

NEWSLETTER OF THE BIOLOGICAL SURVEY OF CANADA (TERRESTRIAL ARTHROPODS)

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General Information

The Newsletter of the Biological Survey of Canada (Terrestrial Arthropods) appears twice yearly. All material without other accreditation is prepared by the Secretariat for the Biological Survey.

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with contributions from Hugh V. Danks

Queries, comments, and contributions to the Newsletter are welcomed by the editor. Deadline for material for the Spring 2008 issue is January 31, 2008.

Editorial Notes

The Biological Survey of Canada (Terrestrial Arthropods) develops and coordinates national initiatives in taxonomic and ecological entomology on behalf of the Canadian Museum of Nature and the Entomological Society of Canada. The Newsletter communicates information about systematic and faunistic entomology that may be of interest in Canada, and reports especially on activities relevant to the Biological Survey.

*This newsletter is also available on the Survey's website at:
<http://www.biology.ualberta.ca/bsc/bschome.htm>*

To receive this newsletter via email (as an Adobe Acrobat file) instead of a paper copy please send an email message to the Editor.

News and Notes

BioBlitz 2007

The Biological Survey of Canada's 2007 BioBlitz was held July 16 to July 20 in Riding Mountain National Park in Manitoba. The park is located about 225 km northwest of Winnipeg, and consists of about 10,000 ha of aspen parkland, an ecotone between boreal forest and grassland. The participants consisted of nine keen entomologists (present for varying periods of time over the week), a substantial number of equally keen Park staff, and a smattering of the general public, invited to assist by Park staff.

The week started first thing Monday morning with an orientation meeting attended by both Parks Canada staff and entomologists. This allowed for an exchange of information and discussion of the plans and expectations for the week for each of the participants. The Park staff, including but not limited to Cam McKillop, Wybo Vanderschuit, and Ken Kingdon, were accommodating and keen. They helped in many ways, from providing GPS units to

those without their own, to printing up collection labels for collectors. They also had their own plans to enhance the week of collecting. Several of their staff participated in collecting, particularly of butterflies and dragonflies, using University of Manitoba equipment made available by Rob Roughley, the principal organizer of this year's BioBlitz. In addition, they organized two public collecting events, in which they invited Park visitors to participate. These events consisted of a morning of butterfly collecting in a lovely meadow near the townsite of Wasagaming, and an afternoon of dragonfly collecting around a nearby marsh.

The start of the week was not without its problems for some of the participants. Rob Roughley was returning on the Sunday before the BioBlitz from teaching a course at the Churchill Northern Studies Centre, and collecting in Wapusk National Park, north of Churchill on the shore of Hudson Bay. To get to the BioBlitz on time, he had to take the train from Churchill to Thompson, retrieve his



Bob Lamb surveys a typical Riding Mountain National Park scene of fescue prairie with spruce forest in the distance.

(photograph by P. MacKay)

car, and drive the 750 km from Thompson to Wasagaming where the Park office is. Unfortunately the train was late and therefore so was he. He and Jonathon Veilleux, who works with him, had the pleasure of a couple of hours' sleep in his car in the parking lot adjacent to the Park office. At least it was a short walk to the 9:30 meeting Monday morning.

The weather for the week was very nearly perfect: sunny, hot, and mostly dry. The one exception to the dry conditions occurred the second afternoon. A ferocious thunderstorm, with high winds, torrents of rain, and hail in some locations, tore through the southeastern part of the Park in the late afternoon. It hit the campground in Wasagaming particularly hard. Unfortunately that's where many of the participants were staying, but fortunately none of them were there at the time. They were all out in the far west end of the Park, where there was no rain, and so they stayed dry and unaware of any problems. However, on their return to their campsite after 8:00 pm, they were initially puzzled to find someone or something had wreaked havoc with their belongings. Eventually some



A blister beetle, *Lytta nutalli*,
on late yellow locoweed, *Oxytropis campestris*
(photograph by P. MacKay)



A viceroy butterfly, *Limenitis archippus*, the second
record for Riding Mountain National Park.

The first one was in 1928.
(photograph by P. MacKay)

still-frozen hail pellets solved the mystery. Some people spent a second night sleeping in their cars.

The BioBlitz provided an excellent opportunity for some positive publicity for entomology in general and the BioBlitz and the Biological Survey of Canada in particular. Throughout the BioBlitz, Rob Roughley met regularly with the Park staff to help them with their activities incorporating insects in Park programs. At the request of the Friends of Riding Mountain National Park, Pat MacKay gave a public presentation, illustrated with lots of pretty pictures of Riding Mountain insects, explaining who we are and what we were doing over the week. Then on Friday afternoon, Bob Lamb and Pat MacKay were interviewed by the Brandon television station, and filmed making one of the many collections of aphids that they were successful in finding over the week. The television folks considered it all strange but very interesting!

In the beautiful surroundings and beautiful weather, collecting was both fun and successful. Insect nets were probably the major

collecting tool, based on number of collectors if not necessarily number of specimens, and were used to focus primarily on butterflies and dragonflies. Microlepidoptera were collected at light traps, aphids were collected into tiny vials with tiny forceps, bees were collected at “bee bowls,” water beetles and soil arthropods were given significant attention. A Malaise trap is still in operation at the time of writing. Over the next several months, the specimens will be prepared and identified. The resulting specimens will reside in publicly available collections and the resulting data will be provided to Riding Mountain National Park as a database. Anyone interested in the specimens or the data should contact Rob Roughley of the Department of Entomology, University of Manitoba at the email address below.

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A brachypterous bush katydid.
 (photograph by P. MacKay)

Biological Survey of Canada Curation Blitz 1: Working out the Bugs in Saskatoon

After the collecting and field work is finished; unit trays, collecting vials, and drawers fill up with fascinating specimens. Unfortunately individual researchers, or even groups of researchers at any given institution, do not have the time or expertise to identify all of them. Unsorted material builds up in all collections, not getting the attention it deserves. A wealth of faunistic information sits untapped in unsorted material in collections across Canada. We can all help make these data more accessible.

Join other curious entomologists for the first Biological Survey of Canada Curation Blitz in Saskatoon during the joint annual meeting of the Entomological Society of Canada and the Entomological Society of Saskatchewan meeting on Monday evening (1 October 2007) from 7-9 PM.

There are two major collections in Saskatoon, at Agriculture and Agri-Food Canada and at the University of Saskatoon. Doors will be open and entomologists will be encouraged

to sit down and sort to family, to genus, and to species where possible. The goal is to sort unidentified specimens and increase the level of curation for these two collections. Additionally, those of us interested in faunistics of Canadian arthropods will have a better idea of the material available in these collections. Thirdly, we should be able to connect specialists and specimens, so that the use and improvement of these collections are ongoing. Finally, and as important as the above, we will all be able to learn from experts in a variety of taxa.

Watch the notice board at the ESC meeting or the Biological Survey web site for more details.

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Summary of the Meeting of the Scientific Committee for the Biological Survey of Canada (Terrestrial Arthropods), April 2007

The Scientific Committee met in Ottawa on April 19–20, 2007.

Scientific Projects

1. Grasslands

The editorial committee for the first grasslands volume has been expanded to include Dr. Joe Shorthouse, Dr. Kevin Floate, and Dr. Rose De Clerck-Floate. Authors should soon receive communication about the project and will have an opportunity to update their chapters.

A list of potential authors for the second volume on Arthropods and Altered Grassland Ecosystems has been compiled and letters of invitation will soon be sent by Dr. Floate. It was suggested that a conservation-oriented chapter would greatly increase the readership of the book.

2. Canadian Journal of Arthropod Identification

Several papers for CJAi have been accepted, submitted, or are in advanced stages of preparation including *Mosquitoes of Ontario*, *Bee genera of eastern Canada*, *Stratiomyidae species of Ontario*, *Bombyliidae species of Ontario*, *Vespidae species of northeastern North America*, *Tephritidae of Ontario*, *Clusiidae species of Canada and genera of the world*, *Psocoptera of Ontario*, *Syrphidae species of Ontario*, and *Orthopteroid species of Ontario*. More papers, especially from institutions other than University of Guelph, are needed. The CJAi should gather considerable momentum over the next year and have a positive impact on biodiversity studies in Canada as well as on the Survey's profile.

The CJAi has been offered the opportunity to publish on the University of Alberta library website using the Open Journal System (OJS) and this system is currently being tested for its suitability to the CJAi. There are both advantages and disadvantages, and use of the OJS may be limited to submission and review

of PDF files. Preparation and posting of HTML content might have to be done outside the OJS system.

Provision for edited but non-refereed additions to papers in the form of dated subsequent postings by the authors or others are being considered as is a section for editorials and reviews.

3. Terrestrial arthropods of Newfoundland and Labrador

Work continues on the key to the Curculionoidea of Newfoundland and Labrador, a checklist of macromoths, and identification of material from the Memorial University of Newfoundland collection. The full staphylinid key will be completed by mid-2008. Some taxonomists have offered to identify flies including Agromyzidae, Syrphidae, and Sarcophagidae. There is a need for somebody to take on the Hymenoptera. Extraction of Newfoundland species records from literature continues at a good pace. This will result in a comprehensive bibliography of works dealing with NL Entomology, with almost 1000 references already entered.

4. Forest arthropods

The database of forest arthropod biodiversity projects is updated regularly and currently includes about 68 projects. Volume 3 of the *Arthropods of Canadian Forests* newsletter will be published in early May.

Seven synthesis papers stemming from a BSC-sponsored symposium entitled "Maintaining Arthropods in Northern Forest Ecosystems," held in 2005, are near completion and should be submitted to *The Canadian Entomologist* by the end of May.

Previous BioBlitzes, especially at Waterton Lakes and Gros Morne National Parks, continue to yield data. The permit for Waterton Lakes has been extended until the end of 2007 and survey work is continuing there. An

impressive database is being built and Parks is very happy to have these data on biodiversity.

Work on the handbook to the Cerambycidae (Coleoptera) of Canada and Alaska continues as a collaboration between the Canadian Forest Service, the US Department of Agriculture Forest Service, Agriculture and Agri-Food Canada, the University of Cape Breton, and the BSC. A manuscript should be ready for review in about 2.5 years.

5. *Insects of the arctic*

Dr. Currie plans to visit the Primorya region north of Vladivostok in the summer of 2007 as well as Norman Wells, NT. Dr. Giberson collected along the Dempster highway in conjunction with the COSEWIC arthropod SSC meeting that was held in Whitehorse in 2006. Dr. Giberson and Dr. Steve Burian have completed work on the mayflies of Nunavut as well as the life history of the most common mayfly in Nunavut, *Baetis bundyae*. Dr. Ken Stewart and Dr. Giberson are beginning to work on the stoneflies of the area not covered by The Stoneflies (Plecoptera) of Alaska and Western Canada by K.W. Stewart and M.W. Oswood. Dr. Giberson's other northern focus is on material collected from the Mackenzie River in the 1970's. Dr. Sperling plans to sample along the Dempster Highway in late July depending on whether permits can be obtained.

The subcommittee charged with developing a proposal for a large collaborative northern project is considered the best strategy for how to move forward with the project and will report at the fall meeting.

6. *Seasonal adaptations*

Dr. Danks reviewed his current work on this project including the status of several papers. Although the subject is linked to the Survey's goals of understanding the northern fauna, the Committee will review the status of the project after Dr. Danks retires.

7. *Invasions and reductions*

The proceedings of the symposium on Ecological Impacts of Non-Native Insects and Fungi on Terrestrial Ecosystems, held at the

2006 ESC Joint Annual Meeting will be published by Springer in the journal *Biological Invasions* with the addition of two additional papers on fungi. The final reviewed manuscripts will be submitted to the journal editor by the beginning of November.

Progress on capturing data for the coccinellid project continues. Help is needed to database more specimens from Ontario and Quebec. An attempt is being made to get AAFC to lead the way in bringing the data together and posting them on the CBIF web site, as has been done already with the butterflies. Work continues on the comprehensive list of non-native terrestrial arthropods, which now includes approximately 1880 species. A synthesis of the data should be published in about a year. The component dealing with species on trees is complete and will be published as part of the aforementioned symposium proceedings as well as being incorporated into a CFS/CFIA invasive alien species web site.

Reports from the now discontinued Forest and Insect Disease Survey (FIDS) have been scanned and will be available in pdf format on the CFS web site.

Other scientific priorities

1. *Arthropods and fire*

The *Journal of Insect Conservation* had tentatively agreed to host a series of papers on the topic of arthropod conservation and fire from BSC symposium. However, only six titles have been confirmed so the taxonomic or geographic coverage is limited. The delay in publication is a potential problem for authors. Publishing a short series of papers devoted to the topic (i.e., 4-6) could be considered instead of a full issue but would not have the profile of a full-length issue. Dr. Buddle will seek commitments from authors once more over the next couple of months, and then will advise the journal accordingly.

2. *BioBlitzes*

The 2007 BioBlitz will be held in Riding Mountain National Park, July 16-20, 2007.

There is some interest in having the 2008 BioBlitz in Bruce Peninsula National Park.

The International Institute for Sustainable Development had invited Dr. Roughley to participate in a pilot project to discuss the BioBlitz method and its prospects as a scientific and public policy tool.

A proposal to organize a series of Collection Blitzes to assess material and give particular curatorial attention to chosen collections was discussed. The possibility of organizing one in Saskatoon in conjunction with the joint annual meeting of the ESS and the ESC will be investigated.

3. *Faunal analysis*

There was little progress to report on this project. The subcommittee had agreed to simplify the protocols and define the objectives more clearly so that the work can proceed.

4. *Arthropods of the Gulf of St. Lawrence Islands*

The focus of the project for the short term is to visit approximately 20 small collections in the Maritimes that have tens of thousands of unidentified specimens, although well maintained in many cases. The plan is to have undergraduate students start the study of some specific taxa, and attract graduate students for broader groups. The goal is to leave these small collections with curated material, get the material into a database, start some synthetic work on the arthropods of the area, and answer some interesting questions.

5. *Databasing*

The BSC database of collecting localities should soon be ready for posting on the BSC web site.

6. *Survey web site*

The BSC web site continues to be updated on a regular basis when new information is received. For April 1, 2006 to March 31, 2007 there were 61,403 unique visitors.

7. *Endangered species*

A proposal for a publication dealing with endangered species in Canada is being considered. It is very timely to proceed with a Survey synthesis given current interest and funding in endangered species legislation.

8. *Biodiversity sampling brief*

Interest is insufficient to prepare a revision of the Survey's 1994 biodiversity brief on planning a study and recommended sampling techniques. However, a reference list giving the various new sources for techniques would be useful and is being considered.

9. *Monitoring of continuing priorities*

Several other ongoing interests of the Survey were reviewed. At the University of Alberta a 3-year study will look at the effects of change in temperature and precipitation on rangeland communities including plants, bacteria, and soil invertebrates. The research will take place at 3 locations in grasslands.

For arthropods of aquatic habitats it was noted that the Rivers Institute (affiliated with Environment Canada) has people interested in species-level work who have decided to join the Barcode of Life initiative. The taxonomic certification program through the North American Benthological Society has been very successful. The Society is trying to certify taxonomists in aquatic groups to certain levels through testing procedures. This will allow people who hire consulting firms to check whether consultant staff have taken the tests. Apparently this certification process is already enhancing quality control.

For arthropod ectoparasites of vertebrates, it was noted that Mr. Wayne Knee is finishing his MSc degree on nasal mites of birds from Alberta and Manitoba and will submit a Lucid key to CJAI. Dr. Proctor has just posted a list of feather mites and their alien hosts, with 12,000 records, on her website. The Ticks of Canada book, coordinated by Dr. Galloway, should be submitted soon.

Collecting done in the Yukon recently included a study of the phylogeography of west-

ern cordilleran black flies, spiders, and beetles collected along the Dempster highway and microlepidoptera in Whitehorse last year.

Liaison and exchange of information

1. Canadian Museum of Nature

Mr. Roger Baird, Director, Collection Services, reported on the competition for the one-year position as Head of the Biological Survey. The Museum forecasts a \$750,000 deficit operational budget for the 2007/08 fiscal year. The priorities for the Museum are to continue with the renovation of the Victoria Memorial Museum Building, to continue fundraising and revenue generation, and to continue with the CMN's national service role. The BSC is considered part of that role. Strategic planning for the next five years will begin this year. Ms. Joanne DiCosimo has received a renewed five-year term as the President and CEO of the Canadian Museum of Nature.

2. Agriculture and Agri-Food Canada

Dr. Lianne Dwyer is now the Science Director for the Biodiversity Theme of the national Environmental Health Program at Agriculture and Agri-Food Canada. A new research project structure has been implemented whereby project proposals receive external peer-reviews and, if approved, obtain guaranteed A-base financing for up to 4 years. The "Invertebrate Biodiversity" proposal involving all of the systematic entomologists at the CNC was approved without amendments with a four-year budget.

Databasing of selected CNC specimens began in early January and is proceeding very well, with six casual employees doing the data entry and one part-time programmer maintaining the system and providing technical assistance.

The Canadian Food Inspection Agency (CFIA) has hired four insect taxonomists (Dr. Vasily Grebennikov, Dr. Chris Schmidt, Dr. Brad Sinclair, Dr. Hume Douglas) to supplement its national diagnostic services that have long been located at ECORC in close proximity to CNC resources and taxonomic expertise.

They will greatly enhance the critical mass of expertise associated with the CNC.

3. Entomological Society of Canada

Dr. Peggy Dixon, President of the Entomological Society of Canada reported that Society's finances and membership are more-or-less stable. Dr. Robb Bennett is the new editor of *The Canadian Entomologist*. Dr. Kevin Floate is now the editor of the Bulletin. The new ESC Office Manager is Ms. Derna Lisi. The Society undertook a strategic review in 2005 and has been slowly implementing some of its recommendations. Two of the new initiatives are overhauling the web site and developing an online submission and review system for *The Canadian Entomologist*.

The next Joint Annual Meeting will be in Saskatoon, September 30 to October 3, 2007.

4. Natural Resources Canada, Canadian Forest Service

Mr. Christian Malouin, Biologist, Forest Science Division, Natural Resources Canada, reported that in October 2006 the Deputy Minister started the development of a national integrated natural resources policy framework; the goal being to integrate the various activities related to management of natural resources not only across centres within NRCan but also between federal and provincial governments. In 2004 the innovation management concept was introduced to the Canadian Forest Service. The department is now working around 5 strategic directions. Biodiversity is captured under Inter-forest sustainability. Some of the short-term actions around this strategic direction include developing a national forest pest management strategy, designing a forest research agenda on climate change impacts and adaptation, identifying threats to healthy forests and mitigating risk, and developing a boreal forest strategy.

The biodiversity outcomes framework, which is an action plan to implement the Canadian biodiversity strategy, has been developed by the federal-provincial biodiversity working group. One of the first activities will be to develop an ecosystem status and trend assessment

for Canada. The working groups determined that the reporting unit will be the ecozone. The working group will look for all the data available on biodiversity at the ecosystem level and develop a national assessment of ecosystems.

A forest biodiversity information gateway is being developed with the National Forest Information System in Victoria. The goal is to develop a one-stop shop for forest biodiversity information in Canada. The pilot stage is in progress and hopefully a demonstration will be ready for the Canadian Council of Forest Ministers meeting. The project continues to look for sets of data on various levels that could be shared.

5. *Canadian Wildlife Service*

Ms. Lisa Twolan, Scientific Project Coordinator, General Status of Species in Canada reminded the Committee that the 2005 Wild Species report included tiger beetles and dragonflies because the working group felt they were relatively feasible insect groups. A work plan for the 2010 report is being developed and comments on the draft plan are welcome. Currently groups are being considered such as spiders, macro moths, mosquitoes, black flies, horse flies, deer flies, some wasps, mayflies, ladybird beetles, carrion beetles, water beetles, robber flies, and grasshoppers. Lists for Canada are still needed for the groups mentioned, after which species can be ranked. There is some value in just seeing whether a list can be assembled. Some groups may only have a list with no ranks and be flagged as needing more information. She pointed out that even this achievement is of high value considering who receives the reports, because it can play a useful role in pointing out the data gaps.

Dr. Giberson pointed out that many students would like to do inventory work that would assist this process, but getting funding for inventory work continues to be a problem because the major granting agencies are not keen on acquiring lists of species. It is also difficult to find places to publish basic inventory work. She hoped that part of the species at risk

process would be an acknowledgement that funds are needed for inventory work.

Dr. Giberson also encouraged the working group to use the common names recommended by the Entomological Society of Canada, in conjunction with the Entomological Society of America.

Dr. Marshall emphasized the importance of regional or national reviews prior to considering a taxon. He noted that some groups, such as water beetles, are well studied and documented and therefore lists can be generated, but this is not the case with many other groups. For example, at least one third of the species of robber flies from Ontario in the University of Guelph collection are not yet officially recorded from Canada because the family has not been reviewed; and therefore listing them is not possible. The BSC's Canadian Journal of Arthropod Identification is an ideal outlet for such reviews, including regional ones.

6. *Parasitology module, Canadian Society of Zoologists*

Dr. Marcogliese commented that there has been no progress with formalizing a parasitology module. Dr. Marcogliese's work on the national stickleback parasite project has moved ahead. Some progress has been made with the EMAN protocols for parasites.

The advocacy report from the Canadian Society of Zoologists was published in that society's bulletin. The last meeting was in Edmonton. The upcoming meeting will be May 21 – 25 in Montreal and includes a symposium on forest Lepidoptera. The Wardle medal is being awarded to Dr. Robert Poulin, the first time a Canadian working abroad has received the award.

7. *Pollination Canada*

The Pollination Canada Monitoring Program had requested the participation of the Biological Survey of Canada in their citizen science initiative being run in conjunction with EMAN. The Committee agreed that it is important to get the general public interested in pollinators and their roles; however, they had some

concerns about the scientific aspects of the program. The Committee noted that without proper verification of the identifications, the program could end up being similar to the earlier CNF ladybird beetle survey, which was a very good public relations tool but the data were not scientifically sound and an impediment to current research. The Committee agreed to send a carefully balanced letter to the organization on behalf of the BSC.

Ms. Breau added that in Canada there has been a desire to have an organization similar to the North American Protection Pollinator Campaign, a tri-lateral organization that includes Canada, U.S.A., and Mexico. NAPPC is led in Washington, D.C by an NGO, the Co-evolution Foundation. The first Canadian meeting was held in January in Ottawa, attended by 80 participants. It was an introductory meeting and resulted in no action plan, although there is some hope to have another meeting and to get more people interested in the initiative.

Other items

1. *Regional developments*

Information of potential interest from different regions was reported, including work being carried out by graduate students and others (not noted in detail here), and the following examples.

In British Columbia construction for the new Beaty Museum at the University of British Columbia has begun. There is concern about the safekeeping of the collections that are to be housed there. Some parks have shown renewed interest in doing insect surveys, including the Gulf Islands National Park. The formation of a south Okanagan national park is being planned but there is some local opposition. The group of NGO's charged by the province to prepare a biodiversity conservation initiative are starting to purchase land for preservation because the cost of land is rising so quickly. The background information for the biodiversity conservation strategy has been done and public hearings will be held in September. An atlas of biodiversity of British Columbia will be published.

In Alberta, the Royal Alberta Museum has plans to expand but rising construction costs have put plans partly on hold. The University of Alberta is moving forward to build a new well-equipped facility to house collections and for curatorial research. The insect pests that caused the greatest economic damage in Alberta in 2006 were the cabbage seedpod weevil, wheat stem sawfly, bertha armyworm, and pea leaf weevil. The two pests of concern for 2007 are expected to be wheat midge and bertha army worm. The grasshopper forecast for 2007 looks good, with low populations predicted. Mr. Scott Meers, Integrated Crop Management Specialist with Alberta Agriculture, Food and Rural Development would like to initiate a project as part of the Prairie Pest Monitoring Network, involving insect taxonomists in the identification of insects found in common crops. He sees the survey work as an important way to detect new pest species that may be arriving on the prairie from elsewhere.

In Manitoba, a successful joint meeting North Central branch of the Entomological Society of America and the Entomological Society of Manitoba was held in Winnipeg.

In Ontario, the first phase of the Royal Ontario Museum renovation will open on June 2, 2007. There have been several recent hirings in the science area – a vertebrate paleontologist, a mineralogist, an invertebrate zoologist, and a freshwater ichthyologist. Negotiations are underway for a “Butterflies of Ontario” volume in the ROM field guide series. The insect collection at the University of Guelph is being expanded. There is much activity at the Biodiversity Institute at the University of Guelph. Graduate students are being sought by Dr. Shorthouse (Laurentian University) and Dr. Jeff Skevington (AAFC).

In Quebec the journal *Fabrerics* has not been able to find a new editor and this peer-reviewed publication is in limbo. Forest entomology and biodiversity work is going strong in Quebec, especially with Dr. Tim Work's program at l'Université du Québec à Montréal and with programs at McGill University. The

curatorial position at l'Université de Montréal is still unfilled.

The annual meeting of the Acadian Entomological Society will be held on 10-12 June at Saint Mary's University, Halifax. Dr. Tom Chapman has been hired at Memorial University of Newfoundland. He is currently working on the population dynamics of gall-forming thrips. There is concern about lack of resources to curate some of the collections in Newfoundland.

For the arctic, Dr. Currie noted that he will be going to Norman Wells, NWT, in June. A group at York University including Mr. Andrew Medeiros is doing work at Rankin and Iqaluit, including some sampling. An undergraduate student from l'Université du Québec à Rimouski collected some interesting material from Bylot Island in 2006 and will collect again in 2007.

2. BSC Transition

The Museum had decided to fill the position of the Head of the Biological Survey for a one-year period following the retirement of Hugh Danks in August, and pending the completion of the Museum's 5-year strategic plan. Mr. Baird gave an update on the status of the competition. As this was the final meeting of the Scientific Committee that Dr. Danks will attend he presented a few general comments from a 30-year perspective that he hoped would help the Survey.

By way of background, he noted that changes over the past many years include the facts that the Canadian scientific community has fewer entomologists in the country, and less general time is allowed by employers, so there are fewer supplementary contributors to the BSC. However, the main core members of the Scientific Committee continue to contribute significantly. The Secretariat has no longer been taking on every slow project because the number of projects has increased and other research and responsibilities are in place. There have been many good BSC accomplishments over the years, especially compared to other organizations, but some projects have not moved

forward as quickly as might be hoped. The next person to occupy the position of Head of the Secretariat will have to take an active role in ensuring that projects move forward.

Therefore, Dr. Danks presented the following recommendations for the future:

The Scientific Committee and its subcommittees and individual members have to stay especially keen and active. Although this is apparent at the Committee meetings, sometimes other pressures interfere and progress between meetings is not always as rapid as desired. Therefore, members should prepare for and participate in Scientific Committee meetings as much as possible; and they should also check project responsibilities, take action between meetings, and prepare reports or discussion papers. Dr. Danks added that Committee members are much-appreciated volunteers, but hopefully they also get something back from being on the Committee, as well as participating in larger synthetic research projects.

The Secretariat entomologist has to keep involved in each dossier. Dr. Danks supposed that this might need an aggressive stance for prompting people, including membership of the secretariat entomologist on every subcommittee. Moreover, the new Head should also personally adopt some specific active scientific roles (e.g. in the grasslands books), even beyond personal research interests.

3. Other matters

The Committee briefly discussed other matters such as a proposal to help entomologists with knowledge transfer, the annual report to the CMN, general operations of the Biological Survey Secretariat, communications with the new editor of *The Canadian Entomologist*, the BSC scholarship, arthropods of the Queen Charlotte Islands, and arthropods of special habitats. The Annual Meeting of the Biological Survey Foundation was also held.

Hugh Danks retires as Head of the Biological Survey of Canada (Terrestrial Arthropods)

As announced in the spring issue of this newsletter, Dr. Hugh V. Danks retired as Head of the Biological Survey of Canada (Terrestrial Arthropods), on August 31, 2007.

Besides his daily involvement with the administrative and coordinating activities of the BSC, Hugh found time to collect and digest the contents of hundreds of articles on the physiological and ecological adaptations of insects. His uncanny ability to produce thought-provoking and thorough syntheses of many complex entomological issues made him well known internationally and not only drew attention to the BSC, but to Canadian entomology as well. He was frequently asked by scientific organizations around the world to make presentations on his insights. For synopses of Hugh's scientific work, titles of presentations, and a list of his over 100 publications, see <http://www.biology.ualberta.ca/bsc/english/danks.htm>.

Hugh has also been credited with stimulating the careers of dozens of entomologists across the country. There likely are few entomologists in Canada under the age of 40 who have not heard several of his seminars presented as part of his cross country tours to enhance the coordinating activities of the BSC. He also made a point of meeting nearly every graduate student after their presentations at annual meetings, offering them kind words of encouragement. Hugh was honoured by the ESC in 2003, for his contributions to Canadian entomology, when he was awarded the Gold Metal at the annual meeting in Kelowna, B. C. For a more general outline of Hugh's career up to 2003 when he received the Entomological Society of Canada's Gold Medal Award see the *Bulletin of the Entomological Society of Canada*: 35(4): 200-202, (2003)

Sometimes life, or at least research, comes full circle and this certainly occurred with Hugh. For example, Hugh's early work on seasonal adaptations was published in *The Canadian Entomologist* in 1971, and his continu-

ous interest in the subject culminated in a series of review articles over the past few years. His most recent "The elements of seasonal adaptations in insects" appeared in the January issue of *The Canadian Entomologist*. Another of his early interests, the ecology of aquatic insects in cold climates, was revisited this year when he made a presentation on the topic at the annual meeting of the Royal Entomological Society of London, presented a keynote address at the 2007 International Symposium on the Ecophysiology of Ectotherms and Plants in Dunedin, New Zealand, and published the review article "How aquatic insects live in cold climates" in the July issue of *The Canadian Entomologist*. In addition, Hugh is currently working on a revised and expanded edition of *The Bug Book and Bottle*, (first published in 1987) that will be published by Workman Publishing in the spring of 2008.

A farewell dinner in Hugh's honour was held on April 19, 2007 in Ottawa and was attended by current members of the Biological Survey's advisory Scientific Committee as well as local entomologists and representatives of the Canadian Museum of Nature and the Entomological Society of Canada.

J.D. Shorthouse



Hugh Danks at his retirement dinner (photograph by J.D. Shorthouse)

New Head of Biological Survey of Canada appointed

On behalf of the Scientific Committee of the Biological Survey of Canada I am delighted to announce that Dr. Andrew Smith has been appointed a one-year position as the Head of the Biological Survey of Canada as of 4 June 2007, to replace Dr. Hugh Danks who retired on 31 August 2007. Dr. Smith received his B.Sc. from Carleton University, his M.Sc. from the University of Toronto, and his Ph.D. from the University of Nebraska. He has completed two postdoctoral appointments, one at the University of Nebraska and the other at McGill University and the Canadian Museum of Nature. He was also an Adjunct Research Associate Professor at the University of Nebraska and is currently a research associate of the University of Kansas and University of Nebraska.

Dr. Smith's research program over the past ten years has focused on the systematics of scarab beetles (mainly on Neotropical taxa). During this time he has produced a number of papers, websites, and databases on this subject. He has also been involved in synergistic activities such as developing electronic listserves and websites, organizing symposia and scientific meetings, and running a large-scale research project titled "Scarab Biodiversity of Southern South America." His southern South America project was funded by the National Science Foundation in the U.S. through the Biodiversity Surveys and Inventories program and has very similar objectives and methodology to some of the BSC initiatives. He was trained as a PhD student under the Partnerships for Enhancing Expertise in Taxonomy (NSF-PEET) program. His research interests and experience are an excellent complement to the activities and overall philosophy of the BSC.

A list of Andrew's scientific publications and more information can be seen at:

www-museum.unl.edu/research/entomology/andrewsm.htm

J.D. Shorthouse



Andrew Smith collecting at the peak of Cerro Montecristo, El Salvador (photograph by M.L. Jameson)

New electronic mailing list

The Canadian Arthropod Survey mailing list is an electronic discussion group initiated and maintained by the Biological Survey of Canada (Terrestrial Arthropods). The purpose of this list is 1) to facilitate communication between researchers who are interested in the Canadian arthropod fauna; 2) to be a forum for discussion about issues facing Canadian arthropod researchers and arthropod collections; and 3) to disseminate information for and about the Biological Survey of Canada.

To subscribe follow the instructions at:
<http://www.mailman.srv.ualberta.ca/mailman/listinfo/canadian-arthropods>

Archived messages can be seen at:
<http://www.mailman.srv.ualberta.ca/pipermail/canadian-arthropods/>

Departing Editor's Remarks

I have been fortunate to be associated with the Biological Survey of Canada since its inception in 1977, nine years after I first came to Canada as a postdoctoral fellow. I have also edited this newsletter since its first issue in the spring of 1982. The editorial notes in 1982 pointed out the role of the newsletter as a means of communication about efforts to characterize the Canadian fauna. It emphasized the activities of the Biological Survey, which aims to promote and coordinate such efforts. That same message prevails in current issues of the newsletter.

During my career as Head of the Survey and editor of the newsletter (among other roles) I have been very fortunate to have had the keen and friendly assistance of many people. For example, the BSC and I have been supported by entomologists across the country, members of the Survey's expert scientific committee, and the Entomological Society of Canada. I have had able administrative assistance, and since 1982 have been employed by the Canadian Museum of Nature, the major sponsor of the Survey.

This short farewell is not the place for scientific facts or commentary, but readers seeking scientific information might wish to consult documents cited on the web page at <http://www.biology.ualberta.ca/bsc/english/danks.htm#publications> [or its successor page]. For other details and perspectives, see especially pp. 168-176 at http://www.esc-sec.org/Bulletin_Dec_2003.pdf.

I am now retiring not only from the BSC but also from entomology in general, because my research interests — primarily in broad themes of seasonal adaptations and biodiversity — require extensive integration of information in a way that is not feasible on an occasional basis. Instead, I shall pursue my many other interests outside entomology. Nevertheless, I look forward to hearing about the continued progress of the Biological Survey of Canada, and wish all of my readers and colleagues good luck and success.

H.V. Danks
August 2007



A few of Hugh Danks' many publications.
(This graphic used on a cake presented to Hugh at his retirement dinner)

Project Update: Arthropods of Canadian Grasslands

Andrew Smith

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and

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The Arthropods of Canadian Grasslands project has been ongoing in various incarnations since the early 1980s. Its primary goal is to coordinate research on the systematics and ecology of the arthropods of Canadian grasslands. The project has involved dozens of specialists over the years with expertise on different taxa, geographic regions, and fields of scientific research. Throughout the 1980s and 1990s, research was conducted by many of these specialists on various aspects of grasslands biota. The findings were scattered in various scientific publications, reports, and newsletters and reported at various scientific meetings and symposia, but much of the accumulated information remained unpublished.

After the completion of the Biological Survey of Canada's Insects of the Yukon project in the late 1990s, the energies of the Survey were refocused on the grasslands project and a plan was formulated to publish a set of compilations to disseminate research and knowledge on the arthropods of Canadian grasslands. Three major volumes dealing with different aspects of the diversity, ecology, and interactions of Canadian grassland arthropods are in the works.

Volume I

Manuscripts for all of the chapters in the first volume, *Arthropods of Canadian Grasslands: Ecology and Interactions in Grassland Habitats*, are in the hands of the editorial board, which originally only included Dr. Terry Wheeler but has recently been expanded

to include Dr. Joe Shorthouse <jshorthouse@laurentian.ca>, Dr. Kevin Floate <floatek@agr.gc.ca>, and Dr. Rose De Clerck-Floate <FloateR@agr.gc.ca>. All manuscripts are currently being updated by the authors and will go out for peer review in October 2007. The editorial board has set a deadline for the review process and subsequent chapter revisions to be completed by 31 January 2008. The editors will then work towards the deadline of 31 March 2008 to have all of the final chapter editing completed. The book will be sent out for publication immediately after this process has been completed.

The following is a list of the authors and chapter titles planned for the first volume of the set on arthropods of Canadian grasslands:

1. Shorthouse, J.D., K.D. Floate, R.A. De Clerck-Floate, and T.A. Wheeler. Introduction to the grasslands of Canada.
 2. Shorthouse, J.D. Ecozones and Ecoregions of Canada's prairie grasslands.
 3. Shorthouse, J.D. Grasslands of British Columbia, the Yukon, and Southern Ontario.
 4. McGinn, S.M. Weather and climate patterns in Canadian grasslands.
 5. Scudder, G.G.E. Grasslands: biodiversity hotspots for some arthropods in British Columbia.
-

6. Scudder, G.G.E., M.A. Alperyn, and R.E. Roughley. The aquatic Hemiptera of prairie grasslands and parklands.
7. Behan-Pelletier, V.M. and D. Kanashiro. Acari in grassland soils of Canada.
8. Alperyn, M.A. and R.E. Roughley. Community ecology of predacious diving beetles (Coleoptera: Dytiscidae) in boreal and prairie ponds across southern Manitoba.
9. Boucher, S. and T.A. Wheeler. Trophic structure of the Brachycera (Diptera) assemblage in xeric grasslands of the southern Yukon Territory.
10. Paiero, S.M., S.A. Marshall, P.D. Pratt, and M. Buck. The insects of a southern Ontario tallgrass prairie.
11. Hamilton, K.G.A. and R.F. Whitcomb. Leafhoppers (Insecta: Homoptera: Cicadellidae) as indicators of grassland habitats.
12. Roughley, R.E., D.A. Pollock, and D.J. Wade. Tallgrass prairie, ground beetles (Coleoptera: Carabidae) and the use of fire as biodiversity and conservation management tool.
13. Wade, D.J. and R.E. Roughley. The responses of a tallgrass prairie spider (Araneae) community to various burn seasons and its importance to tallgrass prairie management.
14. Shorthouse, J.D. Galls induced by cynipid wasps (Hymenoptera: Cynipidae) on the wild roses of Canada's grasslands.
15. Floate, K.D. Gallling arthropods associated with the hybrid complex of *Populus* (Salicaceae) on the prairies.
16. Shorthouse, J.D., K.D. Floate, R.A. De Clerck-Floate, and T.A. Wheeler. Summation chapter.

Volume II

Letters were sent at the end of July to invite chapter contributions for Volume II (*Arthropods and Altered Grassland Ecosystems*). Volume II will emphasize arthropods in grassland habitats altered by agricultural activity and

livestock production. Chapters will summarize arthropod communities in agroecosystems, and describe the ecological roles of the most significant members in these communities.

A draft list of potential contributors and chapter topics was developed at meetings of the BSC. However, well-qualified individuals undoubtedly were overlooked. Please contact Kevin Floate <floatek@agr.gc.ca> if you are interested in potentially contributing to this volume, either as a co-author on one of the chapters below or by contributing an additional chapter.

Tentative chapter topics

- Overview of anthropomorphic changes on Canadian grasslands
- Arthropods of prairie rivers
- Arthropods of prairie ponds
- Arthropods of saline depressions
- Arthropods of sand hill habitats
- Arthropods parasitic on native birds and mammals
- Arthropods of animal dung
- Orthoptera of pastures
- Spiders of pastures
- Carabids of agro-ecosystems and pastures
- Soil microarthropods
- Arthropods of perennial grass production
- Arthropods of forage crops
- Arthropods of cereal crops
- Arthropods of oilseed crops
- Arthropods of vegetable crops
- Arthropods of stored products
- Arthropods of shelterbelts
- Arthropods of sunflowers
- Arthropods of livestock production
- Arthropod introductions for the control of weeds
- Arthropod introductions for the control of insect pests

The Quiz Page

—test your knowledge of Canada and its fauna—

1. What is frazil ice in northern rivers?
2. How many families of blood and tissue feeding mites occur in Alberta?
3. What are the arthropod vectors of West Nile Virus?
4. What proportion of an insect's DNA is made up by the Cytochrome Oxidase 1 (COI) mitochondrial region most commonly used for sequencing in recent years?
5. What is the minimum distance that an introduced insect pest must be able to fly each season in order to infest the whole of Canada within 100 years?

[Answers on p. 56]

An overview and update of the Microgastrinae (Hymenoptera: Braconidae) holdings in the Canadian National Collection, Ottawa

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With about 2,000 described species (Yu et al. 2005) and an estimate total of 5,000–10,000 species (Mason 1981, Whitfield 1997) the Microgastrinae (Hymenoptera, Braconidae) is one of the most speciose groups of parasitic wasps. At present there are 135 species recorded in Canada (Marsh 1979, Yu et al. 2005), but it is estimated that 275 species actually occur here (Biological Survey of Canada 2007).

As part of several studies underway by the author on Nearctic Microgastrinae, a thorough review of the holdings in the Canadian National Collection of Insects, Ottawa (CNC) was carried out. The total number of specimens was estimated taking into account the number of drawers, and the number of specimens per drawer. The last figure varied considerably, so an average of 400 specimens per drawer was chosen as an approximation. All of the Nearctic species represented in the collection were counted and their presence was recorded for each Canadian province. Approximate numbers of specimens collected in Arctic North America were also recorded, as well as some particularly valuable collections (see below).

Apart from type material (housed in a separate area with the rest of the Braconidae types), there were 9 cabinets containing Microgastrinae; plus 6 more cabinets with miscellaneous Braconidae (conservatively, one third of which were Microgastrinae). Each cabinet has 29 drawers, but on average 15% of them were empty. Altogether this totals approximately 250

drawers and at least 100,000 pinned specimens of this subfamily. Compared with previous information (66,900 pinned specimens; Sharkey 1992) this means an almost 50% increase in the last 15 years.

Additionally, there is a significant alcohol-preserved collection; with samples stored at -20°C (some of them kept in 95% alcohol, suitable for DNA studies). It is difficult to calculate with accuracy the number of specimens there, but the author searched all of the samples from Southeast Asia and some from the United States and Australia; and it is quite evident that there are several thousand Microgastrinae. Even using the most conservative estimate, the total figure for the subfamily in the CNC easily surpasses 150,000 specimens, making this one of the larger collections in the world – if not the largest.

The best represented region is the Nearctic, with approximately two thirds of the holdings. Specimens from the Neotropics, Palearctic, Australia, and Old World tropics are also significant. In summary, this is a collection with a major focus in North America but with a fairly good representation at a worldwide level. Most of the specimens added in the past few years were prepared by critical point drying and generally their quality is superb.

Of the 299 described species recorded in the Nearctic (data pooled from Yu et al. 2005; Whitfield 1995, 2006), the CNC has at least

266 of them (89%); including numerous primary types and paratypes (information about primary types summarized in Sarazin 1985). The collection is particularly well represented in diverse and difficult genera such as: *Apanteles*, *Cotesia*, *Dolichogenidea*, and *Microgaster*, each with over 90% of the known species represented in the collection. *Microplitis* is the most poorly represented genus, with 19 of 32 Nearctic species (60%); although numerous undetermined specimens are available for further study.

Table 1 provides an update of species number by province for Canada. Figures were obtained from careful and exhaustive collation of data for each named species (in some cases the specimens were sorted just to species-groups or the closest known species, stating that they were a new, but otherwise undescribed, species). Those determinations were made mostly by W. Mason, the past authority on Microgastrinae; and no intent is made in this paper to check potential mistakes and/or validity of those identifications. However, a thorough revision of those former identifications is currently in progress, and a complete checklist of Microgastrinae species of Canada will be soon published elsewhere. Although some correction to the present figures is certainly expected, all the numbers provided here are rather conservative.

The results show a significant increase for all provinces, ranging from a little less than half for Alberta to more than three times to Manitoba. This is an additional confirma-

tion that the holdings of the CNC cover most of Canada – although many specimens still have to be studied. The Ontario figure (137) even surpasses the previous total for the entire country. As for the single species recorded for Yukon (Whitfield 2006) an almost completed work (Fernandez and Goulet, unpublished data) will increase the figure considerably.

Altogether, 73 new species for Canada were found. This does not include unsorted specimens (several thousand), which will surely increase those numbers even more. In comparison, the number of species currently known for the Nearctic is around 300 (Whitfield 1995, 2006; Yu et al. 2005), with 266 recorded within the US and the highest diversity for its states ranging from 73 to 89 species (Yu et al. 2005). This does not mean that Canada and/or Ontario are the Microgastrinae hot-spot in the Nearctic, but it clearly shows the potential of the resources and information available in the CNC.

There are four particularly valuable collections of Microgastrinae in the CNC that have not been carefully studied yet. Each is briefly mentioned below with some additional remarks:

1) *Fauna north of 60° N*:

The CNC holdings comprise an estimated of + 5,000 specimens, with close to 2,000 from Yukon, but with all northern Territories (as far north as Ellesmere Island) and Alaska also well represented. Altogether, this is the most valuable collections of Microgastrinae in

Table 1: Diversity of Microgastrinae in Canada. Previous information was taken from Marsh (1979) and Yu et al. (2005). All percentages are rounded to the nearest integer.

Species Number	Canada	ON	QC	BC	NB	NS	AB	MB	SK	NF	NT	PI	NU	YT
Previous data	135	80	47	45	26	22	25	10	8	9	6	3	1	0
Present data	208	137	86	85	50	44	36	36	18	15	12	7	2	1
% Increase	54	71	83	89	92	100	44	260	125	67	100	133	100	–

the Arctic region of North America, and it will certainly provide an excellent baseline for further studies. As stated above, the Yukon fauna is currently under revision (with about 40 species already identified), and plans are underway to continue with all remaining Arctic samples from other areas.

2) *Unidentified specimens reared from lepidopterans from both agricultural and forestry sites across Canada:*

There are several hundreds, perhaps even thousands, of microgastrinae from past rearing programs; especially, but not exclusively, the Forest Insect Survey. Most of them have not been studied and lack complete identification (some are sorted to the genus level). It is likely that significant and new biological information can be extracted from those specimens, with the potential to provide new information for biological control efforts.

3) *Microgastrinae from an exhaustive sampling program in an agricultural site:*

Some 20,000–30,000 specimens, collected weekly during 4 years in two apple orchards in Frelighsburg, Quebec. This huge series of specimens will not only provide an excellent overview to the true diversity of Microgastrinae in a single ecosystem, but will also help to associate sex in difficult species complexes, as well as yield considerable of ecological information. Work is already underway, with about 3,000 specimens studied and some 30 species so far identified. There are also other smaller collections from agricultural sites but with much less coverage.

4) *Non-Nearctic collections:*

Alcohol samples from several southeastern Asian countries are particularly rich in microgastrinae braconids (with several hundred to perhaps a few thousand specimens), and will help to improve basic taxonomic knowledge of microgastrinae in that region. As a direct result of sorting through this valuable material, the genus *Philoplitis* is currently under review. Other valuable collections are from Australia and the

Neotropics. Most of the tropical specimens still need to be mounted, making their study more time consuming.

Based on observations of the CNC microgastrinae collection, significant improvements could be made in three areas given the opportunity, resources, and personnel. First, there are species located under two different names in the collection, especially some of the former *Apanteles* that were transferred by Mason (1981) to the new genera he erected. This is confusing and also a waste of space. However, organizing those specimens should be done by a person with at least a minimum of knowledge of the group, to avoid making the situation worse. Second, there are long series of specimens representing a few species (mainly from the Frelighsburg collection) that could be reduced. A particularly useful way to do this is to exchange them for material from elsewhere. Potential places of interest to ask for this exchange would include Europe, Japan, the U.S., and some Latin America collections. That way some important gaps in the CNC, especially of the Palearctic fauna, could be filled. Last but not least, a great opportunity exists to produce illustrated keys to some groups, to create a database with the valuable information stored in the collection, and to carry out faunistic / zoogeography analysis. With over a hundred species already used and / or investigated worldwide in the biological control of pest Lepidoptera (Whitfield 1995) this group of parasitic wasps will undoubtedly require more attention and study in the near future.

Acknowledgements

Reviews by John Huber and Henri Goulet significantly improved the manuscript. The support and encouragement of all Hymenoptera staff at the CNC has allowed me to work on this and several projects related to the Nearctic fauna of Microgastrinae during the last 14 months.

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Composite photo of Canadian Microgastrinae housed at the Canadian National Collection
(photograph by J.L. Fernandez)

Selected Future Conferences

Organization	Date	Place	Contact
ENTOMOLOGICAL CONFERENCES			
Entomological Society of Canada	2007 , 29 Sept. - 3 Oct.	Saskatoon, SK	with the Entomological Society of Saskatchewan; Meeting Chair Dwayne Hegedus - hegedusd@agr.gc.ca http://www.sfn.saskatoon.sk.ca/science/ess/ESS-ESC/intro.html
	2008	Ottawa, ON	with the Entomological Society of Ontario; www.entsocont.com or Kathryn Nystrom - knystrom@nrca.gc.ca
Entomological Society of America	2007 , 9-12 Dec.	San Diego, CA	ESA: http://www.entsoc.org/annual_meeting/current_meeting/index.htm
	2008 , 16-19 Nov.	Reno, NV	http://www.entsoc.org/annual_meeting/Future_meetings/index.htm
Entomological Collections Network	2007 , 8-9 Dec.	San Diego, CA	http://www-museum.unl.edu/research/entomology/ECN/Meeting.htm ; A. Smith - asmith@mus-nature.ca
International Joint Meeting on Ephemeroptera and Plecoptera	2008 , 8-14 June	Stuttgart, Germany	http://www.jointmeeting08.naturkundemuseum-bw.de/index.html
International Congress of Entomology	2008 , 6-12 July	Durban, South Africa	http://www.ice2008.org.za/
OTHER SUBJECTS (especially those relevant to Survey projects)			
Canadian Society of Zoologists	2008 , 19-23 May	Halifax, NS	http://www.csz-scz.ca/cszanglais/engmeeting.htm or Tamara.Franz-Odendaal@msvu.ca
IV International Colloquium on Soil Zoology	2008 , 25-29 August	Curitiba, Brazil	www.unicenp.edu.br/icsz
REGIONAL SOCIETIES			
Entomological Society of Alberta	2007 , 25-27 October	t.b.d.	http://www.biology.ualberta.ca/courses.hp/esa/meet2007.htm
Entomological Society of Ontario	2007 , 26-28 October	Sault Ste. Marie	www.entsocont.com/ or knystrom@nrca.gc.ca
Soci�t� d'entomologie du Qu�bec	2007 , 26-26 October	Lac Delage, QC	http://www.seq.qc.ca/accueil_fr.htm

Answers to Faunal Quiz

[see page 50]

1. Frazil ice in northern rivers is ice formed in running water at a temperature near 0°C, consisting of ice crystals or slush that cannot consolidate because of the turbulent water flow.
2. 13 families of blood and tissue feeding mites occur in Alberta [see “Keys to the Families and Genera of Blood and Tissue Feeding Mites Associated with Albertan Birds” in the BSC’s electronic *Canadian Journal of Arthropod Identification* at <http://www.biology.ualberta.ca/bsc/ejournal/ejournal.html>].
3. Species of *Culex* mosquitoes, especially those that prefer to bite birds, typically are supposed to be the main vectors of West Nile Virus, but in fact many species of *Aedes*, *Ochlerotatus*, and *Culex* can transmit the virus under experimental conditions. Nevertheless, how this ability contributes to transmission outside the laboratory depends on many ecological factors.
4. The 600-base-pair region of COI mitochondrial DNA commonly used for sequencing comprises less than 0.00001% of the total DNA, which in insects is made up of about 16 000 base pairs for mitochondrial DNA, and hundreds of millions to billions of base pairs for nuclear DNA.
5. The minimum distance that an introduced insect pest must be able to fly each season in order to infest the whole of Canada within 100 years would be irrelevant for most species, because transcontinental spread typically depends chiefly on the availability and vulnerability of suitable host plants, further spread by humans moving infested crops, wind-aided dispersal, and so on, rather than on the pest’s unaided flight capacity.

Quips and Quotes

Do not adjust your mind — the fault is in reality.
(Anon)

The original is unfaithful to the translation
(Jorge Luis Borges)

In science the credit goes to the man who convinces the world, not the man to whom the idea first occurs.
(Francis Darwin)

She tells enough white lies to ice a wedding cake.
(Margot Asquith [of Lady Desborough])

You cannot hope to bribe or twist
thank God! the British journalist.
But, seeing what the man will do
unbribed, there's no occasion to.
(Humbert Wolfe)

More words

The dusk was performing its customary intransitive operation of “gathering.”
(Flann O'Brien)

Do not read my book if you expect me to tell you everything.
(Rousseau)

He is a man of his most recent word.
(William F. Buckley)

A deluge of words and a drop of sense.
(Thomas Fuller)

He can compress the most words into the smallest ideas of any man I ever met.
(Abraham Lincoln [about a lawyer colleague])

The best thing about animals is that they don't talk much.
(Thornton Wilder)

Requests for Material or Information Invited

Would you like assistance with your faunistic research? The Biological Survey of Canada encourages cooperation in taxonomic and ecological studies of arthropod fauna. Please complete and return the form on the next page if you have a request for material or information that might be obtained elsewhere in Canada (compare the sample entries from a previous list of requests that are shown below). See also the Survey's website (<http://www.biology.ualberta.ca/bsc/english/listofrequests.htm>) for the full list or an electronic version of the Request for Cooperation form.

Requests may be submitted at any time and will be posted on the web periodically. To have your entry included in the Spring 2008 newsletter please submit it by the end of January.

Sample entries (addresses omitted):

	Material Requested	Areas of Interest	Collecting Methods, Notes	Name of Requester	**
1	Acari (free living and parasitic terrestrial and aquatic mites)	Anywhere, but especially sub-arctic and arctic Canada, Canadian grasslands	Berlese-Tullgren funnel extraction from subaquatic substrates, from grasses and sedges, and from bird and mammal nests, would be especially fruitful (preserve in 75% ethanol +5% glycerine).	V.M. Behan-Pelletier; E.E. Lindquist; I.M. Smith	1
2	Acari from family Uropodidae	Anywhere	Free living and parasitic terrestrial, preserve in 75% ethanol	C. Constantinescu	2
3	Adelgidae (conifer woolly aphids)	Anywhere	Preserve insects and bark, needles or galls in 70% ethanol. Specimen records and host plant records	R. Footitt	1
4	Aleyrodidae (whiteflies)	North America	Preserve insects and host plant material in 70% ethanol. Adults may be dried. Specimen records and host plant records. (Canadian National Collection deficient in all species, including pest species)	R. Footitt	1

Request for Cooperation

Please complete and return to:

Biological Survey of Canada
(Terrestrial Arthropods)
Canadian Museum of Nature
P.O. Box 3443, Station "D"
Ottawa, ON K1P 6P4
email: bsc@mus-nature.ca

Name: _____ Tel. : _____

Email: _____ Fax: _____

Address: _____

Material required (specify taxon, region, habitat, collecting methods, or other details):

Information required (describe in reasonable detail):

Cooperation offered – if there is anything specific you might be able to supply in return (e.g. identifications, material) please indicate it here:
