

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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Queries, comments, and contributions to the Newsletter are welcomed by the editor. Deadline for material for the Spring 2006 issue is January 30, 2006.

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.

Alternative formats

Instead of receiving this paper copy two other options are available on request to bsc@mus-nature.ca:

- An email alert will be sent when each issue is available on the Survey's web site at:
www.biology.ualberta.ca/bsc/bschome.htm.

or

- Each issue can be delivered in pdf format directly to your email box

News and Notes

New E-journal Launched

The Survey has a launched a new e-journal devoted to the publication of richly illustrated guides to Canadian arthropods. Please see p. 47 for more details.

Waterton Lakes National Park BioBlitz 2005

The 2005 Biological Survey of Canada BioBlitz took place July 7 – 12, 2005 at Waterton Lakes National Park, Alberta. This year the annual group field trip was a joint effort for the Survey's Forest Arthropods project and the Arthropods of Canadian Grasslands project. In total, 27 enthusiastic participants collected in one of Canada's most biologically-interesting natural areas. There were many positive contacts with the public, providing an opportunity to educate them about arthropods and entomological activities.

Participants are now undertaking the more difficult job of processing and identifying specimens. Dr. David Langor has offered to compile the data and provide a report for Waterton Lakes National Park. The collecting efforts from the one-week BioBlitz added significantly to the biotic survey of WLNP, but have just barely scratched the surface. Therefore, the possibility of continuing an arthropod survey of this area is being discussed.



R. Roughley at Waterton Lakes National Park.
(photo by J.D. Shorthouse)

Thanks go to David Langor for an excellent job of organizing this event and to Cyndi Smith, Parks Canada who assisted with many logistics including information, advice, access, and accommodation.

A fuller account of the BioBlitz will appear on the Survey's web site in *Arthropods of Canadian Grasslands Online* (<http://www.biology.ualberta.ca/bsc/english/grasslandarticles.htm>).

BioBlitz 2006

The 2006 Biological Survey of Canada BioBlitz is tentatively planned for Gros Morne National Park and vicinity, Newfoundland. More details will be published in the spring newsletter and on the Survey's web site.

Forest Arthropod Newsletter

The first issue of the Arthropods of Canadian Forests newsletter was published and distributed in April 2005. The goal of the newsletter is to serve as a communication tool for encouraging information exchange and collaboration among those in Canada (and elsewhere) who work on forest arthropod biodiversity issues, including faunistics, systematics, conservation, disturbance ecology and adaptive forest management. As well, the newsletter supports the Forest Arthropods Project.

- The first issue included articles on
- The forest arthropods project
 - Collecting generalist arthropod predators from McGill University's research forests
 - The forked fungus beetle as a model system in ecology
 - The Ecosystem Management Emulating Natural Disturbance Project
 - Spiders at the hub of Canadian forest research

- Host use patterns in saproxylic Coleoptera: explaining species succession along the wood decay gradient

- The Walbran Valley Canopy Arthropod Project

as well as news, events and new publications.

The newsletter is distributed in pdf format in English and in French via email and is also posted on the Survey web site (see <http://www.biology.ualberta.ca/bsc/english/newsletters.htm#forestarthropods>).

To be added to the mailing list or contribute an article or new item please contact the editor, David Langor, at dlangor@nrca.gc.ca

Arthropods of Canadian Grasslands Online

<http://www.biology.ualberta.ca/bsc/english/grasslandarticles.htm>

Subscribers to the *Arthropods of Canadian Grasslands* newsletter received a notice in June announcing the metamorphosis of the newsletter from printed format to periodic updates and

articles that will be posted on the Survey's web site.

The *Arthropods of Canadian Grasslands* newsletter began in 1983 to provide updates on research activities, news of interest and a forum for collaborators working on arthropods of Canadian grasslands. With the last issue in April 2005 (for pdfs of past issues see <http://www.biology.ualberta.ca/bsc/english/newsletters.htm#grasslands>) the newsletter has fulfilled its initial role of supporting the development of the grasslands project, allowing items of interest to be disseminated instead in electronic format.

Articles about grassland arthropods or other relevant notes of interest are welcome for the new electronic forum. Please contact Hugh Danks, Editor, *Arthropods of Canadian Grasslands Online* (hdanks@mus-nature.ca).

Those interested can receive email notification at intervals as material accumulates on line. For this service send an email to bsc@mus-nature.ca.

Members of the Scientific Committee 2005

(see <http://www.biology.ualberta.ca/bsc/english/personnel.htm#scientificcommittee> for contact information)

Mr. Roger Baird (CMN)
Ottawa, ON

Dr. Jeffrey Cumming
Ottawa, ON

Dr. Douglas Currie
Toronto, ON

Ms. Joanne DiCosimo
President, Canadian Museum
of Nature, Ottawa, ON

Director, CNC-AAFC
Ottawa, ON

Dr. Jean-François Landry
(ECORC)
Ottawa, ON

Dr. Robert Lamb (ESC)
Winnipeg, MB

Dr. David Langor
Edmonton, AB

Dr. Steve Marshall
Guelph, ON

Dr. David McCorquodale
Sydney, NS

Dr. Owen Olfert
Saskatoon, SK

Dr. Rob Roughley
Winnipeg, MB

Dr. Michèle Roy
Ste.-Foy, QC

Dr. Geoffrey Scudder
Vancouver, BC

Dr. Joseph Shorthouse (Chair)
Sudbury, ON

Dr. Felix Sperling
Edmonton, AB

Dr. Jon Sweeney
Fredericton, NB

Dr. Terry Wheeler
Ste.-Anne-de-Bellevue, Québec

Dr. Neville Winchester
Victoria, BC

(one position vacant)

Honorary / Founding Member:
Dr. George Ball
Edmonton, AB

Summary of the meeting of the Scientific Committee of the Biological Survey of Canada (Terrestrial Arthropods), April 2005

The Scientific Committee met in Ottawa on April 21–22, 2005.

Scientific Projects

1. Grasslands

Eight chapters have been submitted for the first grasslands volume on ecology and interactions in grasslands habitats, and the review process for these chapters has started. Another chapter is with a co-author for some final editing. Submission of the remaining chapters in the near future will allow the book to be produced in a timely fashion. A good list of potential authors has been assembled for volume 2 on arthropods in altered grasslands and invitations for that volume should be sent soon. The third volume on faunistics is also being developed, pending progress on volume 1.

The grasslands newsletter is becoming difficult to produce for a variety of reasons, including obtaining sufficient content materials as well as the cost and labour of production. Because the first book should be appearing soon, it was agreed that the newsletter in its current form has served its course and effort would be better spent elsewhere. Instead, information will be posted on the website and notifications by email will be sent about significant developments as necessary.

The annual grasslands field trip has been successful for several years. This year the trip will be the Bioblitz at Waterton Lakes National Park, coordinated in conjunction with the forest arthropods project. Planning is well in hand and there have been a number of expressions of interest. The 2006 Bioblitz might be held in western Newfoundland, perhaps in Gros Morne National Park where there are interesting habitats.

2. Arthropods of Canada – a BSC e-journal

The Committee considered a proposal for a BSC e-journal that would make available well illustrated identification guides to

parts of the fauna, including keys and not just photographs, treatments of the taxa that are complete at some level, and demonstrably useful for Canadian faunistics. Detailed guidelines are being developed, following some test components, and the Committee discussed issues such as the format, minimal standards, procedure, guidelines for reviewers, editorial structure, action plan and schedule, how to handle updated versions, funding and other issues. The Committee strongly endorsed the proposal. The e-publication will be launched in 2006 after being introduced more widely to the entomological community later this year (and see p. 47).

The ongoing project on insect families (a fascicle on apterygotes and exopterygotes is in preparation) will be adapted for use on the BSC e-journal site.

3. Terrestrial arthropods of Newfoundland and Labrador

Some progress had been made in preparing illustrated keys to the terrestrial arthropods of Newfoundland and Labrador and it is hoped that these will be an early contribution to the e-journal. Drafts for several taxa are available. A database of entomological literature dealing with Newfoundland and Labrador records continues to be built. A database of Newfoundland and Labrador taxa and collection localities is being maintained. Other work is also underway. A lot of material from collections in Newfoundland has come to light recently and the residual material will be added to the collections. Additional material as well as wider participation in the project is welcomed.

4. Forest arthropods

The Forest arthropods newsletter has been produced and distributed and now posted on the BSC and CFS web sites. The newsletter has been well received. Planning is underway for the BSC-sponsored symposium on maintaining arthropods in northern forest ecosystems

planned for the 2005 ESC-ESA joint annual meeting. The symposium includes synthesis papers (to be published later) that will review findings for Lepidoptera, carabids, staphylinids, aquatic species, saproxylic arthropods, and spiders. The database of forest arthropod biodiversity projects has been updated. The 2005 Bioblitz includes forest elements. A project on the Cerambycidae of Canada and Alaska is underway with funding from the Canadian Forest Service and the U.S. Forest Service. The final product may be in the form of a handbook but this is not yet finalized. A database for the subproject on sucking insects on Jack Pine and Lodgepole Pine continues to be developed.

5. *Insects of the arctic*

The BSC symposium at the 2004 ESC annual meeting was well received. It remains to be seen whether that interest will translate to northern work. More recently there has been interest and activity centred in Norman Wells, partly because the NWT government is considering declaring the Horton River a special protected area and partly because of interested people there. Some field work is also planned in 2005 in Norman Wells, and perhaps elsewhere. Work in western Alaska in 2004 led to the collection of many species of black flies new for the area. Baseline data on arctic Diptera continue to be accumulated.

6. *Seasonal adaptations*

A number of papers on this topic are in press or submitted. The Encyclopedia of the Arctic (finally published in 2005) includes short entries on Insects, Insect larvae, and Mosquitoes. Dr. Danks had spent four months recently in Japan, as a visiting professor at the Research Institute for Bioresources of Okayama University, and his work there included the preparation of two review papers on insect cold-hardiness and on insect life cycles.

7. *Invasions and reductions*

Drawing upon discussions with scientists and pertinent government departments the BSC will co-host (with CFS and perhaps others) a 1-day symposium on non-native arthropods

preceding the 2006 entomological societies' joint annual meeting in Quebec. This symposium will focus on science related to the environmental consequences of invasion. A series of presentations will provide background on the biological invasion of Canada, focus on some key science questions, and set the stage for synthesis products. Some funding is already in place. Details continue to be worked out.

A database of all Canadian non-native arthropods is being developed in cooperation with the Canadian Forest Service's new national project on established alien species. The CFS plans to develop a web site that is the first-stop-shop for information about exotic tree-inhabiting arthropods and fungi in Canada, but the outlet for the broader database is yet uncertain. These data would fit logically into the Survey's project on invasions and reductions.

Progress on the specific project on coccinellids in the context of invasive species was reported. Collection data are largely complete for some areas, but not for others. The project continues to determine the structure needed for project databases. Darwin Core 2 is the current widely adopted standard. Development and posting of the coccinellid databases will continue under the guidance of a subcommittee, with the aim of making information available through the BSC web site.

Other scientific priorities

1. *Arthropods and fire*

Several presentations for the 3.5-hour symposium on arthropods and fire to be held at the 2005 Entomological Societies' meeting in Canmore are known, and others are being added.

2. *Databasing*

The Committee briefly discussed general data standards. Some additional work has been done on the BSC's database of important historic collecting localities, revealing a few interesting problems which have to be resolved (such as wrong locality data). Additional efforts are being made to discover other sources

of locality data, to assimilate existing data, and to resolve outstanding issues before loading the database on the BSC web site.

3. Survey web site

Updates continue to be made to the web site in addition to posting of recent Grasslands and BSC newsletters. An index of all newsletter article titles, selected articles from earlier newsletters in pdf format, pdf versions of whole issues from 1999 to present, and pdfs of all copies of Arctic Insect News have been added. Insects of the Arctic reports have been converted to pdf format. The Forest arthropods project page has also been updated (including the Forest Arthropod Biodiversity projects database). The Grasslands project page has also been updated.

In the last 5 months the site has received more than 20,000 unique visitors (equivalent to about 50,000 per year); returning visitors are about 7% of the total. A number of other changes to organization and in particular to the menu structure of the web site are still planned, as the site grows in content and complexity.

4. Endangered species

Developments in Ontario (cf. the Committee on Species at Risk in Ontario (COSARO)) and Canada (cf. COSEWIC) were noted. A recent report on rare and potentially rare Ontario Heteroptera ranked 407 Ontario species, including a few key species. Insects other than butterflies and dragonflies will start to receive more attention once useful identification products are made available (e.g. through the BSC e-journal).

A proposal for a Survey initiative to prepare a multi-authored authoritative book on potentially rare insects in Canada (resurrecting an earlier project dropped because of resistance in the entomological community) will be developed for discussion.

Typical provincial listings for rare and endangered species carry no legal obligations, but if there is overlap with COSEWIC listed species collecting for research may be prohib-

ited if endangered species might be caught. Nevertheless, listing of key species can prove very valuable to protect important habitats.

5. Survey publicity

BSC Symposia at future entomological societies' meetings will continue to be identified clearly as such, and should include the Biological Survey of Canada as part of the symposium name.

A Survey poster is available to Committee members to download from the Survey web site. The feasibility of making a flag bearing the BSC logo, which could be flown at various field sites across the country as a means of advertising the Survey, will be investigated.

6. BSC award

The first BSC postgraduate scholarship was awarded at the 2004 ESC meeting. The future of the award is secure after donations from the H.V. Danks Trust Fund. A notice was put in the BSC newsletter to solicit more donations. The option of contributing is also on the ESC membership renewal form. Students will be encouraged to apply for future awards.

7. Monitoring of continuing priorities

Some other Survey interests were reviewed, including arthropod fauna of soils (several projects are underway, especially in agricultural systems), arthropods of aquatic habitats, arthropods of the Queen Charlotte Islands (Haida Gwaii) (some additional insect inventories might be funded), arthropod ectoparasites of vertebrates, arthropods of the Yukon (additional pitfall trap material is available, and more will be collected by a cooperating zoologist this summer), arthropods of special habitats (work in salt marshes is going on, and a symposium on mites of special habitats is planned for the 2006 International Congress of Acarology), small regional projects (e.g. work at the Mont St. Hilaire Biosphere Reserve [Buddle, C. 2005 Monitoring biodiversity close to home: collecting generalist arthropod predators from McGill University's research forests. *Arthropods of Canadian Forests* No 1: 3-7]),

and agroecosystems (including cooperative projects on the impact of wood lots and shelter belts, grazing studies, and work on certain invasive species).

8. Other priorities

The Committee also considered work on the arthropods of the Gulf of St. Lawrence Islands, faunal analysis, potential future publications and other topics.

Liaison and exchange of information

1. Canadian Museum of Nature

Mr. Roger Baird, Director, Collections Division, reported that renovation work at the Victoria Memorial Museum Building is progressing on track. He had participated in the first conference for the Bar Code of Life initiative. He acknowledged that this initiative is not without controversy but is continuing nonetheless. DNA barcoding under the Consortium of the Bar Code of Life (CBOL) is being promoted as an accurate and reliable tool for scientific research on the taxonomy of plant and animal species; a practical, cost-effective tool for assigning unidentified specimens to their correct species; and a system for expanding interest and activity in taxonomy. The group continues to emphasize that DNA barcoding is not intended to invalidate existing taxonomic practice, is not the enemy of taxonomy, does not equate species identity with a particular sequence and is not intended to duplicate or compete with efforts to resolve phylogenies. The Bar Code of Life is being supported by the Alfred Sloan Foundation. The Secretariat for the consortium is hosted at the Smithsonian Institution. The group brings together museums, taxonomists, and R & D labs that are working in DNA sequencing. The conference generated a high profile and promoted both taxonomy and bar coding and brought both into the public press. Initiatives to barcode large numbers of species of birds and fishes and to create a public database of DNA barcode sequences (in collaboration with GenBank) were formally launched at the conference. Other activities and committee work are ongoing. About 42 part-

ners worldwide have signed an agreement of understanding to collaborate in the CBOL. The CMN is one of the partners because it wants to have inside knowledge of what is going on, and the ability to shape and influence things is easier from within an organization.

Mr. Baird reported that a federal science and technology forum was held in January 2005 organized by the Office of the National Science Advisor to the Prime Minister, Dr. Arthur Carty. There were public expressions of personal willingness to work horizontally across Departmental lines, but participants rated their organizations much lower on a scale of readiness/willingness to work in this fashion. Given the territoriality often observed within the senior ranks, some "horizontal projects" seem to succeed by force of will of the individual partners in spite of the systemic bias of these organizational structures. There was greater emphasis at the Forum on technology than on natural sciences. The CMN is involved in a large number of collaborations with Environment, Agriculture and DFO but Mr. Baird acknowledged that the CMN needs to increase its involvement and presence at the federal level to increase the government's awareness that the Museum is involved in science.

2. Agriculture and Agri-Food Canada

Dr. Jean-Francois Landry reminded the Committee that three insect taxonomists had been recruited last year and all are developing good active research programs. A useful workshop for technicians and others had been organized on practical molecular techniques, including both theoretical sessions and practical lab work. Staffing for a nematologist and an acarologist specializing in phytophagous mites is in progress. It is expected to be complete within the next 4 months. Candidates will be expected to have molecular expertise as well as some bioinformatics training in addition to being good systematists. A Collections Manager for entomology is being staffed for the first time. This will be an internal reassignment and someone is expected to be in place by July 2005. Dr. Landry spoke about the highly valu-

able resource of volunteers, including research associates and also highly qualified landed immigrant volunteers who have difficulty finding jobs.

The reorganization of Agriculture and Agri-Food Canada is largely complete. The systematics research program falls under the Environment team and the Environmental Health program. This program includes approximately 700 scientists across Canada. Within the Environmental Health program are a number of themes one of which is Biodiversity. Under the Biodiversity theme are a number of national studies. Systematic entomology, housed at the Neatby Building, is one of the national studies in the Biodiversity theme. People in the former Research branch now fall under one of three different themes, each with its own Assistant Deputy Minister. Dr. Olfert and Dr. Landry agreed that the new science structure at Agriculture has benefited IPM, which traditionally had a low priority with Centre Directors, as well as biodiversity, which has not always been a "fashionable" term.

Dr. Landry noted that Agriculture has hired a private consultant to study the requirements for consolidating the collections and a detailed report has been presented. It will require the support of other federal departments to be implemented. Discussions are ongoing.

The federal government has an invasive alien species strategy in place. A Memorandum to Cabinet was put forward by several federal departments and organizations. Agriculture and Agri-Food Canada participated in the Memorandum but although it is actively involved in providing expertise, collections and facilities associated with invasive alien species, the department received no funding. Most of the funding went to the Canadian Food Inspection Agency and the Canadian Forest Service. However, Agriculture will continue its program on invasive alien species, especially in assisting with identifications.

Agriculture and Agri-Food Canada is the federal government lead on the Global Biodi-

versity Information Facility (GBIF). Dr. Peter Hall was Agriculture's representative but has moved to London, England. His replacement will be hired very soon. The most visible aspect of GBIF and CBIF has been the development of web portals to mine information on the web about collection specimens. Agriculture and Agri-Food Canada has committed some funding towards the NSERC grant for the Bar Coding of Life project. Three scientists are participating as collaborators including Dr. Landry for entomology. So far 1650 species of Lepidoptera from northeastern North America have been sequenced, more than 10% of the fauna of North America.

3. Entomological Society of Canada

Dr. Robert Lamb reported that the covers for the *Canadian Entomologist* and the *Bulletin of the Entomological Society of Canada* have been redesigned, as created by a professional designer through NRC Press but supplemented by photographs received in a competition. There will be an annual competition for photographs to be used on the covers.

The Society is undergoing a strategic review. The review is being undertaken not because of any serious problems but because it has been 10 years since the last review. The focus will be on membership, finances and particularly electronic information issues. As in other societies, the ESC membership and subscriptions are declining. However income is rising. In 2004 the journal is paying for itself but this has not always been the case; in previous years it has been subsidized from other revenues. Dr. Lamb's goal is to make the various aspects of the Society (e.g. the journal, the bulletin and scholarships) self sufficient. The electronic publishing aspect of the review is inseparable from the membership and financial aspect of the review. He thinks that the electronic version of the *Canadian Entomologist* needs to be made more popular. He pointed out that an advantage of publishing electronically is the lower cost of colour illustrations. Dr. Lamb also noted that Dr. Richard Ring has been the editor of the *Canadian Entomologist*

for over a year now. Dr. Lamb asked the Committee whether they thought that the journal is serving faunistic entomology the way it should be. Members of the Committee noted that for many years systematics and faunistics was a mainstay of the *Canadian Entomologist*, but in recent years that community had been driven away by editorial practices. The systematics community was annoyed by some heavy handed editorial conventions. The faunistics community was frustrated that manuscripts with major contributions to the knowledge of the Canadian fauna were not even being sent out for review because they were deemed to be inappropriate. Some authors in other fields had also been driven away. The community is now cautiously optimistic, hoping that documenting Canada's fauna will gain acceptance as a valid contribution to the *Canadian Entomologist*.

Dr. Lamb had received a letter from the International Trust for Zoological Nomenclature. Income from grants and donations has fallen to an unprecedented low and the Trust is appealing to the ESC and other societies for a financial contribution. Dr. Lamb requested the Committee's advice as to whether he should encourage the ESC to donate some money to this organization. A number of Committee members agreed that the Trust should be supported because it is essential to systematics work. Also the well-funded informatics groups should be lobbied because it is the mandate of these organizations. Government organizations such as those should be supporting the Trust.

4. General Status Program, Canadian Wildlife Service

Ms. Lisa Twolan explained that she coordinates the General Status Program which attempts to establish rankings not just for species at risk but for all species within a given taxon. The first report was released in 2000 – *Wild Species 2000*, targeting relatively well known taxa including vertebrates, ferns and orchids and butterflies. The working group is now leading up to a second report. By March 2006 it is hoped to have a report that will include rankings for dragonflies and damselflies and

possibly general status ranks for tiger beetles. Those groups were chosen primarily because that it was thought that enough information is available. However, the three federal partners in this program, Environment Canada, DFO and Parks Canada do not have the expertise in these groups. Ms. Twolan hopes to be able to take some information back to the working group as to how best to go about taking on rankings for these taxa, and would welcome feedback and assistance.

Ms. Twolan explained that the program was designed to target all wild species in Canada and was initiated because there was a recognition that even though there is a focus on species at risk, there is a need to have a general overview of how all species are doing. The program is now starting to make closer links with the Biodiversity Convention Office and has also been approached by the Alien Species Strategy group to explore how better links with that group might be achieved. As well they have been approached by various biodiversity indicator initiatives to see how the rankings could be used as measures of biodiversity health within Canada.

5. Canadian Forest Service

Dr. David Langor provided an update from the Canadian Forest Service which has also been reorganizing. CFS had been organized along 10 then 5 theme networks, including biodiversity. Now CFS is being organized along business lines. The new ADM had discovered that Forestry was not on the agenda of central agencies in Canada largely because what they do was not perceived to be linked to the requirements of government policy. The reorganization is part of an attempt to improve that situation. Some of the new business lines are relevant to biodiversity such as sustainable forests and climate change. Other lines include strong communities (sociological and economic) and competitiveness (based in Ottawa). Biodiversity is seen as something that cuts across all lines of business but will be prominent especially in the area of criteria and indicators.

Dr. Langor did not foresee any drastic changes in the actual work in the near future.

CFS received \$1.6 to 1.8 million as part of the Alien Species Strategy. Much of the funding will be used to provide science support to CFIA but some will go towards studying established invasive species.

6. Parasitology module, Canadian Society of Zoologists

Dr. Marcogliese reported that the Stickleback project of the parasitology module continues to recruit new members and gather new data. Environment Canada has signed a 5-year agreement with La Mauricie National Park of Canada to use parasites to monitor ecological integrity in five-spine stickleback. The database in his laboratory will become permanently archived at Environment Canada.

Environment Canada is undergoing organizational changes. The Deputy Minister, Mr. Samy Watson, wants to make science the driving force in the Department. The main themes in research will be conservation, protection of environment, the evaluation of sustainable ecosystems, climate change and meteorological and environmental services. Much of the type of research that Dr. Marcogliese does will fall under evaluation of sustainable ecosystems, especially under the directions of biodiversity, water, air and climate modelling and forecasting. Research at the St. Lawrence Centre is being centralized under one program – Anthropological impacts on diversity and productivity in aquatic ecosystems. On a national level the Deputy Minister is pushing to make environment part of the agenda of every government department. Work on the National Wildlife Disease Strategy continues, including a call for input from professionals and others. The National Agro-environmental Standards Initiative, to develop standards for impacts of agriculture on the environment, has a biodiversity initiative. The final mandate dictates that it will be habitat based, using existing data.

Dr. Marcogliese reviewed some changes in personnel in parasitology, and circulated

a variety of reports, journal papers and other documents of potential interest.

Other items

1. Regional developments

Information of potential interest from different regions was outlined, such as diverse work by graduate students and others. In British Columbia, the University of British Columbia received an \$8 million gift toward a biodiversity research centre that will include a museum of natural history to look after its collections, expected to open in the fall of 2007. This gift enabled the University to keep money received from the Canada Foundation for Innovation and the province. However, the donor is insisting that all the collections must be publicly available, and therefore the plans are to have everything on display for the public. This will create serious problems for insect and other collections. The conservation community has received substantial funds and some will be used to develop a provincial biodiversity strategy. (For example, the current protected areas are not in the right place and may not be any use in the future.) The provincial government, the federal government, Greater Vancouver and Delta contributed funds to purchase Burns Bog, the southernmost raised bog in the world. There is a scientific advisory committee for Burns Bog restoration, and a conservation covenant on the bog states that it is to be restored to a functioning bog. At the University of Victoria only one entomology course is being offered. The Entomological Society of British Columbia is thriving. The Royal British Columbia Museum has opened a new exhibit on climate change that includes computer models of potential biological changes resulting from different temperature changes. Okanagan University College will evolve into two new institutions in September, UBC Okanagan (with academic courses, staff and faculty) and Okanagan College (with technical courses). The former University College of the Cariboo in Kamloops is now called Thompson Rivers University.

In the Prairies, the Entomological Society of Saskatchewan put together an historical perspective of the Society commemorating the centennial of the province. Activities at the Entomological Society of Manitoba continue with enthusiasm for various projects. At the Manitoba Museum a curator responsible for both vertebrates and invertebrates has been hired. The University of Winnipeg has two entomologists now and over the last few years the University of Manitoba has lost two entomologists. The St. Charles Rifle Range in Winnipeg has been turned over to the World Wildlife Fund for stewardship. Plans for the joint Entomological Society of Canada / Entomological Society of Alberta meeting, November 2-5, are on track. The funding environment for biodiversity work in Alberta has improved over the last two years.

In Ontario, all the science departments at the Royal Ontario Museum have been amalgamated into one Department of Natural History. The renovations and addition to the ROM are proceeding. Some galleries are due to open later this year. Two of five new curatorships are in the Department of Natural History, one for an invertebrate zoologist and one for an invertebrate palaeontologist. The University of Toronto is also undergoing reorganization, and the Department of Zoology probably will split into two or three departments. Dr. Rob Baker, another entomologist, has taken over as chair of that department. Despite drastic budget cuts at the University of Guelph, expansion of the insect collection there is continuing. An Ontario Biodiversity Strategy was released this past winter, and a complex web site was set up for reviewers, but the system was frustrating (deleting posted comments) and reviewers soon gave up on it.

In Quebec, the Plant Protection Diagnostic laboratory now has a web site, which has received many hits and apparently has led to an increase of requests for identifications. The departures of staff and an impending retirement means that there will soon be no agricultural entomologists at l'Université Laval. The De-

partment of Natural Resource Sciences at McGill University has a newly approved graduate program in environmental assessment, aimed at giving policy people some science courses. Also a new graduate program in entomology in the neotropical environments program is offered by the McGill School of Environment and the Smithsonian Tropical Research Institute. The Université de Montréal again advertised a position in systematic entomology but was unable to hire anyone. Early planning is under way for the ESC-SEQ joint meeting in Montreal in 2006. Work is in progress towards an eventual second volume of the Lepidoptera of Quebec on microlepidoptera.

In Newfoundland and Labrador and the Maritimes, the joint 2004 ESC/AES meeting last fall was a success; 235 people were registered. The 2005 Acadian Entomological Society meeting will be held June 19-21 in Fredericton. The online journal of the AES is officially running and accepting papers although nothing has yet been published/posted. The journal will focus on regional papers.

For the Arctic, a visit to the westernmost tip of Alaska revealed that western Alaska is far more rich in black flies than previously supposed. There are plans to visit Chukotka in 2005, although logistics for the trip are proving difficult. The NSERC northern supplement has been reinstated and can be applied for along with a discovery grant.

2. Other matters

The Scientific Committee also discussed other matters arising from the previous meeting, the Annual Report to the Canadian Museum of Nature, planning for the next meeting of the Committee, and other issues. The Annual Meeting of the Biological Survey Foundation was also held.

Project Update: The Biological Survey of Canada Journal of Arthropod Identification

A modular identification e-journal of the Biological Survey of Canada

Steve Marshall

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Hugh Danks

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The Biological Survey of Canada (Terrestrial Arthropods) is pleased to announce the launch of a new e-journal devoted to the publication of richly illustrated guides to Canadian arthropods. "*The BSC Journal of Arthropod Identification*" is a **modular, regional, and fully reviewed** e-journal of the Biological Survey of Canada. We are now seeking new submissions of digital keys and associated products that contribute significantly to the identification of Canadian insects, and anticipate that the new e-journal will soon grow into the major repository of user-friendly, up-to-date tools for the identification of the Canadian arthropod fauna. The first accepted contributions will be posted by early 2006.

Web-based delivery of exhaustively illustrated identification guides holds the key to overcoming the "taxonomic impediment" that slows or prevents the study of many Canadian insects. Such identification guides are easiest to develop, and most likely to be user-friendly, if they are produced on a regional basis and later expanded into national or international guides on a modular basis. Many professional entomologists, students, and naturalists have the regional taxonomic expertise to produce the core of regional guides we need to crystallize

eventually into an "Insects of Canada". The BSC identification e-journal will facilitate the publication and dissemination of these guides by providing the first nationally recognized, reviewed forum for web-based regional taxonomies.

The BSC Journal of Arthropod Identification is fully reviewed, not only to ensure uniformly high standards, but also to see that contributing author's efforts are appropriately recognized as refereed publications. We realize that we cannot call on members of our community to invest time and effort into regional taxonomic reviews and identification guides unless their efforts are recognized as legitimate scholarship, and that recognition will come with publication in an appropriately reviewed e-journal.

The BSC Journal of Arthropod Identification will be housed on the Biological Survey of Canada web site, providing an easily located, high profile "insect identification" portal. The journal's portal and each published page will carry a distinctive standard identifier for the e-journal, including title. The running head of every e-publication will include the journal name, publication number, original publication date,

and dates of revisions. Significant revisions will require editorial approval and re-posting with a modified running head.

Scope

Contributions must review the taxonomy and identification of one or more groups of terrestrial arthropods for all or part of Canada. Each contribution is expected to include novel and fully illustrated identification guides to at least one taxon for a significant geopolitical region, habitat, or ecozone. Contributions must deal with the Canadian fauna, but need not be restricted to Canada, and we welcome more inclusive submissions covering areas (such as the Great Lakes region) or habitats (such as North American spruce forests). Some of the e-publications due to come out in the near future include Exopterygote families of Canada, Scorpionflies of Ontario, and Vespidae of Ontario.

Criteria for publication

The principal prerequisite for an e-publication to appear in this series is the inclusion of a novel and useful identification guide. We expect that most authors will produce a printable dichotomous key, but we also encourage the submission of alternative key formats either as a supplement or a replacement for a dichotomous key. Matrix keys, such as LUCID, represent an attractive option, as do custom HTML keys. We strongly encourage authors to include linkages to regional databases, maps, and related products, and insist that all submissions to this series include numerous high-quality illustrations and/or photographs (see "other instructions to authors" below for some additional recommendations).

New taxa

We encourage the inclusion of new distributional data, new taxonomic characters, new insights into morphology, new biological information and other data relevant to understanding regional arthropod diversity. We will not, however, accept descriptions of new taxa and instead suggest that new taxa be validated in another journal (such as the *Canadian Entomologist*) prior to usage of the taxon names in the e-journal.

mologist) prior to usage of the taxon names in the e-journal.

Copyright

Copyright for all illustrations and photographs will normally remain with the author, although a release will be required and the BSC holds copyright to the published product as a whole. If someone other than the author holds copyright to the illustrations or photographs it must be clearly indicated on the photos/figures and it is the author's responsibility to ensure that they are used with appropriate permission.

Other instructions for authors

Editing and reviewing will be done by fully qualified volunteers. We wish to avoid extensive technical editing and substantial modifications to files, so contributions must be web-ready as submitted. We recommend that all photographs be provided as JPEGs between 72 (minimum) and 300 (maximum) ppi resolution, and that line drawings are converted to JPEG or (better) GIF formats. Further details will be made available to authors upon enquiry, pending the posting of guidelines on the BSC website and the posting of initial fascicles, two of which are outlined below.

Editorial committee and review process

The Editorial committee will include an editor-in-chief and a committee of regional editors with differing taxonomic expertise. The regional/taxonomic editors will, whenever possible, be chosen from the Scientific Committee of the BSC. Contributions can be submitted via email. The file size of image-rich contributions might be too great for email attachments, so manuscripts can also be submitted on CD. (FTP submission might also be possible, but this approach would limit potential reviewers so CDs are recommended). Submissions should be sent to the editor-in-chief (S.A. Marshall, address above), who will forward them to the appropriate regional editor. The regional editor will then choose reviewers on the basis of taxonomic expertise, familiarity with the type of publication submitted, and scope of the submission.

Page charges/subscription costs

The BSC Journal of Arthropod Identification will be open access, with no subscription charges and no page charges.

Support for the journal is being provided in part by the Biological Survey Foundation, a

registered charity that supports the publication work of the Biological Survey. Therefore, contributors and supporters are encouraged (but certainly not required) to make donations to the Foundation (Tax receipts will be issued to individuals). For further details about donations please contact the Biological Survey.

Sample treatments intended for the BSC e-journal

Vespidae of Eastern Canada

One of the first contributions to the upcoming e-journal of the Biological Survey of Canada is a taxonomic treatment of the Vespidae of eastern Canada. The Vespidae, which include the solitary potter wasps, and the eusocial yellowjackets and paper wasps, contain some of the most conspicuous and most familiar taxa of our native Hymenoptera fauna. Despite their attractiveness (in some cases notoriety) and their highly interesting biology the taxonomy of Nearctic Vespidae lingers in a state of neglect. Even the identification of some of the most common taxa poses tremendous challenges. Some groups have never been properly revised or were revised in the first half of the 20th century, and existing keys are often outdated, incomplete and misleading. The need for a new taxonomic resource is well illustrated by the fact that our research has uncovered one new eastern Nearctic species in the genus *Euodynerus* (Eumeninae) and has led to the resurrection of a species of *Ancistrocerus* (Eumeninae) from synonymy.

The eastern Canadian Vespidae project aims at overcoming the taxonomic impediment in this important and interesting group. It provides a complete and novel set of keys from the subfamily to the species level, and covers all the species that occur in northeastern North America (south to Virginia). In many genera a completely new approach at keying out species is taken including a considerable number of newly discovered diagnostic characters that have helped to solve certain taxonomic problems. Taking full advantage of the opportunities of the new electronic medium this work is profusely illustrated with both high-resolution photographs of museum specimens and photographs of live specimens in the field. The standard set of photographs for each species includes at least one dorsal and one lateral habitus photograph (Figs 1, 4) as well as frontal views of the male and female head (Figs 2, 3). Additionally, all diagnostic characters are documented by either high-resolution photographs or line drawings. Considering the great variability of many species, especially their colour patterns, a detailed verbal description of variation accompanies each species treatment. The distribution of species in Ontario is documented through distribution maps and full locality data while their presence in the remainder of eastern Canada is recorded by province. Besides many new provincial records 14 species are recorded for the first time from Canada, including the first Nearctic record of an introduced Palearctic species. The biology of each species is briefly discussed, including new data on several species.

The project is now in an advanced stage. The keys and most of the species treatments have been written and most of the standard images (habitus and head photographs) have been taken. We are hopeful that the Vespidae of eastern Canada will demonstrate the advantages and usefulness of the new electronic medium and will encourage similar taxonomic treatments of other Canadian families of insects.

Matthias Buck

Examples of images from the upcoming Vespidae of Eastern Canada

(Images of pinned specimens taken by D. Cheung, using a Microoptics imaging system, University of Guelph Insect Systematics Laboratory)



Fig. 1 *Ancistrocerus gazella* (Panzer),
female habitus, dorsal



Fig. 2 *Euodynerus crypticus* (Say),
female head



Fig. 3 *Pachodynerus erynnis*
(Lepeletier), male head



Fig. 4 *Parazumia symmorpha* (Saussure),
male habitus, lateral

Mecoptera of Ontario

The Mecoptera (scorpionflies) form a relatively small group including less than 20 species in eastern Canada. Although some scorpionflies are very common, conspicuous insects there are no general treatments of the order for any part of Canada, and they are not easily identified using existing American keys. Most scorpionflies are moderately large, characteristically coloured, and easily photographed both in the field and the laboratory, making the group an appropriate one for an image-rich digital key. A digital guide to the Mecoptera of Ontario was therefore prepared, initially as an undergraduate student thesis and then as a demonstration project for the BSC e-journal of insect identification. It includes a printable dichotomous key, a LUCID matrix key, and a HTML-based dichotomous key, with each couplet appropriately linked to images, distribution maps and other information. Treatment of this relatively small group using alternative approaches provides a demonstration of the pros and cons of different avenues for key construction and distribution.

After finishing a complete draft of the Mecoptera of Ontario identification guide we invited Mecoptera expert Don Webb (author of Mecoptera of Illinois) to join the project, and he is currently revising the key. We expect the final product to be ready for review in October of 2005, with the aim of having it posted soon after the initiation of the BSC e-journal in 2006.

Dave Cheung / Steve Marshall

Mecoptera of Ontario

Home Panorpidae Bittacidae Boreidae Meropidae Gallery Plates About us

Panorpa hungerfordi

Wings with pale yellow background colour, crossveins not margined. Apical band brown and usually continuous, but may have 1-2 clear spots. Pterostigmal band brown, continuous sometimes forked. Marginal spots absent. Male terminalia yellow. Ninth tergum emarginate. Hypovalves narrow, elongate, reaching near base of dististyles. Ventral parameres elongate, narrow, unbranched, barbed, reaching between dististyles. Dististyles shorter than basistyle each with two large lobes. *Panorpa hungerfordi* is rarely collected and is only known in Ontario from four localities. All Ontario records are from August to September.



Male genital bulb- Ventral view of *Panorpa hungerfordi*.



Distribution map of *Panorpa hungerfordi* in Ontario



Panorpa hungerfordi. Photograph by Marshall.

Sample page from Mecoptera of Ontario

The Quiz Page

—test your knowledge of Canada and its fauna—

1. How many separate islands and islets make up the complex of sea islands off the British Columbia coast?
2. Where are the largest and smallest tidal ranges in Canada, and what are the mean tidal ranges there? Also, how long should a record of the tides be kept to establish the full tidal variation in a given locality?
3. How many species of ticks occur in Canada, and what pathogens are they known to transmit?
4. How many families of insects can you name that have only a single species in Canada?
5. Which four families of Hemiptera-Heteroptera have the most species in the Yukon Territory, and what contributes to their prevalence there?

[Answers on p. 59]

Biodiversity Databases on Shoestring Budgets: The Canadian Arachnologist On-Line Spider Database

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Generating species lists and publication-quality maps of specimen collection locales has traditionally been a very difficult task, especially if the goal is to produce lists and maps for entire biogeographical regions. The challenge requires access to voucher records from disparate sources, a deep knowledge of nomenclature, and the often insurmountable problem of securing enough funds to plot these locales using geospatially-aware software. The technical challenges are no longer problems for institutions or individual collectors. There is also no budgetary reason why all of our Canadian biota from plants to vertebrates cannot be mapped using collection records across institutions. On-line databases that permit real-time species lists, layered distribution maps, and remote uploads of voucher records can be accomplished with nothing more than the cost of an old PC, an Internet connection, and a little patience, thanks to the influx of open-source software.

The Canadian Arachnologist On-line Spider Database (accessible via <http://canadianarachnology.webhop.net>) provides the following:

- 1) Species and specimen lists for the Nearctic downloadable as Excel spreadsheets
- 2) Searches for synonyms and currently recognized nomenclature
- 3) Images of habitus (Figure 1), male palps (Figure 2), and female epigyna
- 4) Descriptions of species including their common names and recorded habitats

- 5) All taxonomic references since original description downloadable as Microsoft Word documents
- 6) Pan, zoom and layered maps (Figure 3) and publication-quality distribution maps (Figure 4)
- 7) Rapid specimen retrieval and communication via email to the curator, and finally
- 8) Remote, client-managed collection records via customized Microsoft Access templates.

This database was made possible using the World Spider Catalog (<http://research.amnh.org/entomology/spiders/catalog/>) and the American Arachnological Society's list of Common Names (<http://www.americanarachnology.org/acn5.pdf>). To date, voucher records for a few collections have been entered into this dynamic database, but it will surely gain depth as individual collectors and institutions contribute via their quickly customized and personalized Microsoft Access templates. Because the database fields are Darwin Core-ready, a DiGIR connection will be established to the Global Biodiversity Information Facility such that these data will be accessed by countless systematists and biogeographers throughout the world.

This spider database began as a mere idea in early June and was completed in late July. All told, perhaps 40-50 hours have been devoted to database configuration and web devel-

opment. The inexpensive, low-power computer (Table 1) and software (Table 2) is stored in my basement and I have a high-speed Internet connection from a local provider. Ecological and political base maps are freely available from various sources (Table 3). This is a testament to how cheaply, quickly and easily such projects can be accomplished. Similar configurations could be implemented in institutions for any taxonomic group. One such example is the E. H. Strickland Virtual Entomological Museum

at the University of Alberta. (<http://www.entomology.ualberta.ca/>).

I will be presenting this database to participants during the Joint Entomological Society of Alberta and Canada annual meeting in Canmore, AB (2–5 November, 2005) and will offer guidance and suggestions for those wishing to construct similar projects for personal or institutional purposes. I welcome any comments and suggestions.

Table 1. Hardware used for the Canadian Arachnologist On-line Spider Database

Part	Details
Motherboard	VIA miniITX m9000 all-in-one
RAM	1 GB DDR
Hard drives	1X 30GB, 1X 200GB
Case	Antec Aria
Estimated Cost (CAN\$)	\$500

Table 2. Estimated costs for retail and open-source software used to develop on-line biodiversity database applications

Software	Retail	Open-Source Equivalent
Operating system	Microsoft Windows 2003	Linux
Web Server	Internet Information Server 6	Apache
Database	Microsoft SQL Server 2000	MySQL
Mapping Application	ESRI ArcIMS	MapServer
Estimated Cost (CAN\$)	\$18,500 before taxes	Nothing

Table 3. Sources for political and ecological/biogeographical base maps

Source	Web Address
GeoGratis	http://geogratings.cgdi.gc.ca
CanSIS	http://sis.agr.gc.ca/cansis
National Ecological Framework	http://sis.agr.gc.ca/cansis/nsdb/ecostrat/gis_data.html
The Atlas of Canada	http://atlas.gc.ca/site/english/dataservices/free_data.html



Figure 1. Habitus of FAM: ARANEIDAE, *Argiope aurantia* Lucas, 1833 (Yellow Garden Spider). Photo taken by Robert Holmberg (submitted to Bio-DiTRL)



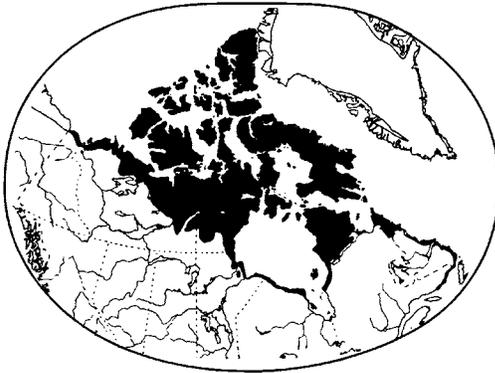
Figure 2. External male palp of FAM: Thomisidae, *Xysticus obscurus* Collett, 1877. Composite photo created by Don Buckle using HeliconFocus (<http://heliconfilter.com>)



Figure 3. Screen capture of a real-time map of FAM: AMAUROBIIDAE *Arctobius agelenoides* (Emerton, 1919) collection locales and ecological map layers presently in the Canadian Arachnologist On-line Spider Database



Figure 4. Publication quality map of FAM: AMAUROBIIDAE *Arctobius agelenoides* (Emerton, 1919) collection locales presently in the Canadian Arachnologist On-line Spider Database



ARCTIC CORNER

News about studies of arctic insects

Arctic Corner provides a forum for news of particular arctic interest, replacing the Biological Survey's newsletter *Arctic Insect News* (1990–2000). Contributions to *Arctic Corner* are welcomed by the Editor (see inside front cover).

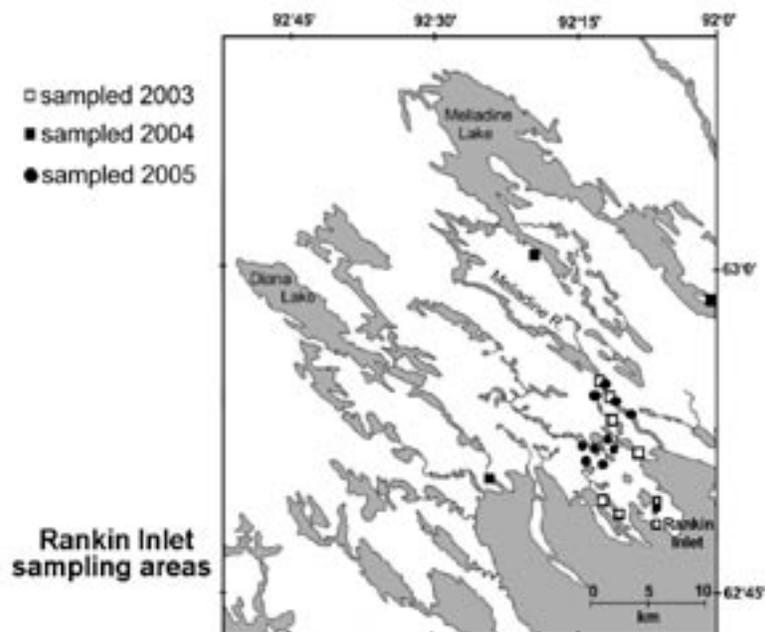
Mayflies and Muscids: Update on the Insects of the Arctic project

Donna J. Giberson

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A project to survey insects in and near major waterways of the Canadian Central Barrens was started in 2000 by Dr. Doug Currie (ROM) and Dr. Donna Giberson (UPEI). The intent was to sample inaccessible regions between the Mackenzie River and Hudson Bay to fill in some gaps in distribution records for certain target insect groups (Diptera: Simuliidae and other families, Ephemeroptera, Plecoptera, Trichoptera) and to collect material for other researchers where possible. To date, samples have been collected along a 700 km corridor

of the Horton River, NWT (2000), a 400 km corridor of the Thelon River, NWT & NU (2002), and near the communities of Yellowknife, NWT (2001), and Baker Lake, Arviat, and Rankin Inlet, NU (2003). A malaise trap was maintained near Rankin Inlet in 2004, and some sampling was carried out by local volunteers. The researchers that have been involved in the project so far include Doug Currie (ROM Ontario), Donna Giberson (UPEI), Peter Adler (Clemson University), Brian Brown (Los Angeles County Museum), Mac Butler (North



Dakota State U.), Amanda Roe (U. of Alberta), and Lisa Purcell (UPEI).

The 2005 field season focussed on the north western shores of Hudson Bay, specifically in the Rankin Inlet region of Nunavut and in Churchill, Manitoba. The 2003 field trip, and the 2004 work by local volunteers, yielded fewer mayfly species in the Rankin area than in Baker Lake or Arviat, and failed to turn up a number of species that had been predicted to occur there. Therefore, I returned to Rankin Inlet in 2005 for a longer and more intensive sampling trip to 1) determine whether the low diversity was real or an artefact of sampling and 2) get more information on the phenology of the species that were present. We got logistic support from Mike Shouldice of Nunavut Arctic College, who arranged the use of the Arctic College Cabin for us. This one-room cabin is located on a tundra lake about 12 km northwest of Rankin Inlet. The use of the cabin meant that we were on the tundra for easy access to collection sites, but close enough to town to make it possible to come in and out for supplies. Thanks to having a cabin to work from, we also transported a microscope to help us with sorting, pinning, and processing insects on site, so that we would get a head start on the samples.

I was accompanied by Steve Burian (Southern Connecticut State University), a mayfly systematist who has been working on northern and eastern mayflies for a number of years. Together we re-sampled a number of sites from 2003, and also hunted intensively for new sites (see map). We also sampled a number of sites repeatedly to get life-history information on these little-known northern mayflies. Despite our best efforts, we found the same species as the previous trip (*Ephemera aurivilli* and *Baetis bundyae*), but were able to



Jade Savage and Steve Burian setting up Malaise trap
(photo by D. Giberson)

collect a variety of life stages and life-history information that we missed in the spot collections of the previous trip. In addition, Dr. Rob Roughley (University of Manitoba) collected mayflies (in addition to dytiscid beetles and other insects) in similar habitats in Churchill, Manitoba, to compare to the tundra regions farther north on Hudson Bay. These samples are currently being processed in our labs in PEI and Connecticut.

Jade Savage (a muscid fly specialist from Bishops University) participated in the 2005 field season as well. Jade set up a Malaise trap near the cabin, and collected a variety of specimens in the Malaise trap, as well as from baited traps and pan traps on the tundra, and by sweeping the vegetation. We were successful in timing the trip to coincide with the early season and summer flowers, so Jade collected widely from all sources to obtain a good picture of the higher flies in the area. These samples are currently being processed at her lab in Sherbrooke, Quebec.

As results from the laboratory work and from later 2005 expeditions come in, they will be summarized for this newsletter. Results from successive planned investigations in some taxa are proving to be especially useful.

Selected Future Conferences

Organization	Date	Place	Contact
ENTOMOLOGICAL CONFERENCES			
Entomological Society of Canada	2005, 3–6 Nov.	Canmore, AB	with the Entomological Society of Alberta http://www.biology.ualberta.ca/courses.hp/esa/2005jam.htm
	2006	Québec	with la Société d'entomologie du Québec
Entomological Society of America	2005, 6–9 Nov.	Fort Lauderdale, FL	ESA, 9301 Annapolis Rd., Lanham, MD 20706-3115; meet@entsoc.org
	2006, 10–14 Dec.	Indianapolis, IN	ESA, see above
10th International Symposium on Tardigrada	2006, 18–23 June	Catania, Italy	http://www.tenth.tardigrada.symposium.unimo.it/
6th International Congress of Dipterology	2006, 23–28 Sept.	Fukuoka, Japan	http://apollon.nta.co.jp/6icd/perl/jouhou.pl?&mode=other&jouhou_id=1209
6th International Conference of Hymenopterists	2006, 22–27 Feb.	Sun City, South Africa	D. J. Brothers, brothers@ukzn.ac.za
OTHER SUBJECTS (especially those relevant to Survey projects)			
North American Benthological Society	2006, 4–9 June	Anchorage, AK	http://www.benthos.org/Meeting/index.htm
PROVINCIAL SOCIETIES			
Entomological Society of British Columbia	2005, 21 Oct.	Victoria, BC	http://esbc.harbour.com/
Entomological Society of Alberta	2005, 3–6 Nov.	Canmore, AB	with the Entomological Society of Canada (see above)
Entomological Society of Manitoba	2005, 21–22 Oct.	Winnipeg, MB	http://home.cc.umanitoba.ca/~fieldspg/meet05.html
Entomological Society of Ontario	2005, 21–23 Oct.	Toronto, ON	http://www.entsocont.com/
Société d'entomologie du Québec	2005, 27–28 Oct.	Orford, QC	http://www.seq.qc.ca/activites/reunions/seq2005/accueil.htm

Answers to Faunal Quiz

[see page 52]

1. Off Canada's Pacific coast there are 36 major islands (each more than 129 km² in area) and 5,198 minor islands, as well as numerous smaller rocks and islets, for a total of many thousands of islands and islets.
2. Burntcoat Head, NB (Bay of Fundy, a long narrow funnel that produces the greatest tidal range in the world), has the largest tidal range in Canada (16.1 metres); Eureka (NU), Ellesmere Island, probably has the smallest (0.1 metres). A tidal record has to last at least 19 years to record all the possible ranges of tides, because that is the cycle of the relative motions of the earth, moon and sun, which are responsible for the tides.
3. Forty species of ticks are recorded from Canada. Pathogens transmitted by these species include the causative agents of Lyme disease, relapsing fever, tularemia, Rocky Mountain spotted fever, Q fever, Colorado Tick fever, Powassan encephalitis, babesiosis, and perhaps others. [Lindquist and Wu: http://res2.agr.ca/ecorc/ti/index_e.htm]
4. Families of insects with only one species in Canada are too numerous to list (there are more than 50), but for examples see data at <http://www.biology.ualberta.ca/bsc/english/faunalanalysis.htm#basic>. A few of these families contain only one world species; a larger number are more or less southern taxa with only one outlying species in the north.
5. Families of Hemiptera-Heteroptera with the most species in the Yukon Territory are Miridae (112 spp.), Lygaeidae (19), Saldidae (17) and Anthocoridae (14 spp.). Miridae and Lygaeidae are the most diverse families in Canada as a whole (650 and 117 spp. respectively). Saldidae, Anthocoridae and Lygaeidae tend to be relatively better represented in northern than in southern zones.

[<http://www.biology.ualberta.ca/bsc/pdf/scudder2.pdf>]

Quips and Quotes

8 people will do 10 people's work better than 12 people
(Jack W. Whiteman [corollary to Parkinson's Law])

All cases are unique, and very similar to others
(T.S. Eliot)

There is no way of writing well and also writing easily
(Anthony Trollope)

Lazy people are always looking for something to do
(Marquis de Vauvenargues)

Hasty climbers have sudden falls
(English proverb)

No comment

“The collection of Say was lost to dermestid beetles and other causes (Ord 1859, Mawdsley 1993). Say gave no indication of the geographic origin of his specimens. His description is too poor to clearly establish the identity of the species”

Notes on the type of *Catops simplex* Say in Peck, S.B. and J. Cook. 2002. Systematics, distributions, and bionomics of the small carrion beetles (Coleoptera: Leiodidae: Cholevinae: Cholevini) of North America. *The Canadian Entomologist* 134(6): 723-787.

“After this work was completed, most of the larval specimens of *Hoplandria* studied were lost when a large shipment of specimens disappeared.”

Footnote from Thayer, M.K., J.S. Ashe and R.S. Hanley. 2004. Discovery of the remarkable larvae of Hoplandriini (Coleoptera: Staphylinidae: Aleocharinae). *Annals of the Entomological Society of America*. 97(4): 624-634.

Requests for Material or Information Invited

Would you like assistance in studying the fauna?

The Biological Survey of Canada encourages cooperation in taxonomic and ecological studies of the 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 2006 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
2	Acari from family Uropodidae	Anywhere	Free living and parasitic terrestrial, preserve in 75% ethanol	C. Constantinescu
3	Adelgidae (conifer woolly aphids)	Anywhere	Preserve insects and bark, needles or galls in 70% ethanol. Specimen records and host plant records	R. Foottit
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. Foottit

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: hdanks@mus-nature.ca

Name: _____

Tel. : _____

Email: _____

Fax: _____

Address: _____

Material required (specify taxon, region, habitat, or other details, as appropriate):

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:

