentation (12 min + 3 min discussion)

Poster presentation

Name of presenter:

Regular President's Prize*

.....

.....

* To be eligible for the President's Prize you must meet the following criteria:

1. You must be enrolled in a graduate degree program or have graduated from a program less than six months prior to the meeting.
2. You must be registered at the meeting; and
3. you must be the principal investigator of the paper.

Projection equipment:

Slide and overhead projectors will be provided for each session. Slides should be organized in a carousel. Please contact the program chair if other equipment is required. Persons who intend to display posters should contact the program chair for information.

Please return abstract to:

W. Jan A. Volney
Canadian Forest Service
Northern Forestry Centre
5320-122 st., Edmonton, AB
T6H 3S5
E-mail: jvolney@nofc.forestry.ca

Volume 29 (1), March - mars, 1997
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COMMUNICATIONS ORALES RÉGULIÈRES ET D'ÉTUDIANT(E)S,
ET COMMUNICATIONS AFFICHES

DATE LIMITE: marque postale 30 juin 1997

Auteur(s):
Adresse:
Titre:
Résumé:

Les résumés ne doivent pas dépasser 50 mots; envoyer de préférence par messages électroniques ou sur diskette.

Format de présentation (ne cocher qu'une case):	régulier	Prix du Président*
communication orale (12min + 3min de discussion)
communication affiches	
nom du présentateur:		

*Pour être éligible pour le Prix du Président, vous devez satisfaire les critères suivants:

1. vous devez être inscrit à un programme d'étude de troisième cycle ou avoir gradué d'un tel programme dans les 6 mois précédant la réunion conjointe.
2. vous devez être inscrit à la réunion conjointe et,
3. vous devez être le chercheur principal de la communication.

Équipement audio-visuel:

Un projecteur pour diapositive et un rétroprojecteur seront disponible à chaque session. Les diapositives doivent être dans un carrousel pour projecteur. Veuillez contacter le responsable du programme si vous avez besoin d'équipement supplémentaire. Les personnes présentant des affiches doivent contacter le responsable du programme pour plus amples informations.

Veuillez retourner le résumé à: W.Jan A. Volney
Canadian Forest Service
Northern Forestry Centre
5320-122st, Edmonton, AB
T6H 3S5
e-mail: jvolney@nofc.forestry.ca

E.S.C. Bulletin S.E.C.
**The 1997 Joint Meeting
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Edmonton, October 4 - 8, 1997
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ASSOCIATES PROGRAM

Please indicate which of the following activities would be of interest to you **on the registration form.**

1. October 4, Saturday

Early arrivals see #5 for suggested attractions.

2. October 5, Sunday - Stroll of Poets Festival

1:00 - 4:00 PM. Small groups of performers give short performances throughout the afternoon in various venues; most read their own poems. Location - Old Strathcona, an historical neighborhood with restored buildings (back to 1891) and many small boutiques, cafes, and restaurants. Transportation provided. Admission free.

3. October 6, Monday - West Edmonton Mall

After the opening session and Plenary Symposium. Shopping at West Edmonton Mall, the world's largest shopping and entertainment complex, complete with waterpark, amusement park, skating rink (indoor), and more than 800 stores. Rental scooters available for those not wanting to walk too much. Transportation provided.

4. October 7, Tuesday - Ukrainian Cultural Heritage Village

10:00 AM departure. Located 50 km. east of Edmonton, the village tells the story of Ukrainian immigrants and their settlement in east-central Alberta, 1892 - 1950's. Role players in more than 30 historic buildings. Gift shop. Admission charge. Lunch charge.

5. October 8, Wednesday

On your own. Suggested interesting attractions: the provincial museum (includes a 'bugroom'); Edmonton Space and Science Centre, with exhibits and IMAX theatre; Muttart Conservatory of 4 glass pyramids showing vegetation of a) tropical rainforest, b) boreal forest, c) desert plants, and d) seasonal display, gift shop and cafe.

For further information, please contact:

Dr. Kay Ball
8108 138 Street
Edmonton, Alberta
T5R 0C9

Volume 29 (1), March - mars, 1997
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Edmonton, du 4 au 8 octobre 1997
Crowne Plaza Hôtel

PROGRAMME ASSOCIÉ

Veillez indiquer quelles activités vous intéressez **sur le formulaire d'inscription**.

1. 4 octobre, samedi

Pour les personnes qui arrive tôt, voir #5 pour suggestions d'attractions touristiques.

2. 5 octobre, dimanche - promenades des poètes

1:00 - 4:00 PM. Des petits groupes d'artistes donnent de courtes scéances au cours de l'après-midi à différents endroits; la plupart lisent leurs propres poèmes. Lieu - Old Stratcona, un quartier historique avec des édifices restaurés (datant de 1891) et plusieurs petites boutiques, cafés et restaurants. Transport fourni. Entrée libre.

3. 6 octobre, lundi - West Edmonton Mall

Après l'ouverture et le symposium plénier. Magasiner à West Edmonton Mall, le plus grand complexe d'amusement et de magasins au monde, incluant des glissoires d'eau, un parc d'amusement, une patinoire intérieure, et plus de 800 magasins. Il est possible de louer une voiturette pour ceux qui préfèrent ne pas trop marcher. Transport fourni.

4. 7 octobre, mardi - Village Ukrainien

10:00 AM départ. 50 km à l'est d'Edmonton, le village raconte l'histoire des immigrants ukrainiens et de leur établissement dans le centre-est de l'Alberta de 1892 au années 1950. Des acteurs sont présents dans une trentaines d'édifices historiques. Boutique de souvenirs. Frais d'entrée. Frais de dinner.

5. 8 octobre, mercredi

Suggestions d'attraction touristiques: le musée provincial (incluant "bugroom"); Edmonton Space and Science Center avec expositions et cinema IMAX; Muttart Conservatory, 4 serres pyramidales chacune possédant différentes végétations a) forêt tropical, b) forêt boréal, c) plantes du désert, et d) une exposition saisonnière, boutique de souvenir et café.

Pour plus d'information, veuillez contacter:

Dr. Kay Ball
8108 138 street
Edmonton, AB
T5R 0C9

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THIRD ANNUAL CANADIAN LINNAEAN GAMES

The ESA-ESC Joint Meeting Organizing Committee is planning the third annual Linnaean Games. The games involve teams of four people competing against each other to answer questions about entomology. They have been a great success in past years. The primary goal is to provide an activity for students at meetings that is both educational and entertaining. The games are named after Carolus Linnaeus, to recognize his contributions to entomology and to reflect the objective of keeping the competition fun. For more information about the history and rules of the games, refer to the **Bulletin of the Entomological Society of America** (now *American Entomologist*), 31(3):5-6.

The preliminary round of the games in Edmonton is scheduled for Sunday, with the time of the finals to be announced at a later date. Subject areas for questions will include: behavior, Canadian entomological current events and history, crop protection, ecology, forestry, morphology, physiology, taxonomy and toxicology. Questions will be presented orally and visually, with the aid of slides.

The Student Affairs Committee invites student members of the E.S.C. to register, either as a team of four people, or as an individual (so we can put you on a team). Depending on the response, there may be space available for a "drop-in" team to be filled at registration. Please send in your response by August 1, 1997.

Linnaean Games Registration Form

Name of Team:.....

Institution:

Team Members:

.....
.....
.....

OR:

Name of Individual:

Institution:

Please return this form to: Jim Hammond, Dept. of Biological Sciences
University of Alberta, Edmonton, AB T6G 2E9
phone - (403)-492-3080, fax - (403)-492-9234
E-mail - jhammond@gpu.srv.ualberta.ca

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TROISIÈME JEUX ANNUELS LINNÉENS CANADIENS

Le comité organisateur de la réunion conjointe ESA-ESC organise les troisième jeux annuels linnéens. Le jeu met en compétition des équipes de quatre joueurs qui doivent répondre à des questions d'entomologie. Ces jeux ont eu un grand succès dans le passé. Le but principal des jeux est de donner l'occasion aux étudiant(e)s qui sont à la réunion de participer à une activité à la fois éducative et divertissante. Les jeux sont nommés en l'honneur de Carl von Linné, afin de reconnaître sa contribution au domaine de l'entomologie, ainsi que pour illustrer l'objectif de garder la compétition agréable. Pour plus amples informations sur l'histoire et les règles du jeu, veuillez vous référer au **Bulletin de la Société entomologique américaine** (American Entomologist), 31(3):5-6.

La manche préliminaire des Jeux d'Edmonton est prévue pour dimanche, la date et l'heure de la finale seront annoncées plus tard. Les questions porteront sur les sujets suivants: le comportement, les événements actuels et historiques de l'entomologie canadienne, la phytoprotection, l'écologie, la foresterie, la morphologie, la physiologie, la taxonomie et la toxicologie. Les questions seront posées sous formes orales et visuelles, à l'aide de dispositifs.

Le comité des affaires étudiantes invite tous les membres étudiants de la E.S.C. à s'inscrire, en équipe de quatre personnes ou individuellement (afin de vous placer dans une équipe). Il est possible qu'il y ait des places disponibles pour former une équipe improvisée au moment de l'inscription. Veuillez faire parvenir votre réponse avant le 1er août 1997.

Jeux Linnéens canadiens: Formulaire d'inscription

Nom de l'équipe:

Institution:

Noms des membres:

de l'équipe

.....

.....

.....

OU:

Nom (personne seule):

Institution:

Veuillez retourner à: Jim Hammond, Dept. of Biological Sciences
University of Alberta, Edmonton, AB, T6G 2E9
téléphone: (403) 492-3080, télécopieur: (403) 492-9234
e-mail: jhammond@gpu.srv.ualberta.ca

Committees and Representatives for 1996-97

A- Permanent committees/ Comités permanents

Nominations/ Nominations

G. Boivin, Chair, St-Jean-sur-Richelieu
B. Broadbent, London
B. Roitberg, Burnaby

Elections/ Élections

J. Corrigan, Chair, Guelph
A. Applejohn, Guelph (1996)
S. Belaousoff, Guelph (1996)
S. Marshall, ex officio, Guelph

Fellowships/ Compagnons

G.G.E. Scudder, Chair, Vancouver (1996)
P. Harris, Lethbridge (1996)
W.J. Turnock, Winnipeg (1997)
G.B. Wiggins, Toronto (1997)
E. Becker, Ottawa (1998)
S. Loschiavo, Winnipeg (1998)
S. Marshall, ex officio, Guelph

B- Continuing Committees/ Comités en cour

Achievement Awards/ Prix d'excellence

L. Gilkeson, Chair, Brentwood Bay
D. Gillespie, Chilliwack (1996)
R. Bouchier, S. Ste. Marie (1996)
S. Marshall, ex officio, Guelph
H. Danks, ex officio, Ottawa

Annual Meeting/ Réunion annuelle

J. Sweeney, Maritimes (1996)
B. Mitchell, Alberta (1997)
J. Delisle, QuÇbec (1998)
S. Marshall, ex officio, Guelph

Bilingualism/ Bilinguisme

J. Delisle, Chair, Québec
J. Brodeur, QuÇbec
M. Cusson, QuÇbec
S. Marshall, ex officio, Guelph

Bylaws, Rules & Regulations/ Règlements

G. Gerber, Chair, Winnipeg
N. Holliday, Winnipeg
S. Marshall, ex officio, Guelph

Finance/ Finance

E. Becker, Chair, Ottawa
J.-F. Landry, Ottawa
R. Anderson, Ottawa
D. Darling, Toronto
T. Wheeler, Ste-Anne-de-Bellevue
G. Gibson, ex officio, Ottawa
S. Marshall, ex officio, Guelph

Heritage/ Héritage

R. DeBoo, Chair, Victoria
S. Marshall, ex officio, Guelph

Insect Common Names/ Noms communs d'insectes

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P. Fields, Winnipeg
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K. Moore, ESS, ex officio, Saskatoon
N. Holliday, ESM, ex officio, Winnipeg
B. Lyons, ESO, ex officio, S. Ste. Marie
J. Bourdeur, SEQ, ex officio, Quebec
S. Marshall, ESC, ex officio, Guelph
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Andy Keddie, Edmonton
Peter Mason, Saskatoon
Al Ewen, Dalmeny
Conrad Cloutier, Laval
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Keith Kevan Scholarship Subcommittee

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C- Ad-Hoc Committees/Comités ad hoc

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S. Fitzpatrick, Vancouver
P. Kevan, Guelph
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S. Marshall, Guelph
S. Marshall, ex officio, Guelph

Call for Nominations - Fellows

Nominations are invited for Fellows in the Entomological Society of Canada. Fellows may be active or special members or entomologists who have made outstanding contributions to the advancement of entomology.

Nominations must be signed by four active members of the Society and are then reviewed by the Fellowship Selection committee. Names are submitted to the Executive Council for approval. A brief biography of the candidate and a statement of her/his contribution to entomology should be included in the nomination. Nominations should be received by the Committee by **31 January 1997**. They should be sent in an envelope marked "Confidential" to: Dr. G.G.E. Scudder, Department of Zoology, University of British Columbia, Vancouver, B. C. V6T 1Z4.

Call for Nominations - Second Vice President & Director-at-Large

Nominations for Second Vice President and Director-at-Large must be signed by three members in good standing and received by **30 April 1997** by the Secretary, Dr. Peggy Dixon

Nominations pour Deuxième Vice-Président et Directeur doivent être signée par trois membres de la Société et envoyée avant le **30 avril 1997** au secrétaire, Dr. Peggy Dixon.

Web Page for the ESC

A Web page has been opened for items relating to the Entomological Society of Canada and can be accessed at the address below. <http://www.biology.ualberta.ca/esc.hp/homepage.htm>

The Canadian Entomologist and the Memoirs are available from the Ottawa office and may be purchased by Mastercard or VISA as well as by cheque or money order.

Student Affairs Committee Update

The SAC has been working on the "Directory of Entomology Education in Canada", a concise list of Canadian post-secondary institutions that offer students an education in entomology. We have identified 44 universities and colleges that teach entomology. English and French versions of a questionnaire will be mailed to these schools in mid-February. The information that we seek includes the following: postal and electronic addresses, telephone and fax numbers, research and academic facilities, list of faculty members, courses offered, financial support available, and admissions criteria. We plan to include only schools whose curriculum (course-work and/or research supervision) contains a significant entomology component; the information will be published in the schools' language of instruction. Schools that do not respond to our survey will not be included in the Directory. We plan to publish an abridged version of the Directory in the June 1997 Bulletin, and the complete text the Society's home page around the same time.

Below is a list of the post-secondary institutions (and numbers of departments or faculties at given schools) that may offer education in entomology. If you are aware of other schools that we could include in the Directory, please pass the information along to me as soon as possible.

British Columbia: Simon Fraser Univ., Univ. of B.C. (3), Univ. of Northern B.C., Univ. of Victoria.

Alberta: Fairview College, Olds College, Univ. of Alberta, Univ. of Calgary.

Saskatchewan: University of Saskatchewan (3).

Manitoba: University of Manitoba.

Ontario: Brock University, Carleton University, Lakehead University, Laurentian University, McMaster University, New Liskeard College of Agricultural Technology, Queen's University, Ridgetown College of Agricultural Technology, Sault College of Applied Arts and Technology, Sir Sanford Fleming College, Trent University, University of Guelph, University of Ottawa, University of Toronto (4), University of Waterloo, University of Western Ontario, York University.

Québec: Macdonald Campus of McGill University, Concordia University, Université de Montréal, Université de Sherbrooke, Université du Québec à Chicoutimi, Université du Québec (a) Montréal, Université du Québec à Rimouski, Université du Québec à Trois-Rivières, Université Laval (3).

New Brunswick: Mount Allison University, Université de Moncton, University of New Brunswick.

Nova Scotia: Acadia University, Dalhousie University, Nova Scotia Agricultural College.

Prince Edward Island: University of Prince Edward Island.

Newfoundland: Memorial University of Newfoundland.

Students should be taking advantage of the internet listserv (e-mail discussion group), entomo-1, that resides at the University of Guelph, and is being maintained by Peter Kevan. This list provides a wide range of information on a variety of entomological topics. Currently, the list has about 1,200 subscribers worldwide. To join, send the message, "subscribe entomo-1 Firstname Lastname" (use your own first and last name, and eliminate the quote marks), to listserv@listserv.uoguelph.ca; no subject is required. You will receive a confirmation notice and information about the list. In January, I used entomo-1 to inform members of the ESC (that are on the list) that the deadline for the ESC Travel Grants was extended.

If you have an issue that may be of interest to the SAC, contact me at: Agriculture and Agri-Food Canada, Lethbridge Research Centre, PO Box 3000, Lethbridge, AB, T1J 4B1, Canada; e-mail danyk@em.agr.ca; fax 403-382-3156; phone 403-327-4591, extension 462. The e-mail address of the SAC is esc-student@sfu.ca.

Troy Danyk, Chair
Student Affairs Committee
Lethbridge, Alberta

ARTICLES

Integrated Pest Management Programs for Colorado Potato Beetles in Canada

Gilles Boiteau
Research Entomologist
Potato Research Centre
Agriculture and Agrifood Canada
Fredericton , New Brunswick

Integrated Pest Management programs for the control of the Colorado potato beetle on potato have spread westerly and can now be found from coast to coast. The sharp increase in potato acreage in western Canada in recent years was accompanied by an increase in the insect pest. The range and the abundance of the beetle have been closely associated with the expansion of the crop since the commercial potato plant was introduced. Today, the potato beetle is a primary pest in eastern and central Canada and a secondary pest in the rest of the country. Hopefully, the IPM programs in western Canada will insure that growers maintain the secondary pest status of the beetle and together with the programs in eastern

provinces gain a better understanding of the ecology and the management of the beetle.

This article summarizes the presentations made by representatives of different Canadian provinces at a Workshop of the Entomological Society of Canada on Colorado potato beetle IPM programs held in Fredericton on October 9, 1996. PEI was represented by Dr. Jeff Stewart (AAFC), New Brunswick by myself, Ontario by Dr. Eugenia Banks (OMAFRA), Quebec by Dr. R.-M. Duchesne (MAPAQ), Manitoba by Dr. Lynn Manager (MDA), Alberta by Mark Goettel (AAFC), and British Columbia by Dr. Bob Vernon (AAFC).

Historical background

The first insect pest management programs on potato in Canada followed soon after the introduction of the Colorado potato beetle late in the nineteenth century. Crops were dusted and inventive minds developed a number of mechanical devices to collect or crush the insects. Time passed and control techniques became more advanced but the Colorado potato beetles developed resistance to many insecticides. An integrated approach was considered. In Canada, the first recognized IPM program on potato was initiated in New Brunswick in the early 1970's to manage aphids and the Colorado potato beetle. It continues on today and is the longest running program in the country and perhaps in North America. Almost two decades later, the reliance on synthetic chemical insecticides for the control of insect pests on potato remained high. In the eastern part of the country populations of Colorado potato beetles were spreading and increasing in abundance necessitating repeated applications of insecticides. Insecticide resistant populations were becoming a major problem again. The lack of insect control and environmental concerns generated interest in alternative control methods in 1989-1990. New IPM programs were initiated (e.g. Ontario and Quebec) and the concept of IPM became the object of renewed interest.

A number of IPM programs differing in scope and in duration have come and gone during the last 36 years in the Canadian provinces. Today, programs exist in almost all provinces that produce potatoes. These programs have been or continue to be subsidized by one or more levels of government, at least during their establishment.

The New Brunswick program was initiated jointly by the provincial and the federal Departments of Agriculture, became partially funded by the growers and is now entirely funded and operated by the New Brunswick Department of Agriculture and Rural Affairs. It is a province wide program that provides general recommendations. It is not a farm specific program. In P.E.I., the provincial government subsidized the program on a decreasing rate schedule between 1988 and 1991. In 1992, private companies took over the service. Approximately 48% of the P.E.I. acreage is managed with the assistance of scouting companies. The IPM program for Quebec was created in 1989 for all 800 growers and remains under the supervision of the MAPAQ with financial contribution from the producers since 1995. The program encourages the participation of private scouting companies. In Quebec the potato beetle IPM program is part of the Quebec Plant Pest Warning System which coordinates the research data and the field data collected by the cooperators and makes it available to the agricultural community. In Ontario, the IPM program was initiated in 1991 with the financial support of the Ontario Ministry of Agriculture and Food. Today the program is partially funded by the growers. The program is located mostly in the central portion of the province where approximately 60% of the potatoes are grown. In the western provinces, the absence of insecticide resistance in potato beetle populations and the lower abundance of the beetles, due at least in part to historically smaller acreages of potato, have left little incentive for the development of IPM programs for beetles. This is changing. For example, the increasing acreage and the willingness to prevent the development of insecticide resistance have led to a test program in Manitoba in 1996. The program covered 55 acres and was headed by Manitoba Agriculture in cooperation with the Manitoba Crop

Diversification Centre. A similar approach is considered in Alberta. British Columbia has a long and successful history with IPM programs but with other potato pests. The low abundance of beetles did not justify the research but the more consistent presence of the Colorado potato beetle in the Okanagan valley in recent years makes it an interesting additional component of the potato IPM in that province.

Integrated Pest Management

Under IPM, insect control stops being an automatic event scheduled regularly according to the calendar or any sighting of insects and becomes a decision based on facts and knowledge. The provincial IPM programs for Colorado potato beetles maybe structured differently but they all place a paramount importance on crop rotation. The strategic action proposed by the different programs is double headed: preventive and/or remedial. Preventive actions result from the absence of rotations or the presence of insecticide resistance in the beetle population and focus on the utilisation of systemic soil insecticides, plastic-lined trenches or traps, propane flamers, etc. Remedial actions result from conditions favourable to the development of unusually abundant populations and focus on the utilisation of chemical insecticides or biological controls when the scouts determine that populations are reaching the economic thresholds for the region. In all areas, control is less frequently required against adults in the spring and in the late season and most frequently required against larvae especially at plant bloom. In all programs, general empirical and research based information, scouting data, thresholds, field history, plant damage and the library of control methods available are used to prepare management recommendations for the province, a region or a specific farm depending on the province. In all cases, the grower makes the final decision usually based on the recommendation, past practices during the current season and his own estimation of plant damage.

Program statistics:

On P.E.I. there are four crop scouting companies charging an average of \$20 per acre for the season.

The New Brunswick program is under the coordination of the Department of Agriculture and Rural Affairs. Scouts monitor 35 representative farms located throughout the potato belt. Less than a handful of consultants assist growers with pest scouting over less than 15% of the provincial potato acreage.

The Potato Network in Quebec is a subgroup of the Quebec Plant Pest Warning Service. It is headed by two pest management advisors from MAPAQ. Crop specialists and plant protection working groups complete the Network. The Potato Network in Quebec had some 1000 subscribers until 1995 when a charge of \$45 brought subscriptions down by 2/3. Quebec growers' concerns are addressed by 10 crop protection specialists monitoring five fields in their respective areas thereby producing a provincial assessment of the beetle population. Some 4-6 private scouting companies provide specific services to growers. Approximately 50% of the farms receive this service.

In Ontario the program is coordinated by the IPM advisor at OMAFRA. A fee of \$10 per acre is collected from participating growers. OMAFRA pays 35% of the wages of the scouts and provides training and supervision.

In Manitoba, growers do their scouting themselves. In the absence of insecticide resistance there has been little incentive to hire scouting companies to monitor the abundance of potato beetles.

In British Columbia, even though IPM services are well established there has been little incentive to include potato beetles until regional populations developed and thus improved the benefits of a multi-

ple pest IPM.

All programs are researching or recommending some form of alternative control often on the basis of local research developments. Throughout the country, large growers often prefer to hire their own scouts reporting to their own pest management coordinator.

Crop managed:

Crop scouting takes place mostly on processing, tablestock and fresh market fields. Seed potato fields tend to be smaller and are mostly managed by growers themselves at least for defoliating pests.

Other insect pests:

Canadian IPM potato programs are concerned primarily with the Colorado potato beetle but include secondary pests of regional or national importance. Traditionally the monitoring of aphids on plants or in yellow pan traps has been a companion of beetle monitoring (New Brunswick, P.E.I., Ontario, Quebec, Manitoba, British Columbia). Attention is given to flea beetles (Ontario, P.E.I., New Brunswick, Quebec, Manitoba), tuber flea beetles (British Columbia), leafhoppers (Ontario, P.E.I., Quebec, Manitoba), wireworms (Ontario, Quebec, Manitoba), tarnished plant bugs (Ontario, P.E.I., New Brunswick), and European cornborers (P.E.I.).

Economic threshold:

Economic thresholds for Colorado potato beetle vary from province to province. On P.E.I. thresholds based on beetle equivalents are used by the scouting companies. An empirical and conservative threshold of 2 larvae or adults per plant on average is used by the New Brunswick program. In Quebec, it is recommended to apply insecticides against young larvae at peak egg mass hatching or at thresholds of 5 larval equivalents per plant. The Quebec program stresses the fact that the first treatment, if needed, should be applied when the percentage of large larvae is still low. In Ontario, the threshold established in the state of New York has been found useful and applicable to the local conditions .

Program structure:

The IPM program in P.E.I. requires one scout for six growers for a total of 200 acres per week. On the larger Ontario farms, one scout can manage farms of up to 350 acres but two scouts are required on the 500 acre farms. In New Brunswick, scouts monitor the same representative monitoring plot every week thereby using much less time for beetle monitoring.

Delivery of information:

The information is communicated to the participants by a variety of means including general meetings, newsletters, code-a-phones and specific information by reports on the abundance and/or presence of insects. Guides and brochures prepared by provincial and federal governments complete the information distributed. When appropriate, other media such as the radio and internet are put to use. In Atlantic Canada, the Potato Guide and the Potato Crop Pest Control Recommendations prepared by the Advisory Committee on Potatoes are used as a source of information and as a list of insecticides available. The Ontario Guide also lists alternative control strategies. Product labels and other information provided by the agrichemical companies are often used by the consultants. Scouting companies keep records on the control products, rates of application, volumes, frequency of application as well as potato variety, and

plant development throughout the season. These databases also include the abundance of the different instars and an index of crop damage. Crop rotation is encouraged, usually three years with small grain.

The life history and identification of the pests is part of the information provided to the growers. The ecological relationships between the pest and the potato agroecosystem are also presented.

The management of insecticide resistance is based on strong recommendations for the rotation of the different chemical groups. In Ontario, the IPM program also recommends the timing of the insecticide applications against the early instars more sensitive to insecticides. Accompanied by the installation of plastic-lined trenches and the utilisation of the propane flamer. The utilisation of non traditional insecticides such as *Bacillus thuringiensis* has been recommended in most programs. The screening of beetle populations to determine their resistance to insecticides has been provided in New Brunswick and continues to be in P.E.I., Manitoba and Ontario. Regardless of the tests available, price remains the deciding factor in many farms.

Information exchange:

The programs are well inserted in the agriculture world. Whether they are called pest management advisor like in Ontario or pest management specialist as in New Brunswick one individual in each province ensures that there is appropriate exchange of information between the programs, the extension specialists and the researchers. Overall, this apparently uncertain assemblage of resources has served growers well in the past. Private scouting companies, a relatively recent addition to the system, have been very active at capturing information from all sources. As part of the service that they are striving to provide to their clients. This same relation, client/contractor, has made it more difficult for the governments specialists and industry planners to obtain quantitative information on crop and population trends. As the role of private consultants expands, the availability of information will decrease. There is an emerging need to redesign the collection of information necessary to planners and funding agencies to enable Canada to continue to respond appropriately to research needs, as well as trade and regulatory concerns.

Looking ahead:

Canadian growers are highly interested in IPM programs but insist on effectiveness, ease of utilisation and a price competitive with conventional programs. In areas of eastern Canada where insecticide resistance has limited the efficacy of controls there has been a greater interest in alternatives and their integration but incentives must be found to ensure that the interest in such a program benefits from the new introductions of traditional insecticides such as Admire or new products such as NewLeaf. In western provinces where insecticide resistance is not a problem, it is especially critical to provide appropriate incentives towards the adoption of IPM. IPM must be cost effective and efficacious if it is to be adopted.

The adoption of IPM for the control of Colorado potato beetles in Canada is progressing. However, serious impediments exist. There is an unwillingness of growers and consumers to assume the potentially higher cost of alternative control methods and environmental protection during the transition from a conventional to a IPM approach. The adoption of IPM for Colorado potato beetle control and eventually its further integration to an overall IPM program for all pests represents an enormous change in potato production and potato protection. The slow rate of adoption experienced by all provinces may be necessary considering the size of the step that growers are being asked to take. It could be that in the transition period, research should concentrate on single alternatives with efficacy and delivery similar to those of chemical insecticides. Familiarity should favour adoption.

The failure of existing IPM programs, here and abroad, to stop the development of insecticide resis-

tant beetle populations suggest that the insecticide resistance management strategies offered must be improved, that we have not found the right strategy or that our integrated programs still rely too much on traditional insecticides.

Scouting tools are available but must be made more practical and effective. Sampling plans are more effective for research than for scouting. The sampling effort is often inadequate for successful IPM because existing sampling plans are too costly and require too much time. Economic thresholds more resilient to regional differences, varietal changes, cultural practices and other parameters must be established. Economic thresholds based on plant stress may be the solution.

The road ahead is a long but promising one. The adoption of a full IPM strategy will require profound societal changes. However, along the road the progressive adoption of the IPM philosophy and of some of its components has already had a very positive impact. It is responsible in part for improved scheduling of control measures and reductions in pesticide volumes as well as safer application procedures.

Programs in all provinces are suffering from cutbacks and governmental restraint programs. But all are looking forward to continuing the service and improving product quality, cost benefits, grower involvement, and ease of use. The increasing number of programs across the country testifies to the vitality of Colorado Potato Beetle IPM. The advantages of an IPM approach are not realized by the single year approach that is now common occurrence. Growers must be offered multi year potato beetle control plans. There is also a general consensus that management plans for other insects and other pests must be integrated. This global approach is not for the coming season but a goal to strive for, a suitable challenge for the new millennium.

PERSONALIA

SFU Graduate Students Honoured

Three graduate students in Simon Fraser University's Centre for Pest Management gained special recognition at the 1996 Annual Meeting of the Entomological Society of America held from 8-12 December in Louisville Kentucky. Ph.D. student Maya Evenden won the President's Prize in the behaviour and ecology section for her paper entitled "Pheromone-based communication disruption of oblique-banded and threelined leafrollers on apple in British Columbia." This is the second time Maya has won this award. The first was in 1994 when she presented the results of her Master of Pest Management thesis. Winning Honourable Mention for their poster presentations were Ph.D. student Ian Robertson and Master of Pest Management student Ed Basalyga.

Une bourse de la Fondation Rockefeller

Une bourse de la prestigieuse Fondation Rockefeller est remise à Monsieur Ibrahim Baoua Boukary, étudiant du Doctorat en Sciences de l'Environnement, qui effectue sa recherche sous la direction des professeurs Jean-Claude Tourneur et Jean Gingras, du Département des Sciences biologiques de l'UQAM.

Dans le cadre de sa recherche qui porte sur: L'étude des relations trophiques du perce-oreille *Forficula senegalensis* Serv. avec le mil: son évaluation comme prédateur d'insectes phytophages, il a soumis une demande de fonds afin de financer la dernière partie de ses recherches entreprises depuis l'automne 1994.

En mai 1996, soit à la veille de son deuxième "été de terrain", grâce à l'excellence de son dossier, mais aussi grâce à à ses premiers résultats expérimentaux et l'acceptation d'un premier article dans la revue *The Canadian Entomologist*, la fondation Rockefeller lui accordait une bourse dans le cadre de son programme "African Internship Awards". Cette bourse d'un montant de 6605 \$ US. équivaut à la totalité de la demande présentée par Mr. I. Baoua Boukary. A ceci, la fondation a ajouté 4000 \$ US. pour le voyage et 1500 \$ US. pour couvrir les frais de séjour de l'un de ses directeurs de recherche. En plus, elle a accordé 2500 \$ US., à titre de remboursement des frais administratifs encourus par l'Institut National de Recherche Agronomique du Niger durant le séjour de Mr. I. Baoua Boukary au Niger.

Depuis l'automne 1994, Mr. Ibrahim Baoua Boukary est inscrit au Programme de Doctorat en Sciences de l'environnement de l'UQAM. De nationalité nigérienne il bénéficie, depuis août 1994, grâce à l'excellence de son dossier universitaire, d'une bourse d'étude du Programme Canadien de la francophonie de l'Agence Canadienne de Développement International. De plus, devant la qualité des résultats expérimentaux obtenus en laboratoire au cours des deux premières sessions universitaires (automne 94 et hiver 95), le "Centre Sahel" de l'Université Laval lui avait octroyé, en 1995, une bourse couvrant tous les frais inhérents à son premier été de terrain.

De retour de son deuxième séjour de collectes de données, Mr. I. Baoua Boukary rédige actuellement les articles scientifiques qui constitueront sa thèse de doctorat et fait profiter plusieurs étudiants de premier cycle de son expertise.

NEWS OF ORGANIZATIONS

International Commission on Zoological Nomenclature

Applications published in the Bulletin of Zoological Nomenclature

The following Application was published on 20 December 1996 in Vol. 53, Part 4 of the Bulletin of Zoological Nomenclature. Comment or advice on this application is invited for publication in the Bulletin and should be sent to the Executive Secretary (I.C.Z.N.), c/o The Natural History Museum, Cromwell Road, London SW7 5BD, U.K.

Case 2950 *Pseudofoenus* Kieffer, 1902 (Insecta, Hymenoptera): proposed designation of *Foenus unguiculatus* Westwood, 1841 as the type species

A.D. Austin & J.T. Jennings, *Department of Crop Protection, Waite Campus, The University of Adelaide, P.O. Glen Osmond, South Australia 5064, Australia*

M.S. Harvey, *Western Australian Museum, Francis Street, Perth, Western Australia 6000, Australia*

Abstract. The purpose of this application is the designation of *Foenus unguiculatus* Westwood, 1841 as the type species of the New Zealand parasitic wasp genus *Pseudofoenus* Kieffer, 1902 (family Gasteruptiidae). At present the nominal species *Gasteruption pedunculatum* Schletterer, 1889 is the type, but the original male specimen of this lacks the diagnostic genitalia and its name is a junior synonym of either *F. unguiculatus* or *F. crassipes* Smith, 1876. The uncertainty would not be resolved by neotype designation because both the latter nominal species are typified by females and the sexes of the *Pseudofoenus* species have not yet been correlated.

Keywords. Nomenclature; taxonomy; Hymenoptera; Gasteruptionidae; parasitic wasps; *Pseudofoenus*, *Pseudofoenus unguiculatus*; New Zealand.

Opinions published in the Bulletin of Zoological Nomenclature

The following Opinion was published on 20 December 1996 in Vol. 53, Part 4 of the Bulletin of Zoological Nomenclature.

OPINION 1857. *Metablastothrix* Sugonjaev, 1964 (Insecta, Hymenoptera): *Blastothrix isomorpha* Sugonjaev, 1964 designated as the type species

Biological Survey of Canada (Terrestrial Arthropods) Survey Report

The Scientific Committee met in Ottawa on 17-18 October 1996.

Scientific projects

1. *Arthropod fauna of the Yukon*

The contents of the planned book on insects of the Yukon have been more-or-less finalized, and all chapters received in some form. The book is proceeding on schedule for publication in 1997.

2. *Arthropods of grasslands*

An Environmental Monitoring and Assessment Network workshop to establish a prairie ecological science cooperative was held in April 1996. The SAGE project at Grasslands National Park is proceeding with excellent cooperation between the Park and the Provincial Museum of Alberta. About 10 million specimens in 7,800 samples were collected by the comprehensive sampling program in 1996. A project at Suffield Base grasslands continues with an analysis of the spider fauna and other analyses.

3. *Arctic invertebrate biology*

The Survey's newsletter supporting this project, Arctic Insect News, has gained wide acceptance. Further work is envisaged in association with the International Tundra Experiment, and with individuals from Europe interested in visiting Canadian arctic sites. The next regular symposium on the cold-hardiness of animals and plants will be held in Victoria, B.C., in the year 2000.

Other scientific priorities

1. *Old-growth forests*

Dr. S.A. Marshall distributed a draft list of current old-growth forest projects for comment and update. Various members of the committee reviewed projects in old-growth forests across the country, including discussion of the need for long-term work, the need for trained entomologists and the adequacy of sampling.

2. *Invasions and reductions in the Canadian insect fauna*

Further progress had been made in defining species that could support a project to detect invasions and reductions based on analysis of collection holdings. The Committee also recognized differences between exotic and native species, pests and non-pests, annual migrants and real reductions, and ephemeral and permanent changes. The draft list of candidate species will be developed further and cooperators

sought.

3. *CD-ROM technology*

Dr. J.V. Matthews demonstrated a CD-ROM about the Palliser Triangle project of the Geological Survey of Canada. This vehicle is intended to make available, to diverse audiences, a wide range of general and technical information and supporting documentation. Dr. Matthews also hopes to produce a CD-ROM, using exciting and well-illustrated treatments, about the sorts of valuable discoveries that have resulted from curiosity-driven research, helping to offset the current damaging trend that insists on short-term financial accounting for research projects.

4. *Mapping software*

Dr. D.J. Larson reviewed the capabilities of software that can be used to plot insect distributions. The Committee is examining the idea of an entomology-collection gazetteer to list geographical coordinates for entomological collection sites.

5. *Other priorities*

The Committee also considered various subjects of continuing interest, faunal analysis, endangered species, work in damaged ecosystems, response to the Canadian Biodiversity strategy, dissemination of the Survey's brief on biodiversity assessment and possible avenues for Survey publicity.

Liaison and exchange of information with other organizations

1. *Canadian Museum of Nature*

Dr. Colgan, Executive Vice-President, reported that Alan Emery left the Museum as President in June 1996. The public programming division includes the Canadian Centre for Biodiversity (CCB) and the Biological Survey of Canada is a unit within the CCB.

The current priority, beyond managerial reorganization, is the move into the new science and administration building in Aylmer. Everyone, except staff directly involved with running the Victoria Memorial Museum building, will be in this new facility. Currently the Museum is working especially on a national collections strategy, an arctic exhibit, and cooperation with other federal agencies. In 1996 the Museum, in conjunction with Queen's University and the University of Kentucky, held its first summer school on Biodiversity and Systematics attended by an international group of students.

Next year the Museum's budget will again decrease due to the federal government program review. This loss highlights the importance of approaching all projects in an entrepreneurial spirit. Towards that end, a full-time grants officer has been recruited.

2. *Agriculture and Agri-Food Canada, Crop Protection Program, ECORC*

Dr. J. Surprenant, Program Manager, Crop Protection Program, reported on the major changes that have occurred at ECORC since the last meeting, as a result of an internal program review intended to focus resources onto agricultural needs and to ensure that ECORC is fulfilling its mandate. Researchers are being encouraged to become more involved with Matching Investment Initiatives.

Dr. Surprenant assured the Committee that overall spending in the Crop Protection Program for the Canadian National Collection has remained the same as it was a few years ago. All of the collection will be maintained; research activities and collection maintenance are separate issues. There are 20 entomologists at ECORC and a substantial budget, which is significant support especially compared to other countries of similar size.

Some progress with the handbook series was reported, especially as a result of liaisons with the National Research Council.

3. *Entomological Society of Canada*

Dr. Marshall, President of the Entomological Society of Canada, reported that at the successful Annual Meeting in Fredericton approval was given to implement recommendations from the ESC's Strategic Review Committee. Therefore the Society will be restructuring, the memoirs have been discontinued, and technical editing of the Canadian Entomologist will be contracted out, saving substantial costs.

4. *Canadian Forest Service*

Dr. Huber reported that the Forest Service has been undertaking a review similar to that of Agriculture, including the needs of systematics in the Canadian Forest Service. Forestry is looking not only at forest pest management, but also at broader biodiversity issues. All of the Forest Service's taxonomists and biologists are involved in the biodiversity network. Three positions at the biologist level will be established to look after the regional collections and do routine identifications. The plan is still to move the collection in St. John's to Cornerbrook but it has not been decided who will look after it.

5. *Ecological Monitoring and Assessment Network, Environment Canada*

Dr. Roberts-Pichette reminded the Committee of the EMAN national meeting, during January in Saskatoon. A half-day workshop will consider international conventions and protocols, especially the many conventions that Canada has signed on to that call for various assessments to be done in the near future. A workshop on the establishment of the prairie ecological science cooperative was held last April, chaired by Dr. Finnamore, and follow-up work has been done on the development of sampling protocols. A strategy for agreements on biodiversity assessments has also been worked out.

An EMAN Advisory Science Board has been established, comprising a group of 10 people from across Canada. This group will give direction, advice and scientific validity to the work that EMAN is doing. Dr. Roberts-Pichette noted other items of interest, including a potential international project on grasslands, a potential international workshop on cultural landscapes and corridors, informal relationships between EMAN and groups at the provincial level, and the sites in the Ecological Science Cooperatives.

6. *Parks Canada*

Mr. Don Rivard, Ecosystem Management Manager, reported that this year Parks is funding an examination by a consultant of the use of insects for environmental monitoring. Parks is still undergoing downsizing and budget cutting, but nevertheless the maintenance of ecological integrity and environmental monitoring and accountability remain high official priorities. Parks is to become a semiautonomous agency reporting to the Minister of Canadian Heritage. Parks will be given the authority to retain revenue generated in Parks in order to operate them, and will have responsibility for monitoring.

Parks recently undertook a large project on the effects of development and human activity in the Bow Valley of Banff National Park, which showed that natural resources are real capital assets. In response to questions from the Committee about long-term plans for the development of new National Parks, such as that in the Torngat Mountains, Mr. Rivard noted that if it is determined that an area has significant potential for commercial or mineral development, historically that area is usually excluded from future Park proposals.

7. *Geological Survey of Canada*

Dr. John Matthews reported that the Geological Survey is again interested in work in the arctic, and will hold a forum this January in which the arctic is the theme. Data collected from the Geological Survey's monitoring site at Hot Weather Creek (now closed) will be published in the form of a memoir.

8. *Canadian Wildlife Service*

Dr. Theresa Aniskowicz commented on the general nature of the impending federal legislation on endangered species. The legislation will apply only to species and lands where the federal government has

jurisdiction, but an attempt has also been made to work out a national accord with the provinces and territories. Insects are not under federal jurisdiction. A new version of the Committee on the Status of Endangered Wildlife in Canada will be enabled by the legislation. COSEWIC wants to base its listings on comprehensive studies in order to determine the true status of the species. Dr. Aniskowicz acknowledged the nature of insect collecting and, as a biologist herself, is trying to address various concerns with regulations put in place to enforce endangered species legislation, which can be problematic if applied too broadly. She hopes that constant consultation to address the legitimate concerns of the research community will continue during the development of the regulations.

9. Canadian Society of Zoologists - Parasitology

Dr. Marcogliese reported that a revised Directory of Parasitologists in Canada has now been published. The list of expertise and gap analysis for parasitology should soon be completed. The perch project is ongoing. A national survey of the three-spined stickleback is underway. A web site has been established for Canadian parasitologists.

Other items

1. Regional developments

Information from different regions of Canada that was of potential interest to the Survey was reviewed, including the following matters.

In British Columbia, Rob Cannings has returned to full-time work in entomology at the Royal British Columbia Museum. Studies of rare butterflies, dragonflies, and other conservation-related work on insects continue. Enrolment in entomology classes at the University of Victoria has increased very greatly.

In the prairies, a successful EMAN workshop on sampling protocols was held, leading to the suggestion for an EMAN advisory science board, now established. Other research in Alberta was outlined. The Criddle homestead at Aweme, Manitoba might be sold to a private owner; the Survey prepared a letter supporting the protection of this site.

In Ontario, various faunal studies continue at the University of Guelph, the Royal Ontario Museum, the Canadian Museum of Nature, Laurentian University, York University, and elsewhere. The curator of the Guelph collection has been lost. Dr. Henri Goulet, ECORC, now has responsibilities for Braconidae rather than for sawflies as before.

The CFS laboratory in Ste.-Foy, Québec will be filling a biologist position to look after the collections.

In Newfoundland the annual Newfoundland "entomology weekend" was held, though attendance was limited.

With respect to arctic matters, the Polar Continental Shelf Project is now giving priority to the support of university research in the arctic. Possibilities for research on plant-animal interactions are being developed by the International Tundra Experiment.

2. Other matters

The Committee also considered membership of the Committee, liaisons with other agencies, and activities of the Biological Survey secretariat.

PUBLICATIONS

Insects of the Yukon - A Plea for Help in Publication

In 1997, the Biological Survey of Canada will publish "Insects of the Yukon", the results of an outstanding collaboration involving some 35 expert authors from 20 institutions across Canada and the U.S. The book will comprise many hundreds of pages, and will provide in-depth treatment of more than 20 groups of insects and their relatives, introductory chapters describing the development of the work and its scientific importance, an overview of the current and past conditions in the Yukon, and a concluding chapter that draws general lessons from the core chapters.

The book will be published by the Biological Survey Foundation, a nonprofit charitable organization registered with Revenue Canada with the primary function of publishing work on the insect fauna of Canada. In recent years, the Biological Survey Foundation was responsible for publishing "Insect Dormancy", a book that received broad international acclaim.

The Biological Survey Foundation is pleased to offer members of the Entomological Society of Canada the opportunity to become participants in this worthwhile project by making donations to assist with publication costs of "Insects of the Yukon". All donors will receive receipts for income tax purposes. In return for contributions of \$250.00 or more, donors will be gratefully acknowledged in the early pages of the book. Financial contributions should be in the form of cheque or money order, made payable to the Biological Survey Foundation, and forwarded to: Dr. H.V. Danks, Secretary-Treasurer, Biological Survey Foundation, 1031 Wiseman Crescent, Ottawa, Ontario, K1V 8J3.

POSITIONS AVAILABLE

Post-Doctoral Fellowship: Insect molecular biology. Two-year Postdoctoral Research Associate, Insect Molecular Biology, with USDA-ARS, Wheat, Peanut and Other Field Crops Research Unit, Stillwater, OK. To develop species-specific DNA hybridization probes to detect endoparasitism and arthropod predation on cereal aphids. Experience is required in animal DNA extraction, amplification, cloning and labeling; experience is desirable in insect molecular biology. Receipt of PhD within the last 4 years is desirable. Send CV and arrange for 3 letters of reference to be sent to Dr M.H. Greenstone, USDA-ARS-PSWCRL, 1301 N. Western St., Stillwater, OK 74075. FMI: e-mail mattg@ag.gov, or call 405-624-4119. (posted Nov 25, 1996).

Summer job: Beekeeping. Position begins in April 1997 with Paul Montoux, RR#1, Hagersville, Ontario NOA 1H0, Canada; tel 905-768-5536. (Posted Dec 5, 1996).

PhD study: Chemical ecology and biological control A 3-year assistantship is available at the University of Wisconsin for a PhD student interested in applying chemical ecology to the biological control of forest insects. Study mainly involves testing whether the currently high removal of predators during pheromonally based trap can be reduced using selected pheromone plumes that maximize *I. pini* response while biasing against such predators at *Thanasimus*, *Enoclerus*, and *Platysoma*. FMI: Kenneth F. Raffa, Dept. of Entomology, University of Wisconsin, Madison, WI 53706; tel 608-262-1125; fax 608-262-3322; e-mail raffa@macc.wisc.edu. (Posted Dec 9, 1997).

PhD study opportunity: lectin toxicity To characterise the mechanisms of lectin pathogenicity by deter-

mining lectin interactions with pest glycoconjugates, particularly glycoproteins. To identify the genes which encode lectin-receptor glycoproteins and the processes in which they are involved. Starts ASAP in 1997 and will end 3 years after appointment. Annual stipend is 7,000 Pounds Sterling and fees will be paid. Student registers with Dundee University and will be jointly supervised by Dr William Whitfield. Candidates will be expected to have an honours degree at first or upper-second class level. FMI: Dr B Fenton, e-mail bfento@scri.sari.ac.uk; Dr Nick Birch, e-mail nbirch@scri.sari.ac.uk. (Posted Dec 11, 1997).

Post-Doctoral Fellowship: Insect molecular virology Characterization polydnnaviruses genome at the molecular level and exploration of relationships between the organization of the viral genome and the functions of individual viral genes. Ideal candidate: experience in molecular biology and tissue culture; individuals with broad training who readily understand and perform new techniques and can trouble-shoot. Position available Spring 1997. Funding anticipated for 2 years at ca. US\$25,000/yr (some supply and travel funds). To apply contact me by e-mail or send CV with names, addresses and phone numbers of 3 references to Bruce A. Webb, Dept. of Entomology, University of Kentucky, Lexington, KY 40506-0091; tel 606-257-7415; fax 606-323-1120; e-mail bawebb@pop.uky.edu. (Posted Jan 28, 1997).

Graduate study opportunity: biocontrol of weeds Research will focus on biological control of rangeland weeds or integrated control of rangeland weeds; starting Fall 1997. Assistantship salary of ca. US\$945/month and includes a full waiver of tuition and fees. Two years of support is provided for a MS degree; 3 years support for PhD degree and includes 2 months of summer salary. Position open until filled. FMI, contact David J. Kazmer, Dept. of Plant, Soil & Insect Sciences, University of Wyoming, P.O. Box 3354, Laramie, WY; tel 307-766-5199; fax 307- 766-5549; e-mail djkazmer@uwyo.edu. (Posted Jan 30, 1997).

Professor and Chair: Entomology. The Department of Entomology at North Dakota State University has a full-time tenured professor and chair position available. The Chair will provide effective leadership and administrative support; manage and coordinate departmental resources, education program and promote extension/outreach programs; establish a teaching and/or research program; serve as liaison with the constituencies of the State, region and the University; promote and support effective grant solicitation among the faculty; actively enhance the national and international reputation of the Department. Minimum qualifications: PhD in entomology or closely related discipline. Must qualify for the rank of Professor. A record of professional excellence in teaching, research or extension. A substantial publication record and recognition received within a discipline. An established record of grant support. A demonstrated capability for effective leadership. A commitment to continued faculty development. Excellent communication skills. Send letter of application describing qualifications and interest, CV/Resume, 4 letters of reference and a statement of leadership goals by April 1, 1997, to: Dr. Robert B. Carlson, Dept. of Entomology., NDSU, Fargo, ND 58105. Direct questions to rcarlson@ndsuxt.nodak.edu; tel 701-231-7582; fax 701-231-8557. (Posted Jan 31, 1997).

SCHOLARSHIPS AND GRANTS

Entomological Society of Canada Postgraduate Awards 1997 and Keith Kevan Scholarship

The Entomological Society of Canada will offer two postgraduate awards of \$2,000 each to assist students beginning graduate study and research leading to an advanced degree in entomology. The postgraduate awards will be made on the basis of high scholastic achievement.

In memory of Dr. D. Keith McE. Kevan, the Entomological Society of Canada is also offering one postgraduate award of \$1,000 to assist graduate students studying systematics in entomology. The award will be made on the basis of high scholastic achievement and excellence in insect systematics

Invitation for Applications

Eligibility: Applicants for either scholarship must be members of the Entomological Society of Canada.

- **Postgraduate Award:** The successful applicants must be either Canadian citizens or landed immigrants with Bachelor's degrees from Canada universities. Applicants must begin their first year of postgraduate studies between 15 June 1995 and 31 December 1997. The studies and research must be carried out at a Canadian university. Each award is conditional upon certification by the Department Head that successful applicants have been accepted into the first year of a program of study and research for an advanced degree with full graduate status. A student who was unable to gain admission or enters graduate school as a qualifying candidate is not eligible to receive an award.

- **Keith Kevan Scholarship:** The successful applicant must be a graduate student at the time of application, studying at a Canadian university or be a Canadian citizen studying abroad.

Method of Application - Applicants must submit a properly completed form, with support documents. Applications must be received by the Secretary of the Society no later than **11 June 1997**. Please specify if you are applying for the Postgraduate Award or the Keith Kevan Scholarship.

Process of Selection and Award Presentation - Applications will be reviewed by a committee of the Society. An announcement of the two winners will be made at the annual meeting of the Society and each winner will receive a certificate. Payment of the award will be made in October 1997.

Regulations

Earnings from Other Sources - Award holders are permitted, under normal circumstances, to demonstrate, instruct or assist in non-degree related research for a maximum of 200 hours per annum, provided that the Head of their Department considers this is desirable and that it does not hinder the progress of their studies. Apart from these assistantships, award holders will devote their full time to study and research and will not undertake any paid work during the school term. They may hold other awards and scholarships.

Transfers - Awards are made on the condition that the winners engage in a program of graduate studies and research for an advanced degree in entomology in Canada. Students, who after receiving the award, wish to change their graduate program or transfer to a foreign university may be asked to decline the award. Any change in the course of study, department or university in which an award winner is registered requires prior approval of the Scholarship Committee. A request for permissions to transfer must be supported by statements from Heads of Departments.

Additional Allowances - The award stipends are all-inclusive. There is no provision for additional grants by the Society for any purpose. Additional grants, for example, to attend meetings, pay course fees, meet publications costs, etc., will not, under any circumstances, be authorized.

All communications regarding these awards, including requests for applications, should be addressed to:

Dr. P. Dixon, ESC Secretary
Agriculture and Agri-Food Canada
P.O. Box 37, Mount Pearl, NFLD, A1N 2C1
Telephone: 709-772-4763, Fax: 709-772-6064
E-Mail: Dixonpl@em.agr.ca

La Société d'entomologie du Canada Bourse pour Etudiants Post-Gradués 1997 et Bourse Keith Kevan

La Société d'entomologie du Canada offrira deux bourses d'un montant de \$2,000 chacun pour aider des étudiants qui entreprennent des études post-graduées et des recherches en vue de l'obtention d'un diplôme d'études supérieures en entomologie. Les bourses seront accordées aux étudiants ou étudiantes en raison des seuls critères de réussite académique.

Aussi, en mémoire de Dr. D. Keith Mc.E. Kevan, la Société d'entomologie du Canada offrira une bourse d'un montant de \$1,000 pour aider les étudiants qui entreprennent des études en taxonomie des insectes. Cette bourse est accordée en raison des critères d'excellence académique et de la prééminence en taxonomie des insectes.

Avis

Éligibilité: Candidats pour chacune des bourses doivent être membres de la Société d'entomologique de Canada.

-Bourse Post-graduée: Les candidats doivent être Canadiens ou résidents reconnus du Canada et détenir un baccalauréat d'une université canadienne. Les candidats doivent obligatoirement avoir débuté leur première année d'études post-graduées entre le 15 juin 1995 et le 31 décembre 1997, et effectuer leur étude et recherche dans une université canadienne. Les bourses ne seront accordées que lorsque les directeurs de Département auront certifié que les candidats choisis sont inscrits en première année d'un programme d'études supérieures, et ce avec tous les privilèges attachés au statut d'étudiant gradué. Un étudiant qui n'a pu être admis à l'École des Gradués, ou qui s'inscrit en vue de compléter l'obtention de crédits, n'est pas éligible à la bourse.

- Bourse Keith Kevan: Le(La) candidat(e) doit être étudiant(e) gradué(e), inscrit(e) à une université canadienne ou citoyen canadien étudiant à l'étranger.

Procédure - Les candidats devront soumettre leur candidature à l'aide du formulaire approprié et y joindre tous les documents requis. Les demandes devront être reçues par le Secrétaire de la Société au plus tard le **11 Juin 1997**. Préciser que vous voulez les formulaires pour la Bourse Post-graduée ou la Bourse Keith Kevan.

Sélection et remise des bourses - L'analyse des candidatures se fait par un comité de la Société, et l'annonce des récipiendaires se fera à la réunion annuelle de la Société où ils recevront un certificat. Le paiement de la bourse aura lieu en octobre 1997.

Règlement

Autres sources de revenus - Un boursier pourra normalement donner des séances de cours ou de démonstration et être auxiliaire de recherche jusqu'à un maximum de 200 heures par année, en autant que le Directeur de son département considère cela profitable et que ces tâches additionnelles ne nuisent pas au progrès de l'étudiant. Sauf pour ces assistances, un boursier devra consacrer tout son temps à ses études et recherches et n'accepter aucune autre rémunération. Il peut cependant jouir d'une autre bourse ou d'un prix.

Transferts - Les bourses sont accordées à condition que les boursiers entreprennent des études graduées en vue de l'obtention d'un diplôme en entomologie au Canada. Les boursiers qui décideront de changer de champ d'études, ou de transférer dans une université hors du Canada peuvent se voir retirer leur bourse. Après acceptation de la bourse, tout changement de programme d'études, de département ou d'université devra recevoir au préalable l'approbation du Comité de la Bourse de la SEC. Une telle demande doit être accompagnée de documents provenant des Directeurs des départements concernés.

Frais supplémentaires - La somme offerte est invariable. En aucun cas la Société n'accordera de montant supplémentaire. Des frais additionnelles, par exemple, pour assister aux réunions scientifiques, payer des frais de cours, défrayer des coûts de publications, etc., ne seront autorisés sous aucune considération. Toute correspondance relative aux bourses, incluant les demandes de formulaires doit être adressée à:

Dr. P. Dixon, Secrétaire SEC
Centre de Recherche, Agriculture et Agro-Alimentaire Canada
C.P.Box 37, Mount Pearl, Terre-Neuve, A1N 2C1
Telephone: 709-772-4763, Telecopie: 709-772-6064
E-Mail: Dixonpl@nfrssj.agr.ca

Eastern Apicultural Society Grant for Honey Bee Research

The EAS has established a foundation to support honey bee research. Two grants of \$2000 each will be made in 1997. Proposals are welcome from anyone doing research on honey bees within the ESA territory. Proposals should outline the objective and plan of work and how the results will be disseminated, and should not exceed five pages. Deadline for application is May 24, 1997. Submit three copies of the proposals to: EAS Foundation for Honey Bee Research, c/o EAS Secretary, Box 300A, County Home Road, Essex, N.Y. 12936, USA.

UPCOMING MEETINGS

International Symposium: Integrated Production And Protection (IPP) In Horticultural Crops

May 6-9, 1997, Agadir, Morocco, organized by the: Institut Agronomique et Veterinaire Hassan II (Agadir Campus) and the International Organization For Biological Control (OILB/SROP)

Topics: (1) Biological control of major pests and diseases. (2) Integration of biological control with other methods (3) Sampling and monitoring pest systems. (4) Biorational pesticides. (5) Biotechnology and "safe" control agents. (6) Pesticides residues. (7) Postharvest protection of horticultural products.

Registration: \$250 The official languages of the Symposium are English and French. Simultaneous translation will be available. Contributed papers and abstracts may be given in either languages. For more information, contact: Dr. A. Hanafi, IPP Symposium, Department of Plant Protection, Institut Agronomique et Veterinaire Hassan II, B.P. 18/S Agadir, MOROCCO. Fax: 212-8-24 22 43

14th annual meeting of the International Society of Chemical Ecology

13-16 July, 1997, University of British Columbia, Vancouver. Symposia: "Marine Chemical Ecology"; "Chemical Ecology of Scolytidae"; "Chemical Ecology of Blood-feeding Arthropods". Contributed papers and posters welcome. Contact: Murray Isman, Dept. of Plant Science, UBC via email: <isman@ubc.ca> or fax: (604) 822-8640. For information on the ISCE, visit their website: www.cas.usf.edu/ISCE/index.html. To register online, visit the following website: www.conferences.ubc.ca

49th International Symposium on Crop Protection. To be held on May 6, 1997 at the Faculty of Agricultural and Applied Biological Sciences, University of Gent, Gent, Belgium.

Topics: Insecticides, nematology, senio-chemicals, fungicides, phytopathology, herbicides, plant growth regulators, integrated control, residues and toxicology.

Contact: Dr. ir. L. Tirry, Faculty of Agricultural and Applied Biological Sciences, Coupure links 653, B-9000 Gent, Belgium. Tel: 32 (0)9 264.61.52; Fax: 32 (0)9 264 62 39 or 264 62 49.

NET, SHOVEL AND AXE

This section is being established on the suggestion of Paul Riegert and Bob DeBoo as a light-hearted reflection of the heritage of field entomologists. Contributions are solicited from anyone with a good story involving practicing entomologists.

My, How Those Critters Can Bite!

I was fresh out of UBC and finally on my first real job, teaching biology at Achimota secondary school in Ghana. I soon discovered that a real good field trip for my third form students was to take them to the perimeter of the school grounds, where there were many fine termite hills. We would then wreck one with picks and shovels, eventually levelling it and getting the royal chamber from below ground. The royal chamber was harder than the rest of the hill and had to be hacked open to get at the queen and king inside. Meanwhile the soldiers were furiously searching for the cause of the wanton destruction to their happy home. I normally let the students do the physical work and I stood back a little distance, quite comfortable in my shorts and thongs with the tropical sun beating down. On about the third such trip I was standing about ten feet away, serenely watching the action, when there was suddenly an excruciating pain from within my shorts. One of the soldiers had crawled up my leg and impaled his pincers into my scrotum. I started hopping around, attempting to stifle yells, while the students looked on wondering what was wrong with Mr. Barclay. Actually, I think it was only the girls that were wondering; I think the boys already knew. I finally found a tree to hide behind and dislodged the little wretch. After that I was decidedly more circumspect, and kept a safer distance and a closer watch around my feet while out on termite expeditions.

Hugh Barclay

MISCELLANEOUS

Request for Information on Northeastern Odonata Wanted

The state of Maine has begun a five-year survey of Odonata (dragonflies and damselflies) and as a preliminary we are gathering records and other information regarding the Odonata in that state, Vermont, New Hampshire, the Eastern Townships of Quebec, and Atlantic Canada. If you have any information, or would like to know more about the project, please contact Paul-Michael Brunelle at 2460 John Street, Halifax, Nova Scotia, Canada, B3K 4K7. Email as849@chebucto.ns.ca, Tel: 902-423-1845

Cordially,
Paul-Michael Brunelle

Beetles, Beetles, Beetles

A Czech entomologist is interested in exchanging and selling beetles. Available are 6000 identified species (Cerambycids, Buprestids, Carabids, Scarabaeids and others) from the palearctic region as well as many other unidentified species from the Old World tropics and China. A catalogue is available on request.

Libor Klima, Dr. Maleho 62
CZ-70100 Ostrava 1
The Czech Republic

Free online service for CAB International

CAB International announces a free online journal service: **PEST CABWeb**, which provides online access to pest management journals for existing and new subscribers to one or more of the CAB journals. Website: <http://pest.cabweb.org/> Subscribers must register to use this service; forms available from: Lorraine Rogers, CAB International, Wallingford, Oxon, OX10 8DE, UK.

LA SOCIÉTÉ D'ENTOMOLOGIE DU CANADA

393 Winston Ave., Ottawa, Ontario K2A 1Y8

Application for membership - (new members only)
Demande d'adhésion (nouveaux membres seulement)

Name and Address (please print):
Nom et Adresse (lettres moulées):

[Empty box for Name and Address]

telephone (bus.) / téléphone (au travail):
[Empty box]

Keywords describing interest (up to six):
Décrivez vos intérêts en utilisant jusqu'à six mots clés.

Fax:
[Empty box]

Electronic mail address / Adresse électronique:
[Empty box]

[Empty box for Keywords]

Membership is a personal affiliation; publications are the personal property of the individual member.
Cotisation est une affiliation personnelle; publications payées ici appartient à l'individu

MEMBERSHIP DUES / COTISATION

- Regular member / Cotisation regulier with/avec...Cdn \$80.00 + \$5.60 GST (Can)\$.....
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(ask your professor to endorse this form/demande l'apull de votre professeur)
Endorsement/Signature du professeur

Enclose cheque or money order (or use Mastercard or VISA) payable to :Entomological Society of Canada
Inclure un chèque ou mandat (ou utilisez Mastercard ou VISA) payable à: Société d'Entomologie du Canada

If you need an official receipt, please check:
Si vous désirez un recu officiel, indiquez, s'il vous plaît:

Please copy and distribute to interested non-members. Thankyou

**ENTOMOLOGICAL SOCIETY OF CANADA - 1997
LA SOCIÉTÉ D'ENTOMOLOGIE DU CANADA - 1997**

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