Pesticulars
The Professional Pest Management Association of B.C.

Why join the Professional Pest Management Association of B.C.?

Consider the member benefits

- Admission to the Annual General meeting and a copy of the proceedings. The AGM has gained a reputation for strong agendas and interesting speakers
- An established means for communication amongst your professional peers
- Collective voice for advocating the pest management approaches you believe in: see our mission statement
- Your copy of "Pesticulars" the popular PPMA newsletter, published twice a year, including the AGM proceedings
- A web site containing topical items on pest management in BC: www.ppmabc.ca
- A facility to shop your resume in case you are looking for employment
- A venue for students to talk about their research
- And ... the lowest membership fee for any professional organization ... *on the planet*

Executive Members:

Past President's Message:

Dear Friends and Colleagues,

An interesting year it has been. And what an interesting time it is for those of us in pest management:

- program changes in colleges and graduate training in BC,
- attitude changes in cities like Vancouver, where a by-law to limit the use of cosmetic pesticides will take effect in January 2006,
- an epidemic of avian influenza that is now declared "out of control" in the lower mainland with over 29 infected poultry facilities;
- a crisis in the nursery industry brought about by the importation of a strain of the protist, *Phytophthora ramorum*, (cause of sudden oak death, SOD); and
- social climate changes to a fear of terrorism under the scrutiny of Homeland Security, where "pests" take on a whole greater meaning and political threat.

Is it an exciting time to be studying pest management? You bet it is!

With the current political-economic climate in British Columbia, institutes of higher education have been economically starved. This has forced tuition rates to climb out of reach for some students. Although, according to local demographics we are at a time of logarithmic increase in the number of college seats needed. And remember: Student loans are expensive today. When I finished at Cornell, I had significant student loans nearly equal to my starting salary of about $CDN 29,000 at Agriculture and Agri-Food Canada. My loan payments were a scant $US 35 per month. My apartment rent was $208. Not so today. Many of my students are looking at loan repayments equal to a month's rent, even though their loans are far below a year's salary. Can we expect the students to carry the burden of this debt?

During the last few years, Simon Fraser University changed the Master Pest Management program to parallel a standard Master of Science Degree, with a major in one of the pest management disciplines. At the same time, Kwantlen University College began investigating the possibility of offering an applied Bachelor of Science in Pest Management that would take the place of the applied training lost through the changes at SFU. We eagerly await developments in these areas and hope to continue to train qualified pest management professionals here in BC. Will we be able to provide the necessary pest managers to deal with the current agricultural and horticultural crises?

Pesticulars, PPMABC, Spring 2004

Just last month, the City Council in Vancouver recommended that a bylaw be created to restrict the use of cosmetic pesticides. It was an interesting debate between the growers, the pesticide vendors, tree and lawn care companies and other interested parties. The Supreme Court of Canada made a landmark decision that a municipality s the right to legislate the health and safety of its residents. Are we prepared to train the public and allied industry in the basics of integrated pest management?

We have no shortage of pest-related crises in British Columbia: European chafer threatening the turfgrass industry; West Nile virus continuing its move westward from Idaho; Avian influenza wiping out the Fraser Valley poultry industry; and *Phytophthora ramorum* / SOD challenging the Nursery Industry and CFIA quarantines. Can our industry survive the economic challenges of these pest threats?

Last, I was dismayed (although not surprised) to hear from the flower growers who were asked to destroy or fumigate cut flowers at SeaTac airport because of the presence of thrips. The species cited was a beneficial thrips, reported to be in the USA already. I am afraid that we have only just seen the beginning of Homeland Security issues. Do our politics and politicians support our pest management?

In a recent lecture at Kwantlen University College Institute of Transborder Studies, Dr Peter Oberlander said "… national boundaries no longer exist. We are in a time of urbanization…." As we have seen in this decade, pests know no national boundaries. And so pest management becomes more challenging and more interesting.

Bring them on: Death, Disease and Destruction! But are we ready?

James A. Matteoni. April 2004

John Borden

After 37 years of teaching, advising and conducting research at SFU, John Borden retired last year, a loss that will be much felt by the Simon Fraser campus.

His years of work encompass pioneer work in the chemical ecology field, the biochemistry of tree resin to communication systems utilized by insects when they search for a host. In addition, his work with other researchers has resulted in pheromone discoveries for over 40 different insect species. In writing, John has numerous bibliographies, chapters in books, books, and over 350 refereed journal publications.

In terms of teaching, John has supervised over 100 graduate students, taking the time to guide them through their studies with wisdom, enthusiasm and a stockpile of red marking pens. He has also taken the time to promote SFU's Master of Pest Management Program, ensuring new generations of students continue in the field of entomological research. To recognize his tireless efforts as a teacher, the Entomological Society of Canada created an award in his name

In recognition of his tremendous work and overall lifetime contribution to studying insects, John was made a Fellow of the Royal Society of Canada and honoured by having an ambrosia beetle species (*Playpus bordeni*) named after him.

Although retired, John can still be seen at SFU, where he holds a position as professor emeritus, working on numerous research projects.

Phero-Tech Award

For her extensive work in the area of Integrated Pest Management, and her outstanding professionalism, the Executive of the PPMABC nominated Debbie for the 2004 Phero Tech Award of Excellence.

Debbie studied at Trent University, The University (Sheffield, England), and Universities of Manitoba and BC. Later, she was a National Science and Engineering Research Council Fellow at the University of Toronto.

In 1988 she established E.S. Cropconsult Ltd, to offer Integrated Pest Management (IPM) and other related services to agricultural and municipal clients in the Fraser Valley, B.C. The company employs nine permanent and 20-22 seasonal staff, monitoring approximately 6,000 acres of more than 15 different commodities. For many of these crops, E.S. Cropconsult has developed IPM programmes.

She has written handbooks on beneficial insects, developed IPM workshops for growers and worked with Agriculture Canada to develop expert system Integrated Pest Management software for potatoes and berry crops. Since 2002, she has been working with an agricultural research and extension lab in Cuba on biological control and IPM projects of mutual interest.

Appointment of New Student Representative Eloise Rowland

Eloise is in her third year of studies at Simon Fraser University. She was brought into contact with insects and the PPMABC through a work term in Gerhard Gries' lab; she conducted research on codling moth larvae. With the acquisition of another NSERC award, Eloise will be working this summer with sandpipers through Ron Ydenberg's lab. Eloise is still exploring the many facets of biology, and is leaning toward research in primates, but is still undecided. We're personally hoping that she'll continue her work in the field of pest management! Eloise is looking forward to being part of the PPMABC team and we know she will be an excellent student representative.

Call for Student Members

This year's AGM had a great turn-out of students from a variety of educational institutions. The PPMA is always interested in having new members, especially students. Membership benefits students and the association; students have the opportunity to meet potential employers and learn who's who in the field of pest management, while the PPMA has the chance to meet new members who can bring fresh ideas and young blood to the association, thereby ensuring its continuance. Please spread the word about the PPMA and students – they're a valued part of our future.

For student information, please contact Eloise Rowland: erowland@sfu.ca

AGM Presentations

Abstracts from 2004 AGM:

The 2004 Annual General Meeting of the Professional Pest Management Association of BC was held at the Halpern Center at Simon Fraser University on Tuesday, Feb 3, 2004. The theme of this year's AGM was "Death, Disease and Destruction: Introduced Pests in B.C.". We hosted a range of student discussions and invited speakers who presented various topics associated with the meeting's theme.

Once again, the presentations given by students and guest speakers at the AGM were packed with information. Our student presenters kept the audience up to date with what aspects of pest management are currently studied at the college and university level, while our professional speakers informed the audience as to new directions, discoveries, and concerns in the pest management field. We thank each person who took the time to present at the AGM; their talks made the meeting a success.

Below are abstracts and samples from the talks presented at the AGM.

Student Presentations

****** Student Award Winner ******

Zaid Jumean

Zaid has just defended his MPM and has already embarked on his Ph.D. He finds time to TA for the entomology course available at SFU, and works as a contributor for the departmental newsletter. An engaging speaker, he has been awarded best student paper at this year's PPMABC AGM and the Entomological Society meeting that took place in Kelowna.

Semiochemical-mediated location of *Cydia pomonella* host prepupae by the specialist parasitoid *Mastrus ridibundus*

Z. Jumean[1], T. Unruh[2], R. Gries[1], G. Gries[1]

[1]Department of Biological Sciences, Simon Fraser University, Burnaby, BC V5A 1S6
[2]Yakima Agricultural Research Services, Wapato, Washington 98951

Porapak Q-captured volatiles from cocoon-spinning codling moth larvae strongly attracted female parasitoids. Coupled gas chromatographic-electroantennographic detection analysis of Porapak Q extract revealed 10 candidate kairomones that elicited responses from *M. ridibundus* antennae. In Y-tube olfactometer bioassays with synthetic kairomones, 8 of these compounds were required to attract female parasitoids. In pitfall olfactometer bioassays, it was further shown that codling moth larvae seeking pupation sites utilize the same candidate semiochemicals as an aggregation pheromone. We show that *M. ridibundus* females "spy" on the intraspecific communication biology of codling moth larvae. The development of the codling moth aggregation pheromone may lead to a more robust management strategy of the pest in pome fruit orchards worldwide.

The Intraguild Interactions of an Insect Predator, *Dicyphus hesperus*, and an Entomopathogenic

Fungus, *Paecilomyces fumosoroseus*, for the Biological Control of *Trialeurodes vaporariorum*

C. R. Alma[1], M. S. Goettel[2], D. R. Gillepsie[3], B. D.Roitberg[1]
[1]Dept of Biological Sciences, Simon Fraser University, Burnaby B.C., Canada, V5A 1S6; [2]Lethbridge Research Centre, Lethbridge Alberta, Canada, T1J 4B1; [3]Pacific Agri-Food Research Centre, Agriculture and Agri-Food Canada, Agassiz B.C., Canada, V0M 1A0.

The insect predator, *Dicyphus hesperus* and the entomopathogenic fungus, *Paecilomyces fumosoroseus* strain Apopka 97 (PFR-97™) are currently being evaluated as biological control agents of *Trialeurodes vaporariorum*. The combined use of *D. hesperus* and *P. fumosoroseus* for *T. vaporariorum* control raises a concern regarding the potential of an intraguild interaction to occur between the two biological control agents. Results from a tomato greenhouse trial indicated that an antagonistic interaction did occur when *D. hesperus* and *P. fumosoroseus* were used in combination on greenhouse tomato plants to suppress *T. vaporariorum* populations. Potential reasons for the antagonistic interaction will be explored in future studies.

Ovipostion Deterrence in Houseflies, *Musca domestica*: Mediated by Micro-organisms?

Kevin Lam,
Department of Biological Sciences,
Simon Fraser University, 8888 University Dr.
Burnaby, B.C.

A recent study with houseflies, Musca domestica (L.) (Diptera: Muscidae), has shown that water extracts of freshly deposited eggs induce oviposition by gravid female M. domestica, whereas extracts of 24-hr-old eggs deter oviposition. Here, I investigated the mechanisms that cause oviposition deterrence. Replicated binary-choice laboratory experiments with Gravid female M. domestica revealed that oviposition deterrence is due to microorganisms deposited by ovipositing females. Aging of the oviposition site, semiochemicals associated with eggs, and metabolites from egg-associated microorganisms all did not deter oviposition by females. The microorganisms deposited by females during oviposition may signal later-arriving females of potential larval interference competition. The strength of the deterring signal may depend upon its relation with other factors affecting oviposition decisions by female M. domestica, and the abundance of microorganisms.

Development of pheromone based monitoring of the orange wheat blossom midge

Lucian Mircioiu, Master of Pest Management Candidate
Department of Biological Sciences
Simon Fraser University, 8888 University Dr.
Burnaby, B.C.

Experiments conducted in Saskatchewan 2002 investigated whether captures of male orange wheat blossom midge, *Sitodiplosis mosellana*, in pheromone traps are predictive of crop damage at harvest. In wheat-on-wheat fields, cumulative captures of male midges from onset of flight to 1-5 days after the heading stage of wheat plants were positive correlated with both mean numbers of larvae per wheat plant and percent of damaged kernels at harvest.

Geoff McLeod,
Department of Biological Sciences,
Simon Fraser University, 8888 University Dr.
Burnaby, B.C.

American elm trees (*Ulmus americana*) exist throughout North America in natural forests and urban and rural settings. Because elms grow rapidly and survive in a wide range of conditions from wet to well-drained soils, as well as in sun or shade, planting elms as a shelterbelt species was very popular throughout rural Canada. However, elm tree numbers have been dramatically declining since the introduction of Dutch Elm Disease (DED). Introduced from Europe in the early 20th century, this disease has killed millions of elms and is threatening existing elms in areas where DED is approaching. Management strategies to date have had some success in putting the disease in a holding pattern. In fact, most research has focused on the disease causing pathogen (*Ophiostoma ulmi*) and the European elm bark beetle (*Scolytus multistriatus*). ⌠Multilure, a pheromone bait containing the sesquiterpene □-cubabene, which is used to synergize multistriatin (racemec mix of 4 optical isomers) and 4-methyl-3-heptanol (racemic mix of 2 isomers) components of ⌠Multilure, is currently used as a trap bait to monitor elm bark beetle populations. However, ⌠Multilure is specific to *S. multistriatus,* not the native elm bark beetle *Hylurgopinus rufipes* which is the primary vector of *O. ulmi* in the Prairie Provinces. Thus, ⌠Multilure may not be optimal to monitor *H. rufipes* populations.

The current research underway is two-fold. First is to identify an attractive pheromone for *Hylurgopinus rufipes.* Previous attempts to isolate a pheromone blend have proven unsuccessful, but another attempt is now underway in our lab. The second objective stems from work done by Millar in 1986. In his study it was observed that beetles are significantly more attracted to DED infected trees than healthy trees. It is from this that we are in the process of attempting to isolate the components in diseased trees that

significantly attractive to *H. rufipes*. Currently we have identified a blend of host derived chemicals that have proven to be attractive in the laboratory and hope to be equally successful in the field.

Our attempts are to develop a lure consisting of one or a combination of identified components and to incorporate these into an effective pest management strategy.

Blueberry scorch virus-an Introduced Disease Threatening the BC Blueberry Industry

Lisa Wegener
Department of Biological Sciences,
Simon Fraser University, 8888 University Dr.
Burnaby, B.C.

Blueberry scorch virus (BlScV), genus *Carlavirus,* was first detected in British Columbia, Canada in 2000 and is a serious threat to highbush blueberry production in BC. The virus is transmitted by aphids, and has been spreading throughout commercial blueberry plantings in BC. Symptoms of BlScV develop at bloom and include necrosis of blossoms and young leaves, leaf chlorosis and shoot blight; line patterns on the leaves of some infected cultivars were also observed in October. Some varieties show retained blighted blossoms from the previous growing season. Symptoms of BlScV are easily confused with other diseases and stresses of highbush blueberry, including bacterial blight caused by *Pseudomonas syringae*, *Blueberry shock virus*, winter moth feeding damage, botrytis flower and leaf blight caused by *Botrytis cinerea*, mummy berry caused by *Monilinia* spp., or frost damage. From 2001 through 2003 a survey for BlScV was conducted in Lower Mainland. During the survey, growers voluntarily submitted samples for free DAS-ELISA (Double Antibody Sandwich Enzyme-Linked Immunosorbent Assay) testing. Presently there are 119 blueberry fields in the Lower Mainland and 1 blueberry field on Vancouver Island infected with BlScV. Several submissions of plant material purchased from propagators tested positive for BlScV indicating that movement of diseased planting stock is contributing to virus spread. To determine the rate of spread, BlScV infection was mapped for three consecutive years in four infected fields. Mapping data revealed an annual rate of spread ranging from 1.6 to 7%. Varietal reactions observed in BC indicate that the previously reported East Coast and Northwest strains are both present and there are likely additional strains of BlScV infecting highbush blueberry in BC. The majority of samples in which BlScV was detected during the survey were from symptomatic 'Bluecrop' and 'Duke', indicating that the East Coast strain may be predominant in BC. This is a big concern for the industry, since this strain causes severe symptoms on 'Duke' and 'Bluecrop', the two most commonly planted varieties in BC. Nucleotide sequencing of BlScV in BC is underway with the ultimate goal of developing a test capable of detecting all strains of BlScV and distinguishing between them. In 2003, BlScV was detected for the first time in cranberry (*Vaccinium macrocarpon*) in Abbotsford, BC. A survey for BlScV in cranberry in the Lower Mainland revealed 7/42 infected cranberry fields in 2003. A similar survey conducted in Washington and Oregon revealed the presence of BlScV in 3/18 and 2/12 fields, respectively. At present cranberry infected with BlScV appears to be aymptomatic. The recent detection of BlScV in cranberry in BC and its widespread occurrence in highbush blueberry suggest a potential for spread to alternate susceptible hosts. It is possible that additional *Vaccinium* species (wild, ornamental, or cultivated) could become infected with BlScV or may already be infected and providing inoculum for spread to highbush blueberry or to other hosts, particularly by migratory aphids. Current recommendations for growers with BlScV-infected fields are removal of infected plants, aphicide application and purchasing clean planting stock.

Guest Speaker Presentations

Invasive Plants in British Columbia Past, Present, Future?

Roy Cranston, P.Ag.
Provincial Weed Specialist
BCMAFF

Initial "invasive plant" priorities in British Columbia dealt with "noxious" weeds, which are plants legislated under provincial statute. The *Noxious Weed Act* of 1888 listed 5 specific weeds (Canada thistle, wild oats, sorrel, oxeye daisy and burdock) but also included other "foul" seeds. This Act, whose purpose was to protect agricultural land, applied only to land west of the Cascade Mtns. By 1911, the Act applied to the entire province. Spotted and Russian knapweed (*Centuarea* sp.) were added to the noxious weed list in 1948; diffuse knapweed (*C. diffusa*) and Dalmatian toadflax (*Linaria dalmatica*) were added in 1966 and by 2001 there were a total of 48 species listed as noxious weeds in BC.

Weed priorities through the 1940's and 1950's included St. John'-wort (*Hypericum perforatum*), which caused a photosensitive dermal reaction in grazing animals, poisonous tansy ragwort (*Senecio jacobaea*) at the Coast and the knapweed complex in the interior. The latter were increasing rapidly and forming large, monocultural infestations throughout the southern interior. St. John's-wort became the target of a successful biological control program.

Through the 1960's and 1970's weed management strategies for Crown resource protection was evolving. From a simple "search and destroy" approach, programs evolved into chemical containment efforts to treat the periphery of infestations and protect currently uninfested grasslands. More emphasis and resources were placed on biological control research and implementation and on maintenance of a healthy competitive forage base. This has resulted in the integrated protection programs in place today. New weed concerns became more evident in this period. Weeds such as hound's-tongue (*Cynoglossum officinale*), leafy spurge (*Euphorbia esula*) and Dalmatian toadflax were on the increase. Chemical control and biological control research started on these species. Sulphur cinquefoil (*Potentilla recta*) was also on the increase and was postulated to be replacing diffuse knapweed infestations likely stressed from bioagent attack.

The 1980's brought heightened attention to increasers and "new invaders" that were impacting natural habitats. These included: rush skeletonweed (*Chondrilla juncea*) in the North Okanagan and East Kootenay regions; the hawkweed (*Hieracium*) complex (particularly orange hawkweed) through the central and southern interior; perennial pepperweed (*Lepidium latifolium*), a serious threat to rangelands and riparian areas in the Thompson and East Kootenay regions; field scabious (*Knautia scabiosa*) in west central BC and wild chervil in the Fraser Valley.

More new invasives such as common bugloss (*Anchusa* sp.) and marsh plume thistle (*Cirsium palustre*) were raising concern as were a host of "aggressive ornamentals" such as purple loosestrife (*Lythrum salicaria*), Scotch broom (*Cytisus scoparius*), English ivy (*Hedera helix*), Japanese and giant knotweed (*Polygonum cuspidatum* and *Polygonum sachalinense*), spurge laurel (*Daphne laureola*), Himalayan balsam (*Impatiens balsamifera*), giant hogweed (*Heracleum mantegazzianum)* and baby's-breath (*Gypsophila paniculata*). Leafy feeding biological control agents to stress purple loosestrife were introduced to coastal BC in 1992 and have resulted in successful control at a number of localized sites.

Resource managers are constantly on the look-out for new potential invaders. Yellow starthistle (*Centaurea solstitialis*), which infests over 20 million acres in the northwestern U.S. is close to our southern border. This spiny member of the knapweed family is successful in outcompeting native vegetation and can cause a brain disorder in horses that graze on it. Kudzu (*Pueraria Montana var. lobata*), often referred to as the "vine that ate the south," is a fast creeping legume that can canopy over trees and totally cover structures. It is moving north and was recently found growing along the highway at Vancouver, Washington.

Invasive plants impact all industries and citizens in British Columbia. In order to better protect our resources from the devastation caused by these plants the Fraser Basin Council began facilitating an Invasive Plant Strategy for the province in 2002. The Strategy, currently being printed, is a collaborative outcome produced by a wide range of representatives from all levels of government, land and water-based user groups, industries and non-government organizations. The strategy's goal is to build cooperation and coordination to protect BC's environment and economy from the devastating impact of invasive plants.

More information on invasive plants in BC, including photos, "Alerts", biology/ecology information and strategies for developing weed management plans can be obtained at:
www.weedsbc.ca and
www.agf.gov.bc.ca/cropprot.weeds.htm

Evolution of "new aphid species" in commercial greenhouses

Dave Gillespie and Don Quiring
Pacific Agri-Food Research Centre
Agassiz, BC

An overview of problems associated with pests that occur within buildings and the challenges in resolving them.

Art Guité, Rid Pest.

Structural (or urban and industrial) pest management involves the suppression of pests that occur within buildings. The environments where the pests occur may be very sensitive (*e.g.* hospitals) and have historically resulted in the application of pesticides in the closest proximity to people. Four structural pests were chosen to demonstrate the challenges that are posed by structural pests and by the restrictions that have and are now being placed upon their control.

Pathways to Oblivion: the Global Movement of Invasive Forest Pests

Dr. Leland M. Humble
Canadian Forest Service – Pacific
Victoria, B.C.

West Vile Virus in Equines: Impacting Horse Owners

Susan Thompson

The role of BCMAFF Plant Diagnostic Laboratory in early detection of introduced diseases

Vippen Joshi, Plant Diagnostic Pathologist
BCMAFF, Abbotsford Agriculture Centre
www.agf.gov.bc.ca/cropprot/lab.htm

Articles

- **Pesticulars** is always looking for pest management topics to publish. If you or know of others who have information to relay, exciting research to share, or upcoming events that you would like posted in our Fall Issue, please contact Melanie Hart: greenmellybean@yahoo.ca

Website Updates

Come visit us at www.ppmabc.ca and let us know what you think! In our member's only section, you will find a member's directory, a listing of the current events in pest management, the AGM archive, past and current issues of Pesticulars and association business. You can contact Sophie Dessureault directly at (604) 257-8589.

Please e-mail us at ppma@ppmabc.ca if:

- You would like to arrange to login to the member's section
- You would like material posted on the website, or
- You have upcoming pest management-related events you would like advertised.