THE ESO Newsletter

December 2005 **Volume 10, Issue 2**

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ESO SPECIAL FEATURE

Aposematic Colouration:

The Controversy and Potential Uses

Aposematic colouration or warning colouration involves vivid colours and colour patterns, which are thought to serve as a visual warning signal to potential predators of the adverse qualities (e.g. distastefulness or toxicity) of a prey item (1). Most people associate the colours red, orange, and yellow, often alternating with black, with warning colouration, colours that are found in the most familiar aposematic insect the Monarch butterfly (*Danaus plexippus*). However, these are not the only colours that can serve as warning colours. It is believed that blues and purples can also serve this purpose (2), for example

The aposematic, black, yellow, and white striped, larvae of the beetle *Physonata alutacea* Boheman (Coleoptera: Chrysomelidae).

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INSIDE

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iridescent blue is likely one of the warning colours in the distasteful North American pipevine swallowtail butterfly (*Battus philenor*) (3). Another interesting example are adults of the neotropical, migratory, diurnal moth *Urania fulgens*, which have black with metallic green bands as the colouration that signals their unpalatability to potential predators (4,5).

It must be remembered that most insect herbivores are preyed on by more than one predator species, which could differ in foraging styles, as well as visual (visual acuity, colour vision, UV vision etc.), perceptual, and learning abilities (6). Many of the ideas of palatable and unpalatable prey characteristics have been shaped by research with vertebrate predators; however, it is perhaps necessary to re-examine some of these assumptions as invertebrate predators, such as ants and parasitoids produce substantial levels of mortality (7). In addition, the background of where an insect is typically found may also play a role in determining what could be considered aposematic colouration (8). Ultimately, exactly what is aposematic colouration may differ substantially between species, making further research in this area desirable.

Current research on aposematic colouration addresses aspects such as how aposematic colouration evolved (9,10), the relationship between aposematic colouration and gregariousness (11), as well as the correlation between aposematic colouration, the chemicals found in the insects, and the actual effectiveness to deter predation (12). The research that I undertook for my Master's, under the supervisor of Dr. Todd Capson (Smithsonian Tropical Research Institute, McGill University) and Dr. Tim Johns (McGill University), focused on determining whether aposematic insects can be used in an applied manner, specifically, if they can be used as guides to plants containing potentially medicinally-active compounds. It is becoming increasingly difficult to find new lead pharmacologically-active compounds from plants, because many of the chemical structural types are already known and because of the frequent occurrence of compounds with moderate levels of activity and structural types that are not suitable for pharmaceutical purposes, such as tannins (13). Therefore, there is a need to search intelligently for plants that are likely to yield novel structural types and provide greater potency against disease. One method of doing this is using ecologically-guided bioprospecting, where ecological knowledge and theories are used to guide the selection of plants (14). The idea that aposematic insects can act as guides to medicinal plants is based on the knowledge that defensive plant secondary metabolites may also have medicinal properties (15,16,17,18,19,20) and that host plant defensive compounds may be sequestered by aposematic insect herbivores and used in their own defensive strategies (21,11).

After collecting Coleopteran and Lepidopteran herbivore populations feeding on ten plants with known medicinal activity and ten plants without activity in the Panamanian International Cooperative Biodiversity Group's cancer, malaria, leishmaniasis, and Chagas' disease, bioassays, it was found that plants with medicinal activity were significantly more likely to have associations with aposematic insect species, than those plants that had not shown activity in the bioassays. In contrast, there was no significant difference seen in the populations of non-aposematic insects feeding on active and non-active plants. These results support the hypothesis that aposematic insects are more likely to have associations with medicinally-active plants than non-active plants.

How did I decide whether or not the insects found feeding on the active and non-active plants were aposematic or non-aposematic? I used the generally accepted definition of aposematic colouration: reds, oranges, or yellows, often alternating with black (including dark grey, dark brown), as well as sometimes blues and purples (2). With this definition I asked 15 individuals, including both scientists and non-scientists, to examine photographs of the insects and determine if they considered the insect to have aposematic colouration or not. The most frequent response determined the category in which the insect was placed. This method helps to avoid any of the bias that could occur if only the researcher is deciding whether or not the insect has aposematic colouration. However, as eluded to with the example of the black and metallic green *Urania fulgens*, even this definition could overlook insects that are truly aposematic. In addition, this method could also misclassify insects as aposematic, because to be considered truly aposematic an insect must be unpalatable, as well as have easily recognizable colouration (8). Moreover, some insects could be mimics. Much research still needs to be done on insects and aposematic colouration. However, even so, it appears that aposematic insects as determined by the above method can still be used in some interesting ways, such as guiding us to medicinally-active plants. The next step will be to determine the success rate of finding new medicinally-active plants using aposematic insects as guides.

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The cryptic, 'snake-imitating', fifth instar of *Oxytenis modestia* Cramer (Lepidoptera: Saturniidae).

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ESO SPECIAL FEATURE (continued)

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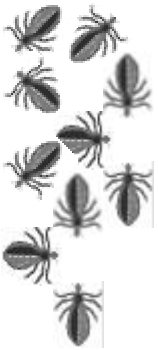
Photos in this article appear courtesy of Julie Helson. Special thanks to ESO Student Member Julie Helson for sharing her photographs and writing this update on aposematic colouration in insects for the ESO Newsletter!

As a member of the ESO, we ask you to do your part to keep our membership directory up to date. If your contact information changes (particularly your email address) in the future, please forward it to the ESO Secretary, Dave Hunt. In addition to using email to send information on the ESO Annual meeting, the ESO is now sending the Newsletter this way.

Unless you request a paper copy of the ESO Newsletter, you will only receive an email and link to the newsletter.

Thanks for keeping us up to date!



Missing Members

If you know the whereabouts of these members, please ask them to email ESO Secretary David Hunt to update their address.

Janisse Bailey
Lisa Ciolfi
Barbara Frei
Steve Offman
Thomas Spencer
Stuart Campbell
Michael Cournoyer
Matt Holder
Luc Pelletier

NOMINATIONS

Call for Nominations

It's not too early to **start thinking of candidates for the 2006-2007 ESO Election.**

The Nominations Committee is calling on the ESO Membership to nominate candidates interested in running for the elected positions on our Board of Officers:

President-Elect
Directors &
Student Representative

We require a minimum of 2 candidates for the position of President-Elect, at least 3 candidates to fill the 2 Director positions, and at least 2 candidates for the position of Student Representative. Our Student Rep position is a one-year term, while the Directors each serve a three-year term. You'll notice that our current list of ESO Officers (see front page of newsletter) includes a total of 6 Directors. Two directors are replaced on an annual basis. Like the Director position, the President-Elect is also engaged in Society business for a three-year period as the individual serves one year in both subsequent presidential positions as the President, and then Past-President.

Any member of our society can nominate a candidate. However, candidates must also agree to let their names stand for election. It's a compliment to be nominated, and the duties are by no means onerous, yet they are critical to the smooth functioning of the Entomological Society of Ontario.

Early in the spring of 2006, the Nominations Committee will begin gathering the names of candidates and their biographies to be printed in the Spring ESO Newsletter. Election ballots will be mailed to members in the Spring. Ballots are then returned to the secretary and counted. Successful candidates will be notified and begin serving on the ESO Governing Board at the 2006 Annual General Meeting.

Please forward your nominations and informal suggestions to the ESO Secretary, **Dave Hunt** or Past-President, **Fiona Hunter**.

21-23 October 2005
Bahen Centre, University of Toronto
Toronto, Ontario

Ontario entomologists were invited to spend the 21-23 October weekend in Toronto to attend the 142nd Annual Meeting of the ESO. Friday evening's wine and cheese mixer at the University of Toronto's Faculty Club Lounge included a silent auction. A wide range of items were available for entomologists to bid on in the silent auction, including insect literature, posters, hand-tied fishing flies, text books, stained glass and honey. Donations from the auction were used as a fund-raiser for the 2005 annual meeting. Mid-evening, entomologists headed into the Faculty Club Alleyway for a bit of fun and insect entertainment during the cockroach races. Ten Madagascar giant hissing cockroaches (*Grompadorhina portentosa*) were released from the epicentre of the racetrack. Barry Lyons captured this shot (right) of the race, shortly after it commenced. The amusement generated at this event still had the Faculty Club staff talking about our roach races well into Saturday evening's banquet.

"Racing" Roaches.
Photo courtesy of Barry Lyons.

Saturday morning's Plenary Session of ***Insects in Urban Environments*** was presented by the ESO and the Toronto Entomologists' Association (TEA). Entomologists were definitely more fascinated than grossed-out by the non-insect matter in the slides that **Dr. Sherah VanLaerhoven,** University of Windsor, presented in ***Bugs and Bodies: Status of forensic entomology in Canada.*** Our eyes were opened to the work of a forensic entomologist and the legal use of insects in criminal and civil cases. The bottom-line of the forensic division in urban entomology is that insects are evidence. Sharing the early-morning stage, **Dr. Timothy Miles** from the University of Toronto, communicated his success in treating the "social skin" of the termite colony to achieve block-wide eradication of termites in a number of larger southern Ontario urban centres in ***Termite management in urban areas of southern Ontario: review and prospects.***

Following our coffee-break, **Dr. Jean Turgeon**, of the Canadian Forest Service walked us through the stages of eradication of ***The Asian longhorned beetle in Toronto.*** **Dr. Laurence Packer**, at York University closed the Plenary session with his presentation on ***Bees in the urban landscape.*** Packed with bees, biodiversity and biology, Dr. Packer's presentation not only compared the bee fauna in urban and non-urban environments, it considered the potential habitat for bees in urban gardens and the importance of bees for the health of the environment. By the close of the plenary session, there was a clear message that entomology is alive in the urban setting!

Saturday afternoon started back with the ESO President's Prize Competition for best student oral presentation. Our concurrent oral sessions were teeming with high-quality student presentations. Oral presentations were divided into sessions on BioControl & Pollination Biology, Community & Population Ecology, Systematics & Diversity and a special memorial session honouring Dr. Chris Sanders. Mid-afternoon, ESO members took a break from the student talks to turn their attention to student posters for the ESO President's Prize Competition for best student poster. The remainder of Saturday's afternoon completed the program of student talks.

Henri Goulet. Photo courtesy of Barry Lyons.

After a late afternoon break, we reconvened at the Faculty Club Dinning Room for cocktails and the ESO banquet. After dinner, ESO President Fiona Hunter presented the Society's Student Award winners with their prizes. We congratulated all of our student presenters for their excellent work. The 2005 student award-winners and runners-ups are highlighted on the following pages of the newsletter. Enjoy a second look at this year's award-winning presentations.

As the lights were dimmed for the banquet presentation, it would have been fitting for the live crickets enclosed in our table centerpieces to begin their evening serenade. Instead, the orthopteran audience was amenable to our evening program as we enjoyed the stunning photography of **Dr. Henri Goulet** (Agriculture and Agri-Food Canada). Dr. Goulet took us on an insect safari, deep in the heart of his backyard near Ottawa, Ontario. There was an insect for everyone, a surprising level of diversity in what we saw and loads of interesting details that Dr. Goulet shared from his entomological expertise.

Sunday morning's excellent line-up of regular member speakers concluded the formal schedule of this year's annual meeting in Toronto. Following lunch, there was an afternoon tour that enjoyed a behind-the-scenes look at the Toronto Zoo– Insect Rearing Facility, with Tom Mason.

TRAVEL AWARDS

Jennifer Rosati, University of Windsor

Elizabeth Reichert, McGill University

ESO President Fiona Hunter presented a travel award to Jennifer Rosati (left) and Elizabeth Reichert (right) at the ESO banquet. In the past, there has been a minimum of one undergraduate and one graduate travel award given by the ESO for the annual meeting. Since there were no undergraduate applicants this year; two worthy graduate students were chosen as grant recipients.

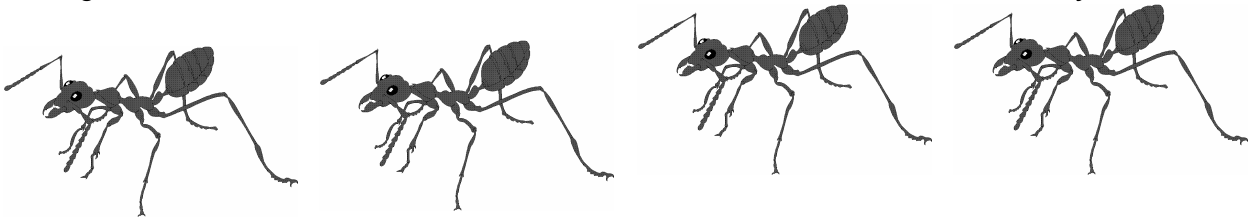
PRESIDENT'S PRIZE FOR POSTER

Poster Winner: Iris Vaisman, University of Toronto

Defensive strategies of the yellowheaded spruce sawfly (*Pikonema alaskensis*) in response to a generalist predator

Iris Vaisman, Jeff Boone, Sandy Smith, University of Toronto

Ants are widespread insect predators in Northern forests, preying on caterpillars, flies, and sawflies. Yellowheaded Spruce Sawfly (*Pikonema alaskensis)* larvae feed on Black Spruce (*Picea mariana*) trees, which are also a common location for ant foraging. This leads to direct interactions between the two insects. Trees manipulated to exclude terrestrial predators had higher sawfly larval survival, suggesting that ant predation may cause mortality. Individual ant-sawfly interactions were observed by placing a single ant with either one or two sawfly larvae in an enclosure. The ant and sawfly tended to avoid one another, with the few interactions resulting in 100% survival rate of larvae and 79% rate survival of the ants. Ant mortality was attributed to two defensive strategies employed by the sawflies: tail swiping and release of oral exudate. Individual sawflies were able to effectively defend themselves against single ant predation. The lower survivorship on the non-manipulated trees may be due to other ground predators or more complex ant interaction. Further investigation can determine the direct and/or indirect effects ants have on sawfly larvae.



PRESIDENT'S PRIZE FOR ORAL

Sessions I & III Winner: Duncan Selby, McGill University

Diversity of saproxylic Cecidomyiidae (Diptera) in a Quebec hardwood forest

Duncan Selby, Terry A. Wheeler, McGill University

The diversity of Cecidomyiidae (Diptera) associated with decaying logs was studied in an old-growth forest on Mont Saint-Hilaire, Quebec from June until September 2004. Over 24 000 specimens representing 323 species and morphospecies were collected in emergence traps set over American beech and sugar maple logs in two different stages of decay. The paedogenic species *Miastor metraloas* Meinert was by far the most numerous species with 17 002 individuals and was excluded from further analyses. Analysis of known and inferred feeding habits showed that most species were probably fungivores, detritivores, or predators, with many of the predatory species feeding on other Cecidomyiidae. Significantly more specimens were collected in logs in the more advanced decay stage, and indicator species analysis showed that the most abundant species were associated with this decay stage. Overall species richness was not significantly different between decay stages or tree species; however, non-metric multidimensional scaling indicated that the species assemblages associated with decay stage and tree species were significantly different despite the similar species richness. The fact that overall measures of diversity (species richness, abundance) did not reflect differences in species assemblages illustrates the importance of accurate species-level identification in ecological studies of saproxylic arthropods.

Sessions I & III Runner-ups: Marc Johnson, University of Toronto
& **Jeff Boone, University of Toronto**, tie

The importance of density-dependence, plant genotype, and ants in affecting aphid population dynamics

Marc Johnson, University of Toronto

&

Influence of intra-plant variation in rates of parasitism on the foraging behavior and performance of a specialist herbivore

Jeff Boone[1], Sandy Smith[1], Dan Quiring[2],
[1]University of Toronto, [2]University of New Brunswick

PRESIDENT'S PRIZE FOR ORAL

Sessions II & IV Winner: Jennifer Rosati, University of Windsor

Effects of season and habitat on the carrion insect community: preliminary spring and summer 2005 Results

Jennifer Rosati, Sherah VanLaerhoven, University of Windsor

Presented here are some preliminary results from the first year of a 2-year decomposition study. The effect of habitat (sun and shade) and season (spring, summer and fall) on the successional patterns of carrion insects were investigated using the domestic pig. Each season, 2 freshly killed pigs (approximately 23kg) were placed in each habitat type in 6 test sites located throughout Windsor/Essex County, Ontario (n=12 pigs/season). Insects were sampled using a combination of pitfall and malaise traps as well as direct sampling. Internal carcass temperatures and ambient temperatures were recorded for each pig using Smartbutton data loggers and biomass loss was determined through weekly weighing. Differences is temperature were noted between the sun and shade habitat for the spring and summer seasons. Rates of decomposition also varied between seasons and between habitats. During the spring trial, the amount of time taken to reach the advanced stage of decomposition took a mean of 40.7±1.1 days in the sun habitat, which was significantly shorter than the 49.5±1.8 days to reach the same stage in the shade habitat. This was significantly longer than decomposition in either habitat during the summer. In the summer, carrion decomposed at the same rate between sun and shade habitats, taking a mean of 4.2±0.2 days in the sun and a mean of 6.3±0.4 days in the shade to decompose to the advanced stage. Preliminary observations have shown notable differences in the insect species present between the spring and summer seasons and also between the sun and shade habitats. These differences in insect species composition should influence the successional patterns of the carrion insect community. The research is currently on going with the second year beginning in April 2006.

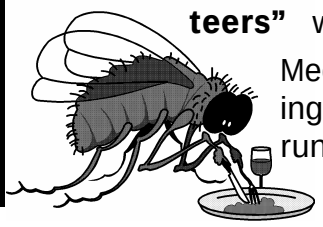
Sessions II & IV Runner-up: Amy Sharp, Brock University

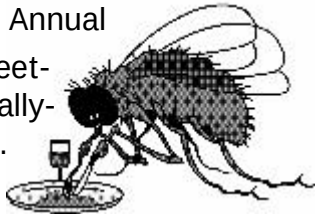
Mermithid-infected black flies (Diptera: Simuliidae): an examination of sexual determination and developmental stage

Amy Sharp, Fiona F. Hunter, Brock University

KUDOS

Thank-you to **Laura Timms** and the "almost entirely-**student crew of volunteers"** who organized and hosted this year's ESO Annual Meeting! From beginning to end, the Toronto meeting was a very well-organized and professionally-run meeting and certainly one to remember well.





IN MEMORY: Dr. Christopher John Read Sanders 1935 – 2005

Chris Sanders was born on 7 October 1935 in Kent, England, where he later graduated from St. Edmonds School, Canterbury, in 1954. He served in the British Army in Germany from 1954-1956 as a 2nd Lieutenant in the Royal Engineers. Chris received his B.A. (Honours in forestry) from Oxford University in 1960. Chris immigrated to Canada after graduation where he worked as a forester for the New Brunswick Department of Lands and Mines. In 1962, he obtained a M.Sc. from the Department of Forestry, University of New Brunswick, where his thesis was titled *Biology of the carpenter ants of the Fredericton area, N.B.* In 1962, he worked for six months as a Research Scientist with the Canadian Department of Forestry in Fredericton New Brunswick. He then entered a Ph.D. program at the School of Natural Resources, University of Michigan from which he graduated in 1965. His thesis, under the supervision of Dr. Fred B. Knight, was titled *Natural regulation of the aphid* Pterocomma populifoliae. He was hired in 1965 as a Research Scientist with the Canadian Forestry Service in Sault Ste. Marie. With the exception of a brief foray into academia in 1985, he continued in that position until his retirement in 1997. From retirement until his passing, Chris enjoyed the status of Emeritus Scientist whilst continuing to further his research goals.

Chris Sanders. 1975.
Photo courtesy of Barry Lyons

Chris' Honours dissertation while at Oxford, on mycorrhizal associations, was published in the journal *Plant and Science* and his M.Sc. research on carpenter ants was also published in a peer-reviewed journal, *The Canadian Entomologist*. The results of Chris' Ph.D. research were published in the prestigious journal *Ecology*. Chris continued this publication trend throughout his career with 59 additional papers in peer-reviewed journals, 51 in which he was the senior author. He also authored a total of more than 30 book chapters, symposium proceedings or technical reports.

The major focus of Chris' research was the development of pheromone-trap monitoring systems for forest insects with emphasis on spruce and jack pine budworms. Chris was also actively involved in research on spruce budworm population dynamics, adult dispersal, mating behaviour, and development of sex pheromones for regulation of populations by mating disruption. Other areas of his research expertise included adult behaviour of white pine weevil, adult behaviour of gypsy moth in relation to mating disruption, behaviour and biology of carpenter ant, and bird populations and predation on Lepidoptera in the boreal forest.

Chris was actively involved in training the next generation of entomologists. He served as an adjunct professor at the University of Guelph, University of Toronto, and Lakehead University where he lectured and co-supervised three M.Sc. and two Ph.D. students. For a short period in 1985, he was employed as a Professor of Forest Entomology at the University of New Brunswick. He was also a sessional lecturer at Algoma University College in Sault Ste. Marie during the 1990's where he taught applied entomology.

Chris was a world-renowned scientist. He was invited to make presentations at symposia in Canada, United States, The Netherlands, France, England, Germany, Switzerland, Australia and Greece, often as a keynote speaker. He participated as a member of a Canadian Forest Service mission to China and a Sault Ste. Marie forestry delegation to Ecuador and Chile. He spent a year at Imperial College, London, U.K. on career development leave working with Professor J. S. Kennedy. He was also invited by CSIRO to undertake a career development leave in their Division of Entomology in Canberra, Australia in 1990-1991 to work on mating-disruption strategies for the oriental fruit moth.

Chris was an active member of the Entomological Society of Ontario (ESO), Entomological Society of Canada, Entomological Society of America, and Canadian Institute of Forestry. Chris served as a Director of the ESO from 1995-1997 and in 2002, Chris was elected a Fellow of that Society.

Chris was a consummate naturalist and outdoorsman. He was an avid and competent birder, and an active participant in breeding bird surveys and counts, often acting in local and regional coordinator roles. After his retirement, sunny days meant that Chris was either hiking with a pair of binoculars or on the golf course. If the weather turned ugly, he would be found sitting at his desk working on one of his many projects. Chris was a regular on the cross-country ski trails in the Sault Ste. Marie area where he was often seen in the company of his dogs. On 17 May of this year Dr. Chris Sanders passed away suddenly while engaged in two of his favourite avocations, birding and sailing. Chris is survived by his wife Susan, son David, daughter Ann Boyonoski and grandchildren Garrett, Hannah and Meagen.

Chris was a friend, colleague and mentor to many. His keen sense of humour, valued opinion and sparkle in his eye will be greatly missed.

Barry Lyons
Canadian Forest Service
Sault Ste. Marie

Special thanks to ESO Member Barry Lyons for writing this Memorial Article for our ESO Members.

ELECTION RESULTS

This year's ESO election ballot listed two candidates for president-elect, three candidates for our two director positions, and two candidates for student representative. A total of 63 ballots were returned to the ESO Secretary and tallied in the ESO 2005 Election.

We are pleased to extend a warm welcome (or welcome-back as the case may be) to the following elected candidates:

President-Elect:
Blair Helson, Natural Resources Canada, Canadian Forestry Service, Sault Ste. Marie, ON

2006-2008 Directors:
Laura Timms, Faculty of Forestry, University of Toronto, Toronto, ON

Sherah VanLaerhoven, Forensic Sciences Program, University of Windsor, Windsor, ON

Student Representative:
Christine Bahlai, Dept. of Environmental Biology, University of Guelph, Guelph, ON

Laura Timms is returning to serve a three-year term as director, following two consecutive terms as our Student Representative. Blair Helson is certainly a familiar face to the Board of Governors from his years as the Society's Treasurer. Blair served as Treasurer from 1995 to 2003, and now returns as this year's president-elect. We are equally excited to have Sherah VanLaerhoven and Christine Bahlai join the Board.

We wish to thank all candidates for allowing themselves to be nominated and letting their name stand for election. We also thank all the members who cast their vote and returned their ballot. Thanks for doing your part for the ESO election.

Does Your Library Subscribe to JESO?

In my travels throughout Ontario and Canada, I make it a point to visit government and university libraries to look for a copy of JESO. Very strange I know! However, I am often surprised to discover that JESO is not an offering.

I would encourage all ESO members to visit their libraries to see if JESO is offered, and if it is not then please request the subscription librarian to subscribe to JESO by communicating with

Dr. Kevin Barber, ESO Treasurer
1219 Queen St. E., Sault Ste. Marie, ON P6A 2E5
or
kbarber@nrcan.gc.ca

THANKS

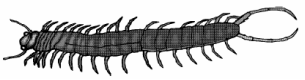
Our departing Board Members deserve a word or two of thanks.

The ESO Annual General Meeting marks the transition of Board Members in the Society and with it the cycling of presidents. As the newly-elected board members take their positions, we also wish to thank our departing members for their dedication and service to the Society over the past three years. On behalf of the Society we wish to thank our outgoing Past-President **Jim Corrigan** and our 2003-2005 Directors **Miriam Richards** and **Tracey Baute.** Thanks to **Laura Timms** for being our 2004-2005 Student Rep too. Laura will be extending her two years of service on the Board to five by returning as one of our newly elected 2005-2008 Directors.

In addition to their Board duties, each of these volunteers took major roles in organizing various Annual Meetings for the Society.

Miriam Richards will also return to the Board as the new Scientific Editor of JESO. As Yves Prévost leaves his position as editor, we wish to thank Yves for his years of service to the Society.

Thanks to you all!



Welcome!
to our new members in 2005

Membership in our Society continues to grow and our best source for new members is through word of mouth. Mention the ESO to a friend, amateur, co-worker or student of entomology. Application forms are available on the ESO website at:

http://www.entsocont.com

Saghir Alam
Michael Bruyns
Mike Burrell
Sheila Colla
Rachel Crowhurst
Jay Fitzsimmons
Marjolaine Giroux
Julie Helson
Zahirul Islam
John Klymko
Ranajit Kundu
Christopher Lee
Jessamyn Manson
Henry Murillo
Hugo Ortiz-Saavedra
Hiteshkumar Patel
Kurt Randall
Elisabeth Reichert
Julio Rivera
Chris Robinson
Carol Sellers
Michael Short
Jason Sproule
Agnieszka Sztaba
Megan Taylor
Aynsley Thielman
Sherah VanLaerhoven
Catherine Walsh
Natalie Webster
Faruque Zaman

ESO COLLECTOR'S CORNER: What is this pink bug?

For many people, Labour Day weekend marks the end of summer, and the return of school-age youth to school. In Harrow we have the Harrow Agricultural Fair this same weekend as our local harbinger of fall. This past Labour Day weekend, as I was volunteering to set up for the Harrow Fair, I was reminded that an entomologist is never truly "off-duty."

While working in the Homecrafts Building at the Fair, my cell phone rang. My husband announced his friend had just stopped by at our home with a pink bug for me to look at. "Hmm," I murmured as I considered what it might be. A pink insect had me puzzled. Though I have often said that insects can be any colour in the rainbow, when I tried to think of a pink insect, only one came to mind. "Was it a katydid?," I asked as I pictured the last pink bug I'd seen. The image I pictured was a photo of a pink katydid I'd seen in the lab of a now-retired entomology technician at my work (Agriculture & Agri-Food Canada). The katydid in that thirty-year-old photo was collected locally. My attention turned back to my phone conversation with my husband, as he told me his friend was on her way to the fair with her children and the bug. Without a field guide handy, I questioned what I might be able to tell them about their find. Not being sure what was incoming, I let the ladies I was working with know that Dionne and her children would be arriving shortly with a pink bug.

Clay Shepley, Nick Sauve, Dionne Shepley (holding the pink katydid), and Brooke Shepley.

When Dionne Shepley arrived with her 4 children and 2 nephews, the bug was safely contained in a mason jar with holes poked in the lid. Their first question to me was "What is it?" It was definitely a katydid (see photo below)! With its' up-curved, sword-like ovipositor, it bore the true sign of a female member of the orthopteran suborder Ensifera (Bland, 2003)! Most everyone in the building wanted a closer look at the insect, so we passed the jar around. Few people have ever seen a live green katydid. This was definitely a rare find. We all agreed that she, was truly spectacular with her bright, intense pink body colour. I later read that this unusual red pigment in the katydid was an insect erythrochroism, being genetic in origin, and not influenced by diet, sex or environment. Katydid colour is apparent from the time they emerge from the egg, constant throughout an individual's life and certainly something they pass on to their offspring. Dionne was interested in knowing if pink ones have pink babies and it appears they do. Pink and green *A. oblongifolia* have been reported to mate in captivity and produce viable offspring, as W.S. Blatchley (1920) reports that Dr. J.L. Hancock (1916) successfully crossed a pink female with a green male of this species. According to Hancock, the eggs of this species required 2-3 years to hatch once they were laid in the ground. Nine of the 13 offspring of this particular couple were born pink. Pink and green are not the only colours this species comes in, some sport a yellow colour as well. Jim Rowan at The Field Museum in Chicago has posted his photos of four different colour morphs of *A. oblongifolia* (http://www.fieldmuseum.org/research_collections/zoology/zoo_sites/bugcamp_web/biokatydid.htm).

While several katydid species are occasionally reported to have pink individuals, *Amblycorypha* species are among those most commonly encountered in eastern North America. Behaviourally, pink katydids are believed to act similarly to green ones for *Amblycorypha* species yet it doesn't appear to be true for all species of katydids with pink colour morphs. In a recent (2001) outbreak of "pink" truncated true katydids (*Paracyrtophyllus robustus* Caudell) in Lee County Texas, only pink individuals were responsible for defoliating several patches of post oak trees in a forested area of the county. The outbreak was rare (first time in at least 30 years), relatively short-lived (less than 3 months) yet the numbers of pink individuals were high (in the thousands) (http://buzz.ifas.ufl.edu/152a.htm).

I always enjoy seeing a new insect, but my favourite part of these types of visits is when I ask the collector to tell their story of how and where they collected their insect. Collecting the katydid was a shared effort by three of the boys (Jeff Shepley(14), Nick Sauve(11) and Gerard Shepley(16)). Their family had spent the day clearing a 1-acre area needed to create a wetland on their property near Harrow. A small existing pond was currently being expanded in an area where they had lost several emerald ash borer-infested green ash trees. The boys were riding 4-wheelers and hauling branches, when suddenly Jeff yelled, "Stop!" Gerard, who was driving, thought it was an emergency so he stopped, and shouted back, "What?" Jeff told him, "You're gonna run over the bug!" While the other 2 boys focused in the direction that Jeff was looking, for a moment, the pink katydid stayed hopping near the trees. Next, it jumped in front of the 4-wheeler, and that was enough to get all three boys down on the ground, trying to capture the katydid using an empty Gatorade bottle. Surprising

. . . continued on page 11 . . .

Amblycorypha oblongifolia (De Geer), the oblong-winged katydid.

. . . continued from page 10. . .

that an insect capable of jumping up to a meter at a time actually co-operated by jumping right inside their bottle. Nick said his first thoughts were that it must be something rare, it jumped really far, and it had a cool colour. The boys agreed that it was the colour that saved her life and caught their attention.

She was certainly a fantastic specimen to start an insect collection, but the boys had no interest in this. Instead, they wanted to know what she ate and wondered how to keep her alive for a while at their house. Dionne had mentioned oak trees nearby, so I encouraged the boys to try fresh oak leaves, which she did eat. We later discovered she might prefer pollen from flowers nearby where she was caught. Goldenrod was certainly abundant and would have been a good choice. We received an update a week later that the katydid appeared to be feeding happily on the leaves the boys were placing in her jar. This was the first insect any of them have tried to rear.

I do not know if the pink colour has unique consequences for these individuals in the katydid population, perhaps making them more vulnerable to predation, or if it enhances their chances of mating (Do green males find pink females sexy?). Who knows what katydids see at night. Colour would seem to be secondary to sound location for this species, given that the females actually reply to the male's call by sending a soft ticking response back to the male. Given that the timing of katydid adults (August-October) roughly coincides with leaf fall, the pink colour may provide a unique cryptic advantage in fallen leaves during the day. While the true advantage of this type of polymorphism to a nocturnal insect has me speculating, I certainly find it encouraging that the pink genes are continuing to persist in the katydid population in Essex County. Given that this species prefers to hang out in damp areas along fence rows, or along margins of woods and thickets where goldenrod and other tall composites are abundant (Bland, 2003), I see a bright future for the katydid population on the Shepley's property. The Shepley's wetland is situated between a fence row with goldenrods and a woodland habitat.

When I asked Dionne if she'd ever heard the katydids calling at night, she excitedly replied, "Oh, yes. It's loud out here at night. They seem to talk to each other."

Special thanks to Dionne and Rod Shepley, their children and nephews for allowing me to share this story. Photos in this article appear courtesy of Dana Gagnier.

Happy Collecting,
Dana Gagnier

References

R.G. Bland. 2003. The Orthoptera of Michigan—Biology, keys, and descriptions of grasshoppers, katydids and crickets. Central Michigan University. Michigan State University Extension Bulletin E-2815. 220 p.

W.S. Blatchley. 1920. Orthoptera of Notheastern America. The Nature Publishing Company, Indianapolis. 784 p.

J.L. Hancock. 1916. Pink katydids and the inheritance of pink colouration. Ent. News XXVII 70-82.

JESO NEWS

Volume 135 is at the technical editor and it contents are as follows:

SUBMITTED MANUSCRIPTS

HUBER, J. -- Review of the described Nearctic species of the crassicornis group of Anaphes s.s. (Hymenoptera: Mymaridae) (Received 18 October 2004; Accepted 6 June 2005).

ROMANKOVA, T. -- Ontario bees of tribe Epeolini: Epeolus Latreille and Triepeolus Holmberg (Hymenoptera, Apoidea, Apidae). (Received 14 November 2004; Accepted 15 May, 2005).

MARSHALL, S. A., S.M. PAIERO and O. LONSDALE. -- New records of Orthoptera from Canada and Ontario. (Received 17 July, 2004; Accepted 20 January 2005).

PREE, D. -- Management of Resistance to Insecticides in the Obliquebanded Leafroller, Choristoneura rosaceana (Harris), (Lepidoptera:Tortricidae) in Ontario Orchards (Received 14 February 2004; Accepted 15 March 2004).

PREE, D. -- Control of the Multicoloured Asian Lady Beetle, Harmonia axyridis (Pallas) Coleoptera:Coccinellidae), on Grapes in Ontario (Received 28 January, 2004; Accepted 13 September 2004).

BOOK REVIEWS

JONES, C.D. -- Damselflies of the Northeast. 2004. by Ed Lam

OTIS, G.W. -- Insect and Bird Interactions. 2004. edited by Helmut van Emden and Miriam Rothschild

Volume 136 of JESO is well under way and we are still accepting manuscripts for consideration. This JESO volume will be co-edited by Miriam Richards and Yves Prévost.

WELCOME & THANKS

Welcome Dr. Miriam Richards as the new Scientific Editor of JESO.

Dr. Jeff Skevington of Agriculture and Agri-Food Canada in Ottawa is a new associate editor as of Septemer 2005. Welcome Dr. Skevington.

Dr. David Pree will retire as an associate editor as of December 1, 2005. Dr. Pree has served as associate editor for 14 years when Dr. Peter Kevan and Dr. Dolf Harmsen were scientific editors for JESO. Over the past 5 years, I appreciated his professionalism and quick action to get the review done. I know the membership of the ESO appreciates your long service. We wish you all the best in your new activities.

Yves Prévost

JOBS

CFIA is accepting applications for 2 Entomologist Positions in Ottawa.
Closing Date: January 30, 2006.
More details at: http://www.jobs-emplois.gc.ca/jobs/p040281e.htm

University of Windsor is accepting applications for 3 Tenure track positions in Biology.
Closing Date: January 31, 2006.
More details at: http://www.uwindsor.ca/units/vpacademic/faculty_jobs/facjobs_v2.nsf/38b749c6082416d285256ed7006e145a/3fe645f639421b53852570b50071680d!OpenDocument

Upcoming Events: Entomology in your 'hood!

Toronto Entomologist's Association – Monthly Meetings

TEA Website: http://www.ontarioinsects.org

The Toronto Entomologists' Association (T.E.A.) welcomes everyone who is interested in the insects of Ontario.
Come to our meetings, join us on our field trips, purchase our publications, apply for the research grant, join us!

Meetings are held at: Northrop Frye Hall Room 113, Victoria University (at the University of Toronto), 73 Queens Park Crescent Toronto, ON (Museum subway stop; opposite the Museum, on the east side)

Saturday, January 28, 2006 — 1 PM— **Miriam Richards**
IT'S GOOD TO BE QUEEN: SOCIAL BEE-HAVIOUR AND THE MYTH OF THE HAPPY SLAVE

Saturday, February 25, 2006 (Special location: Room 302, Emmanuel College, 75 Queen's Park Crescent E.) — **Marc Johnson**
THE LONG REACH OF THE GENE: INSECT/PLANT INTERACTIONS

Saturday, March 25, 2006 (Special location: Ramsey Wright Building U of T, 25 Harbord St (SW corner of St George & Harbord), Room 432)- 1PM
STUDENT SYMPOSIUM

Graduate students from Ontario universities present results of their research in entomology through brief talks and posters. The presentations cover a variety of insects and topics such as behaviour, ecology and genetics. If you are interested in participating, please e-mail Doug Currie, academic co-ordinator of the symposium, at dcurrie@zoo.utoronto.ca

Saturday, April 22, 2006 — 1 PM— **Jim Corrigan**
LOOSESTRIFE: A BIOLOGICAL CONTROL SUCCESS STORY

Toronto Entomologist's Association – Student Travel Award

W. John D. Eberlie Research Travel Grant is a research travel award of $300 to assist graduate or undergraduate students conducting original field research into Ontario insects. The award is intended as a travel grant to defray costs of travel to field sites used for research. Application must be postmarked no later than March 25 for consideration in the current year. Find further details on how to apply, or to request an application on their website.
Website: http://www.ontarioinsects.org/who%20we%20are.htm

2006 ONTARIO INSECT FAIR, tentative date Sunday April 23, 2006. To be held in Mississauga in conjunction with the Ontario Reptile Expo. See TEA Website or ESO Website for final date and more details in 2006.

Ottawa Entomology Club – Monthly Meetings

This is an informal gathering that meets on the 3rd or 4th Thursday of each month (September to April) at 8PM in the K.W. Neatby Bldg. on the Central Experimental Farm. Typically, a visitor or a local insect enthusiast gives a slide show of recent insect work or presents a travelogue from a collecting trip. Notices for these meetings are sent out a week or two in advance, and often are posted on the doors of Carleton University Biology Department professors Drs. J. Yack or S.B. Peck. Interested entomologists are encouraged to attend. For more information about upcoming meetings, you can contact Dr. Bruce Gill at: gillbd@inspection.gc.ca

MEETINGS: OUTSIDE ONTARIO

ESA Annual Meeting Rescheduled
New Dates: December 15-18, 2005
See website for latest updates
Website: http://www.entsoc.org/annual_meeting/current_meeting/am_updates.htm

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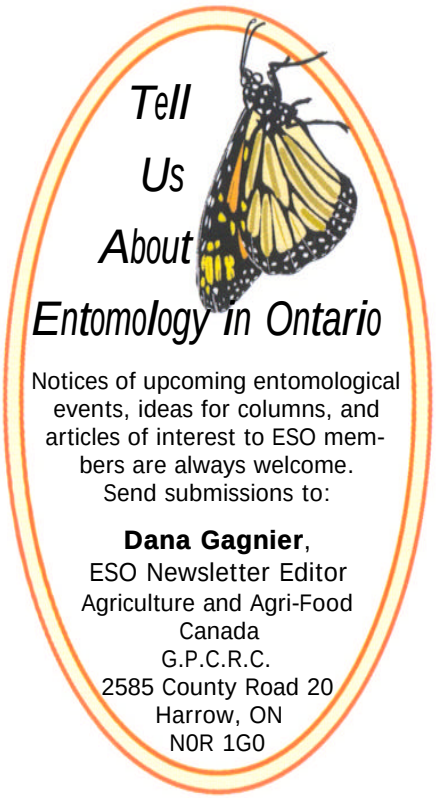
Eastern Branch ESA Annual Meeting
March 12-14, 2006, Charlottesville, VA; Omni Hotel
Website: http://www.ento.vt.edu/EBESA/mtnginfo.html

56th ESC Annual Meeting
Joint Annual Meeting of Société d'entomologie du Québec & Entomological Society of Canada
November 18-22, 2006, Holiday Inn Midtown Hotel (420 Sherbrooke St. W., Montreal, Quebec
Website: http://www.seq.qc.ca/accueil_fr.htm



Notices of upcoming entomological events, ideas for columns, and articles of interest to ESO members are always welcome.
Send submissions to:

Dana Gagnier,
ESO Newsletter Editor
Agriculture and Agri-Food Canada
G.P.C.R.C.
2585 County Road 20
Harrow, ON
N0R 1G0