Canadian Association of Palynologists
Association Canadienne des Palynologues

NEWSLETTER

Volume 37 Number 1 May 2014

President's Message

Having accepted the responsibility (as well as the honour!) as President of CAP, my major initiative to date has been sponsoring **Topical Session T108: *Palynology in Geoarchaeological and Environmental Studies*** which was accepted for the Annual Meeting of the Geological Society of America to be held October 19 – 22, 2014. On one of the infrequent occasions that GSA holds its annual meeting outside the USA (at the Vancouver Convention Centre – West Building in Vancouver, British Columbia) I hope that we can showcase the importance of palynology and the broad scope of studies to which it can contribute. Our former president, Terri Lacourse of the University of Victoria, will be presenting at this session that will examine the application of pollen and non-pollen palynomorph analysis to archaeological and environmental issues—the latter including topics as varied as natural hazard prediction through anthropogenic impact assessment. It is being co-sponsored by both AASP- The Palynological Society and PS- The Paleontological Society, so I am hoping to see a diverse slate of speakers and audience, which the very broad scope of the session was intended to capture… and the patriot in me would like the palynological and paleontological community around the world to take note of the leading role Canada has taken (and continues to take) in this field.

My own interests have allowed me to wander as far back as the Miocene (even dipping my toes tentatively into the Paleogene) of the New Jersey margin and to germinate cysts of freshwater dinoflagellates (some from varved sediments nearly 200 years old!) to get insights into this largely overlooked group of non-pollen palynomorphs… and throughout my 3-decades-long palynological career, the analysis of pollen from the Great Lakes region has continued to produce fodder for my scientific curiosity, and has allowed me to interact with a wide variety of geoscientists, biologists, and archeologists.

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My first association with CAP dates back to my days in Halifax, where my frequent visits to the Bedford Institute of Oceanography to see my PhD co-supervisor, Peta Mudie, also brought me into contact with Graham Williams and Rob Fensome and various students and visiting scholars in the field—it's where I first met André Rochon and former CAP President Elisabeth Levac, for instance. It is sad to see so little commitment from the Geological Survey of Canada to maintain strength in this field as colleagues retire—but on the bright side, in my experience, palynologists continue to be active researchers and mentors decades after retirement, which is a testament to how interesting this field is!

A key focus of the CAP Executive is to encourage the efforts of the palynologists of tomorrow despite waning funding from government agencies and industry, and we were pleased to see a strong field of candidates for this year's CAP Student Award. Andrea Price, who won the prize a few years ago to support her MSc research with Vera Pospelova at the University of Victoria, was this year's recipient of the CAP Student Award for her dissertation research at McGill University with Gail Chmura entitled "Dinoflagellate Cysts as Indicators of Water Quality in NE US Estuaries". We hope to see an even larger pool of applicants in years to come, and I hope to see all of this year's applicants at our session at GSA this fall!

Francine McCarthy
CAP President

Editor's Notes

Thank you to all who contributed material for this edition of the *CAP Newsletter*: Alwynne Beaudoin, Chelsea Daku, Linda Dancey, Konrad Gajewski, Jennifer Galloway, Simon Goring, Matthew Peros, André Rochon, Art Sweet, Scott Swinden, and Mary Vetter.

Deadline for Next CAP Newsletter

Please submit items for the next issue of the *CAP Newsletter* (Volume 37, Number 2, December 2014) by November 10, 2014. Conference reports, announcements, field trip reports, notices of new books, dissertation abstracts, book reviews, news, and essays on topics relevant to Canadian palynology are all welcome. Please send contributions to:

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CAP Special Session at the GSA meeting, Vancouver 2014

The Canadian Association of Palynologists together with the GSA Archaeological Geology Division, the Palynological Society, and the Paleontological Society will be sponsoring a special session at the Geological Society of America meeting in Vancouver held October 19-22, 2014.

The session is titled ***Palynology in Geoarchaeological and Environmental Studies*** and will examine the application of pollen and non-pollen palynomorph analysis to archaeological and environmental issues—the latter including topics as varied as natural hazard prediction through anthropogenic impact assessment.

There is a large palynological and geoarcheological community in the Vancouver area, with interesting local examples like the impact of the great earthquake an tsunami of A.D. 1700 to be discussed. There are also many practical applications to solving a variety of environmental problems that should draw a large and diverse group of participants.

Looking forward to seeing you all there!

Francine McCarthy

Message from the Canadian Federation of Earth Sciences - The Coordinated Voice for Canadian Earth Sciences

What is CFES?

The Canadian Federation of Earth Sciences (CFES) is the umbrella organization for Earth Science societies in Canada and the coordinated voice for Canadian Earth Sciences. Its stated Mission is ***to be the coordinated voice of the Earth science community in Canada, ensuring that decision makers and the general public understand the contributions of Earth sciences to Canadian society and the Canadian economy.***

CFES began its life in 2006 as successor to the Canadian Geoscience Council. The vision was to ensure that Canada is recognized at home and abroad as a world leader in Earth Sciences. CFES was seen as an organization that could represent the whole of the Earth Science community in forums where a collective voice would be more effective and carry more weight than the multiple voices of individual societies. The initial statement of strategic priorities ended with the statement that "***CFES-FCST, as the unified voice for ES in Canada, ensures Canadians take pride in their role as world leaders in Earth Science.***"

CFES represents 14 Member Societies and is managed by a volunteer Board of Directors nominated from the Member Societies. Its

overall direction comes from a Council of Members, comprising senior representatives of all Member Societies. In addition to the Member Societies, CFES shares a close relationship with Geoscientists Canada, communicating on issues related to professional geoscientists across the country.

What Does CFES do?

CFES plays an important role within Canada and internationally on behalf of the Canadian earth science community. Figure 1 illustrates the organization's domestic and international context.

Domestically, CFES is an important player in a number of initiatives that deliver significant value to the earth science community. CFES is an active member of the Partnership Group for Science and Engineering (PAGSE), a cooperative association of more than 25 national organizations in Science and Engineering that represents approximately 50,000 individual members from the industry, academia, and government sectors. PAGSE was formed in 1995 at the invitation of the Academy of Science of the Royal Society of Canada to represent the Canadian science and engineering community to the Government of Canada. CFES is the only Earth Science organization represented in PAGSE and this provides an important opportunity for earth scientists to provide input to Federal policy and decision makers. CFES is also a founding member of the Science and Media Centre of Canada (SMCC), an organization that helps journalists report on science issues, contributing to more informed media coverage of scientific issues.

In addition, CFES maintains committees that operate ongoing national science and advocacy activities including:

- **The Canadian Geoscience Education Network (CGEN) is the education arm of CFES**. CGEN is concerned with all levels of Earth Science education in Canada and encourages activities designed to increase public awareness of Earth Science. CGEN exists to stimulate the development of Earth Science awareness activities in Canada and to coordinate the efforts of the Canadian Earth Science community in matters related to Earth Science education and public awareness of Earth Science. CGEN undertakes initiatives that can only be conducted on the national scale and raises funds to support grassroots activities. The EdGeo program, a highly successful initiative that supports local workshops on earth science for Canadian teachers is coordinated by CGEN.

- **The Canadian National Committee for Geoparks is a CFES committee**. It has developed Guidelines for Canadian Geoparks in English and French and works in close cooperation with the Geological Society of America, which is responsible for developing guidelines for Geoparks in the USA. The Stonehammer Global Geopark in the Saint John (NB) region achieved Global Geopark Status in October 2010 and is currently the only Global Geopark in North America. CFES liaises with the Global Geopark Network and UNESCO and is a convenor of the 6th International UNESCO Conference in Saint John in September 2014. This is the principal forum for discussion of Global Geoparks and attracts people from dozens of countries. Under the umbrella of UNESCO, and through exchange between the global network partners, important national geologi-

cal sites gain worldwide recognition and profit through the exchange of knowledge, expertise, experience and staff with other Geoparks.

- **CanGeoRef is developed by CFES and AGI and is a subset of GeoRef, the earth science reference database built and maintained by the American Geological Institute (AGI) which contains 3.2 million references**. In addition to literature from provincial and territorial agencies, CanGeoRef will contain all publications of the Geological Survey of Canada and all peer reviewed literature pertaining to Canadian Geoscience. CanGeoRef will eventually include all Canadian Geoscience Literature published since the early 1800's. The CanGeoRef Steering Committee advises CFES on technical and strategic issues and its chair sits on the Board of CFES.

- **CFES led Canada's bid to hold the 36th International Geological Congress in 2020 in Vancouver.** Although ultimately unsuccessful, this bid has led to a proposal by members of the bid committee to host the first IUGS conference outside the International Geological Congress. The conference, titled "Resourcing Future Generations" is an outgrowth of its global initiative of the same name that will bring geoscientists and geoengineers together to address the world's future resource needs. RFG is aimed at identifying and addressing key challenges involved in securing natural resources to meet global needs post -2030. **This proposal is being sponsored by CFES.**

- **Four Billion Years and Counting: Canada's Geological Heritage, to be co-published by CFES and Nimbus Press, is in the final stages of production and will be out in 2014.** The project to produce a popular book on the geology of Canada is a grassroots initiative of the geoscientific community. The book was accepted as one of Canada's principal contributions to International Year of Planet Earth and its publication is a significant accomplishment of the community at large.

- **CFES awards the CFES National Earth Science Mentorship Medal annually to recognize sustained and inspirational mentorship by Earth Scientists.** This award was initiated in honour of Paul F. Williams, a geologist known for scientific and mentoring excellence, candour and integrity and will be awarded in 2014 for the 6th time to Dr. Fred Longstaffe of the University of Western Ontario.

CFES is also the primary voice for Canadian earth sciences in the international community and it could be argued that CFES is really the only organization in a position to fill this role. CFES is an international affiliate of the American Geological Institute (AGI) and an affiliate (and represents Canada) on the International Union of Geosciences (IUGS). Through this affiliation, the Canadian earth science community is linked to the International Council for Science (ICSU) (Figure 1). CFES also represents Canadian earth sciences in UNESCO and for many years has hosted the Canadian National Committee on the International Geological Correlation Program (IGCP). These are an important linkages between Canadian earth sciences and the international earth science community that provide us with input into such diverse international activities as the IGCP and Geoparks programs.

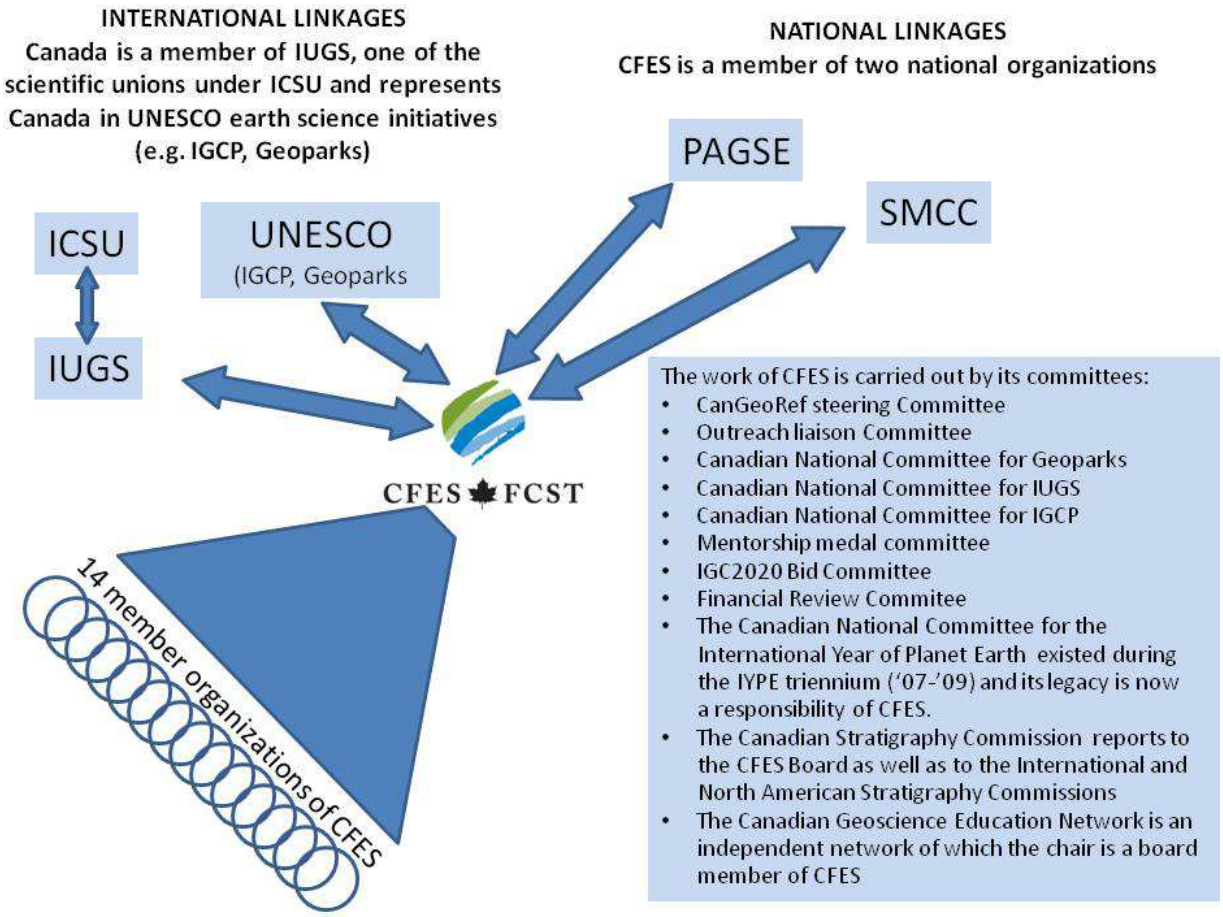

Figure 1 Organization context for CFES

Looking to the Future

CFES is currently undergoing re-organization and a thorough discussion and review of its operational and strategic priorities. At its annual general meeting in Ottawa in November, 2014, CFES Council agreed on six strategic priorities that will govern its activities in the coming years:

1.Provide a coordinating role and common voice for member societies and the Earth Science community in Canada

2. Coordinate public policy advocacy on behalf of Earth Sciences

3. Facilitate public awareness of Earth Science and Earth Science literacy

4. Represent Canadian Earth Sciences internationally

5. Provide Service to Member Societies in Particular and to the Earth Science Community in General

6. Coordinate support for professional and academic organizations in Canada

More detail on each of these can be found on the CFES website (see below). Of particular importance is the organization's role in communicating the concerns of its member societies and the earth science community at

large to decision makers and the Canadian public. This is captured in the first two strategic priorities and will be a significant focus of our activities in the near term. In particular, the CFES Board recognizes that the advocacy role on behalf of earth sciences in Canada is critical. The Canadian Earth Science community needs a common and unified voice to speak on its behalf on issues related to natural resource development, environmental protection and public safety. CFES intends to develop the means be that voice, to engage decision makers on these issues and promote the important messages to the general public. We are establishing an organizational headquarters in the Department of Earth Sciences at the University of Ottawa, which has graciously agreed to host our mail and email addresses, and provide us with access to administrative support. We view this as the first step in establishing a presence in the capital that will allow us to engage with decision makers and a centre from which the advocacy role can be managed.

CFES occupies a unique and important niche in the Canadian earth science community. It is truly a living example of the adage that "the whole is greater than the sum of the parts". It is already accomplishing much on behalf of its member societies and the earth science community through the energy and passion of its dedicated volunteers. But there is much more that could be accomplished. The CFES member societies have set the strategic priorities for the organization for the coming years and have clearly indicated that the role of CFES as their coordinated voice is of critical importance. If the strategic goals are to be met, it will be crucial that member societies find ways to participate actively in the activities of CFES. A critical part of this will be finding volunteers within their organizations that can serve on CFES Board and committees on their behalf.

CFES maintains a comprehensive website at www.earthsciencescanada.com/cfes/ with up to date information on issues of concern to the earth science community, news and events, and the activities of the organization. We invite you to visit the site and welcome suggestions as to how we can serve the earth science community better. Of course, we particularly welcome volunteers who would like to contribute to the continued well being of the earth science community in Canada.

Scott Swinden, President CFES

PALYNFO
The Arctic Institute of North America

The Arctic Institute of North America operates a field station at Kluane Lake in the southwest Yukon, which is the focal point for research and teaching across the area (http://arctic.ucalgary.ca/klrs/kluane-lake-research-station). For example, the University of Ottawa Geography Department has been running a summer field course from the Kluane Base for over 40 years. The field station is adjacent to the UNESCO World Heritage Site Kluane National Park, and there is access to glaciers and ice caps as well as alpine and boreal ecosystems. There is a long history of research activities in the region in a wide variety of subjects. Recently, to celebrate the 50th anniversary of the establishment of the Base, a series of articles were commissioned summarizing past and ongoing research in the area. These articles are now starting to appear in a special issue of

the journal Arctic, and are available at: http://arctic.synergiesprairies.ca/arctic/index.php/arctic/issue/current

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CANADA

Graduate Student Opportunities — Opportunités pour les étudiants de cycles supérieurs

Variabilité temporelle de la productivité primaire des estuaires au cours du XXe siècle – quantification de l'importance relative des facteurs naturels (climatiques) et anthropiques (transformation du territoire).

Sous l'effet des pressions anthropiques et des facteurs naturels, les écosystèmes changent sur des échelles de temps souvent plus longues que ce que permettent les programmes de suivis environnementaux. Le carottage des sédiments et l'analyse des marqueurs temporaux (pollen, diatomées, pigments fossiles) permettent d'évaluer les changements à long terme dans la productivité et la biodiversité des producteurs primaires. Ce projet fait appel aux personnes intéressées aux indicateurs de santé à long terme des écosystèmes côtiers.

Le projet offre la possibilité de travailler à l'UQAR ou à l'Université de Moncton, Campus de Shippagan (UMCS) sur les milieux côtiers du Nouveau-Brunswick. Un appui financier de 13 000$/an est disponible pour les étudiants non boursiers.

Le projet se déroule conjointement à l'ISMER-UQAR et à l'Université de Moncton, Campus de Shippagan (UMCS) en codirection avec André Rochon (UQAR) et Alain Patoine (UMCS). Veuillez faire parvenir un curriculum vitae (avec références) et un relevé de notes à l'une ou l'autre des adresses courriel ci-dessous.

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Dinoflagellate diversity and propagule pressure in the ballast of vessels of Arctic Ports: Churchill (Manitoba) and Deception Bay (Nunavut)

Project description

Dinoflagellates constitute an important part of marine phytoplankton after diatoms. Some di-

noflagellate species produce harmful algal blooms, toxic or not, which may cause massive kills of birds and marine mammals, and represent a threat for human health. Dinoflagellates can be transported in ballast water of commercial ships and they may threaten the ecosystem integrity in areas where ballast waters are discharged. As part of a multidisciplinary program studying the pathways of introduction and further spread of aquatic invasive species, we are seeking candidates for the Oceanography Master's program at ISMER.

The project aims at determining the dinoflagellate species diversity and propagule pressure from ballast water samples collected in ships visiting the ports of Churchill (Manitoba) and Deception Bay (Nunavut). Dinoflagellate specimens with and without cell content will be counted and identified to the species level. Culture experiments will be performed to determine the proportion of viable cells within each sample. The dinoflagellate, and eventually dinocyst, assemblages will then be compared to available published lists of species from the study area. Finally, seasonal variations of dinoflagellate assemblage composition will be determined, and comparison of samples collected before and after ballast water exchange will be performed. This project is part of a collaborative program between the Freshwater Institute (Fisheries and Oceans – DFO), the Maurice Lamontagne Institute (Fisheries and Oceans – DFO) and ISMER-UQAR. The project will be co-supervised by André Rochon (ISMER), Kimberley Howland (DFO – Winnipeg) and Nathalie Simard (DFO – Mont-Joli).

Salary

A scholarship of $14,000/yr is available for a MAXIMUM of 2 years. Foreign students may also be eligible for a scholarship to cover the rated-up tuition fees, depending on the availability of such scholarships.

Admissibility criteria

Fulfill the requirements of UQAR Master's program in Oceanography; Obtain a cumulative averaged CPA of at least 3.4/4.3 or the equivalent; Bachelor degree in Biology, Oceanography or related field, with a solid base in marine phytoplankton ecology and taxonomy; Interest for the ecology and taxonomy of dinoflagellates and problems linked to the transport of marine aquatic invasive species; English (reading and writing) and French (reading and writing, an advantage).

Potential candidates must submit their documents to the project director mentioned below. These documents, all within a single PDF file, must include the following:

- Curriculum vitae;
- Motivation letter;
- Academic transcripts;
- Name and coordinates of two referees.

Selection of candidates will begin immediately and continue until a suitable candidate is found. The selected candidate will have to register as a full time student in the Master's program in Oceanography at UQAR for the summer 2014 semester, or the semester of fall 2014 at the latest.

To submit your documents or obtain additional information on the project, please communicate with the project director at the following address:

André Rochon
Professor in geological oceanography
Institut des sciences de la mer de Rimouski (ISMER)
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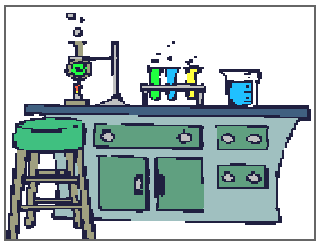
PALYNFO



NEW LABS

New Paleoecology Laboratory at Bishop's University

With support from the Canada Foundation for Innovation, the Government of Québec, and other partners, a new paleoecology laboratory has been opened at Bishop's University (Sherbrooke, Québec). Completed in 2013, the laboratory is directed by Dr. Matthew Peros, Canada Research Chair in Climate and Environmental Change. The laboratory is equipped with infrastructure and instrumentation to enable a broad range of paleoecological research methods—including pollen analysis—to be utilized. The facility includes:

- A cold room for core and sample storage
- Two fume hoods (HF-certified) for chemical processing
- A microscope room, a sediment analysis room, a student office, and an field equipment storage room
- Four new Zeiss upright research microscopes (two with digital colour cameras) for microfossil identification (with fluorescence and DIC capabilities)
- Three Nikon stereomicroscopes for macrofossil identification
- A Microtrac laser particle size analyzer for sedimentological analysis
- A Velmex tree ring measuring system and WinDendro tree ring analysis software
- A UV-visible spectrophotometer for measuring humification and biogenic silica content in lake and peat sediments
- A magnetic susceptibility meter for measuring the presence of iron-bearing minerals in sediments
- An oven and furnace for sediment analysis
- Various lake and peat coring devices such as a Livingstone piston corer, a Russian peat borer, and a gravity corer

Three graduate students are currently undertaking their thesis research in the laboratory:

Frank Oliva, Ph.D. candidate, University of Ottawa (co-supervised with Dr. André Viau), whose research project will attempt to reconstruct the history of hurricane activity in Nova Scotia using geological proxy evidence from coastal lagoons and lakes.

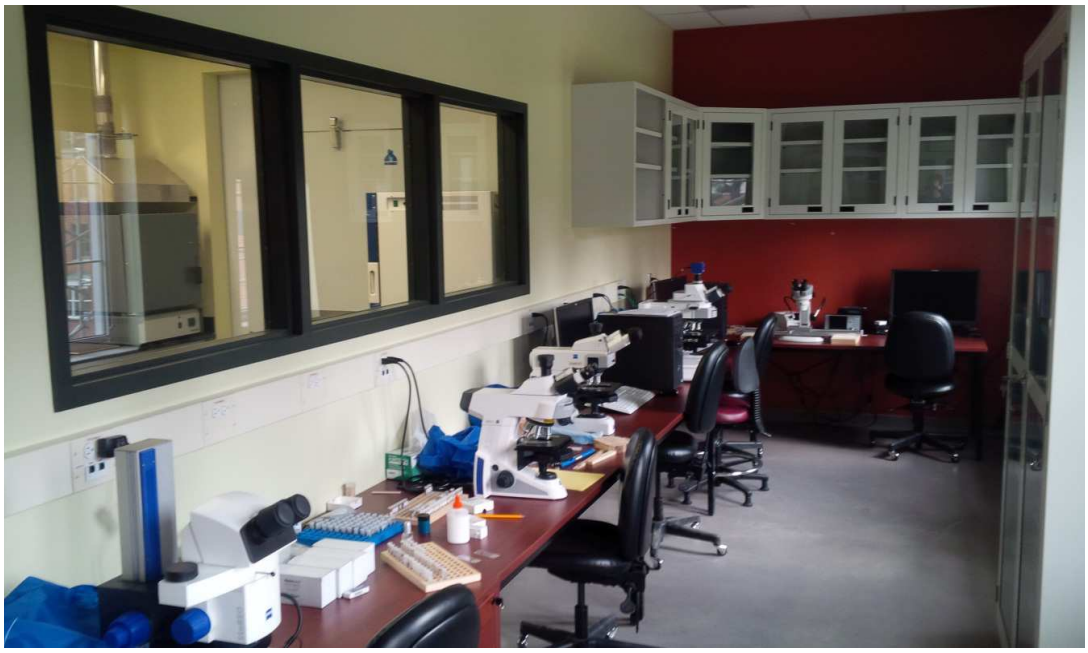
Anna Agosta G'meiner, M.Sc. candidate, McGill University (co-supervised with Dr. Gail Chmura), who is researching the Holocene environmental history of Cayo Coco, Cuba, using pollen from a laminated sediment core.

Benjamin Marquis, M.Sc. candidate, l'Université de Sherbrooke (co-supervised with Dr. Mark Vellend), who is investigating the sensitivity of sugar maple to climate change in the Eastern Townships using tree rings.

In addition, two undergraduate theses have already been competed in the lab:

James Carroll, B.A., Bishop's University, whose thesis was titled "The Johnville Peat Bog: A Database of Long-Term Climate Change", which was a study using testate amoebas to investigate how water tables changed over the last 1000 years at an ombrotrophic peat bog near Bishop's University. Jamie's results showed that water tables were relatively unaffected by the Little Ice

Wet lab, Bishop's Paleoecology Laboratory



Microscopy room, Bishop's Paleoecology Laboratory

but underwent significant variability in the 20th century in response to human impacts.

Andrew Manouk, B.A., Bishop's University, who completed a thesis investigating how black spruce trees responded to the drainage of the Johnville Peat Bog in the 20th century. Andrew's results showed that black spruce underwent a rapid expansion within the bog in response to water table drawdown.

The new laboratory represents a dynamic and inter-disciplinary environment and new members are being sought to join the team. Students interested in graduate studies or postdoctoral positions should contact Dr. Matthew Peros at mperos@ubishops.ca. Research projects are currently being undertaken in southern Québec, the Maritime Provinces, and the Caribbean, on topics related to Holocene environment and climate change. Graduate students would be enrolled at, and would receive degrees from, either McGill University or l'Université de Sherbrooke. Within the region, numerous opportunities exist for collaboration with leading scientists in the fields of geography, ecology, and geomatics.

Please feel free to send any inquiries or questions to:

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Community Profiles

PALEOPALYNOLOGY at the GEOLOGICAL SURVEY OF CANADA, CALGARY

Time brings change, even in paleopalynology at GSC, Calgary. Since the departure in 1994 of the late Dave McIntyre, the expertise of the palynological group at GSC, Calgary has been concentrated on terrestrial palynomorphs. John Utting focused on Carboniferous through Triassic miospores; Arthur Sweet specialized on the Cretaceous through Paleogene; and James White, with a background in Quaternary palynology, concentrated on Tertiary terrestrial palynomorphs but occasionally extended his research into the latest Jurassic. These palynologists have recently retired and become emeritus scientists. The presence of Jan Jansonius, a visiting scientist, and Ramakant Kalgutkar, an Emeritus Scientist specializing in fossil fungi, added significantly to GSC Calgary's palynological expertise until their deaths in 2013. Throughout the last 13 years Linda Dancey has contributed to the palynology laboratory by skillfully processing a wide spectrum of geological samples, ranging from Paleozoic through Quaternary in age. Since joining GSC Calgary she has also mentored and contributed to the learning experience of 17 students in the techniques used in preparing samples for study. Our overall intent has been to provide work experience and knowledge to students that could be beneficial in their future careers.

During the 1990s, and into the 2000s there seemed little opportunity for renewal until the arrival of Jennifer Galloway in 2009, first as a Postdoctorate Fellow and then as an accomplished paleopalynologist concentrating on nonmarine Jurassic and Early Cretaceous Arctic paleofloras. From a background

in the Quaternary, Jennifer has brought renewed vigor to the discipline of palynology and hope for its continuation at GSC Calgary. The optimism for renewal that began with Jennifer is continuing with the presence of two exceptional University of Calgary graduate students, Kimberley Bell and Kyle Sulphur, both who were fortunate to gain grounding in terrestrial palynomorphs from Len Hills before he passed away in 2013. Chelsea Daku, who recently completed her Geology (Honours) B.Sc. thesis at the University of Calgary, also contributed to the palynological group at GSC, Calgary.

Kimberley Bell's B.Sc. in Geology (Honors) and B.Sc. in Environmental Sciences provide a strong academic background for geological, biostratigraphic and paleoenvironmental research. Since 2008 Kimberley has worked at the GSC as either a full or part time student under the auspices of the Federal Student Work Experience Program (FSWEP), Research Affiliate Program (RAP) and a university Program for Undergraduate Research Experience (PURE). Projects have included the microscopic study of spores and pollen and their application to biostratigraphic problems in the Late Cretaceous of the Yukon and NWT, aspects carried into her Ph.D. research. Under the co-supervision of Charles Henderson (Geoscience Department Head) and myself, Arthur Sweet (GSC Calgary), the objective of her Ph.D. dissertation will be to use palynomorphs to resolve complex geological problems involving intra- and interbasinal correlations of Upper Cretaceous strata and their bounding unconformities. She has a special interest in applying phylogenetic principals to angiosperm pollen. Kimberley has demonstrated an aptitude for the digital imaging and morphologic interpretation of fossil pollen and spores. She is well suited for independent research. A reading course last winter initiated her into the world of dinoflagellate cysts. Adding to her list of more than 30 awards, scholarships and grants, Kimberley was recently successful in gaining an up to three year NSERC, Postgraduate Scholarship. These all demonstrate well-deserved recognition of her academic and research accomplishments.

Kyle Sulphur, since 2010, has been involved in palynology at the GSC as either a FSWEP or RAP student. He completed his Geology (Honours) B.Sc. at the University of Calgary with his thesis focused on the migration of early angiosperms in North America under the supervision of Len Hills, James White and Jennifer Galloway. Kyle is now working towards his M.Sc. under the supervision of Federico Krause (U. of Calgary) and Jennifer Galloway (Adjunct, U. of Calgary), which he anticipates to finish this summer. Kyle's thesis focuses on resolving the age and paleoenvironment of deposition of mid-Cretaceous strata in the Canadian high Arctic Kyle is a skilled analyst of pollen and spore morphology. He applies a quantitative approach to his palynological analyses so that he can explore the statistical relationships of northern pollen and spores to those preserved in correlative strata in North America and beyond. Kyle anticipates that his research will shed light on the paleoecology of early angiosperms, important biostratigraphic markers, in high-latitude Canada. This and his appreciation of the digital manipulation of data will serve him well in his planned undertaking of a doctorate specializing in terrestrial mid-Cretaceous palynofloras of Arctic Canada.

We look forward to sponsoring many more Geoscience students in the future through GSC programs and their introduction to the fascinating study of palynology.
Hence, one can now look at the status of

paleopalynology in Canada, if not specifically at GSC Calgary, with full optimism and the hope that the younger generation can look forward to amazing careers in palynology. There is still so much research to be done. Palynology has made interesting careers for those of us passing into retirement and is sure to hold future adventures for the next generation as the rocks continue to yield their treasures. These young paleopalynologists are necessary specialists to ongoing exploration in Canada's northern energy basins but also closer to home as new questions continue to arise on the age and environments of deposition of sedimentary strata throughout Canada.

Submitted by Arthur Sweet
with input from
Jennifer Galloway and Linda Dancey

Dissertation Abstracts

Chelsea Daku
(BSc Honours, University of Calgary)
Supervisors: Dr. Jennifer Cuthbertson and Dr. Jennifer Galloway

Palynological analysis of post-eruptive sediments from "Fifty" kimberlite, Northwest Territories: Implications for age and regional paleoecology

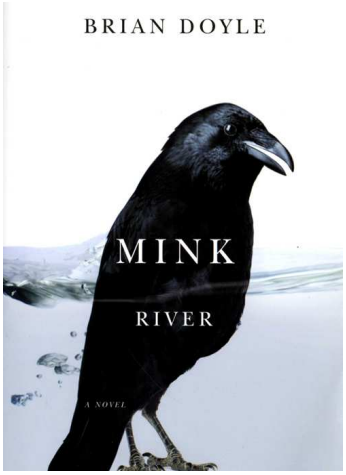
Abstract:
A palynological study was completed on the post-eruptive sediments from the kimberlite "*Fifty*" to determine vegetation patterns signalling paleoclimate variations through the time encompassed by the drill core. The drill core "*Fifty*"was procured by BHP Billiton Ltd. in 1997 from the Ekati mine property in the eastern-central Northwest Territories. The core is dominated by re-sedimented volcaniclastic kimberlite and secondary crater infill of fine grained material. Identification of spores, pollen and some non-terrestrial palynomorphs preserved in the fine grained organic-rich sediments was completed to determine age of eruption and paleoclimate during and following the time of eruption. Relative proportions of taxa present were used for constraining assemblage zones with implications of varying climatic conditions. Two zones and four subzones were identified, showing a general warming trend from the time of kimberlite eruption. This trend was signalled by variable changes in pollen such as those belonging to the Taxodiaceae-Cupressaceae-Taxaceae family derived from vegetative cover from moist, coniferous forests at the oldest depths, followed by a gradual transition to palynomorphs such as *Quercoidites, Alnipollenites,* and *Sequoiapollenites* derived from vegetation from warmer, dryer, deciduous hardwood forests at the youngest depths. Both marine and fresh water non-terrestrial palynomorphs such as *Pterospermopsis* and *Sigmopollis* are present in varying concentrations. The non-terrestrial palynomorph presence is posited to be related to the retreat of the Late Cretaceous Western Interior Seaway or simply due to reworking of sediments from the crater walls during post-eruptive crater-infilling.

PalynoLit

A list of my favourite things. . .

The fictional village of Neawanaka on the Oregon coast is a place well worth visiting. Inhabited by a mixed community of Salish and Irish descent, it is a place of trees and shaded trails, pebbled shores, and a fish-filled river. It's damp and dark, yet alive with the sparkle of sunlight on water, the sound of rain, and the wind from the sea. The people eke out a precarious living. Fishing and logging, formerly the main economic activities, are both declining industries and nothing else has really taken their place.

Helped by his friend Cedar, Worried Man runs the Department of Public Works, though he is more interested in recording and preserving the history of the community. His wife, Maple Head, is the village schoolteacher. Their daughter, No Horses, is a skilled wood carver and is married to Owen, whose great-grandfather came to North America to escape the Irish potato famine. Their son, Daniel, has inherited mysticism and delight in stories from both sides of his family. Owen runs the local repair shop, although he spends much of his time tinkering around, occasionally making odd but practical machinery. His constant companion is a pet crow, Moses, who has a philosophical bent and watches the antics of humans with amused bewilderment. The local doctor smokes thirteen cigarettes a day, each named for one of the Apostles. The village police officer, Michael, loves Puccini and can sing *Tosca* from memory.



With wonderful lyrical poetic prose, Brian Doyle brings the members of this community vividly to life. Interweaving narrative and description, he unfolds their stories, as the characters deal with adversity, worry about the future, struggle with relationships, and yet inhabit the world as a magical and beautiful place. It is still a place of beauty to the man who has six days to live. Sitting on the doctor's porch at dusk, knowing he is dying, he tells 12-year-old Daniel of all the things in his life that he has loved and that have mattered to him. The list is long and varied and even includes pollen! It reflects a fulfilled and richly experienced life. Here are just a few of the things that are highlighted in his list:

> *… Opera on the radio. Bathrobes, backrubs. Potatoes. Mink oil on boots. The bands at wedding receptions. Box-elder bugs. The postman's grin. Linen table napkins. Tent flaps. The green sifting powdery snow of cedar pollen on my porch every year. Raccoons. The way a heron labours through the sky with such vast elderly dignity. The cheerful ears of dogs. Smoked fish and the smokehouses where fish are smoked …*

From: Brian Doyle (2010) *Mink River*. Oregon University Press, Corvallis. p. 196

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Recent Publications

Blarquez, O., Finsinger, W., and Carcaillet C. (2013) Assessing Paleo-Biodiversity Using Low Proxy Influx. *PLoS One* 8(6):e65852. 5 pp. DOI:10.1371/journal.pone.0065852.

Cheruvelil, K.S., Soranno, P.A., Weathers, K.C., Hanson, P.C., and Goring*, S. (2014) Creating and maintaining high-performing collaborative research teams: the importance of diversity and socio-cognitive skills. *Frontiers in Ecology and the Environment* 12:31-38. [link]

Czarnecki, J. M., Dashtgard, S.E., Pospelova*, V., Mathewes*, R.W., MacEachern J.A. (2014) Palynology and geochemistry of channel-margin sediments across the tidal-fluvial transition, lower Fraser River, Canada: Implications for the Rock Record. *Marine and Petroleum Geology* 51: 152-166. DOI: 10.1016/ j.marpetgeo.2013.12.008.

Dickson,T.R., Bos, D.G., Pellatt*, M.G., and Walker, I.R. (2014) A midge-salinity transfer function for inferring sea level change and landscape evolution in the Hudson Bay Lowlands, Manitoba, Canada. *Journal of Paleolimnology* 51:325-341. 10.1007/s10933-013-9714-x.

Dillhoff, R., Dillhoff, T., Greenwood*, D.R., DeVore, M., and Pigg, K. (2013) The Eocene Thomas Ranch flora, British Columbia. *Botany* 91(8): 514-529. DOI: 10.1139/cjb-2012-0313.

Eldrett, J.S.,Greenwood*, D.R., Polling, M., Brinkhuis, H., and Sluijs, A. (2014) A seasonality trigger for carbon injection at the Paleocene-Eocene thermal maximum. *Climate of the Past* 10: 759-769, doi: 10.5194/cp-10-759-2014.

Friel, C. E., Finkelstein*, S.A., and Davis A.M. (2014) Relative importance of hydrological and climatic controls on Holocene paleoenvironments inferred using diatom and pollen records from a lake in the central Hudson Bay Lowlands, Canada. *The Holocene* 24(3):295-306. DOI: 10.1177/0959683613518587.

Gajewski*, K., Bunbury, J., Vetter*, M., Kroeker, N., and Khan, A.H. (2014) Paleoenvironmental Studies in the southwest Yukon. KLRS 50th anniversary issue. *Arctic KLRS Special Issue* http://arctic.synergiesprairies.ca/arctic/index.php/arctic/issue/current.

Goring*, S., Weathers, K., Dodds, W., Cheruvelil, K., Kominoski, J., Rüegg, J., Sweet*, L., Utz, R. (2014) The collaborative culture of Macrosystems Ecology: Optimizing participant benefits. *Frontiers in Ecology and the Environment* 12:39-47. [link]

Heffernan, J., Soranno, P., Angilletta, M., Buckley, L., Dodds, W., Harms, T., Keitt, T., Knapp A., Kominoski, J., McDowell, B., Powell, H., Xiao, J., Gruner, D., Goring*, S., Koenig, L., Kellner, J., Richardson, A., Rocha, A., Stow, C., Vargas, R., Weathers, K. (2014) What is macrosystems ecology? *Frontiers in Ecology and the Environment* 12:5-14. [link]

Jagdis, A. and Sussman G. (2012) Anaphylaxis from bee pollen supplement. *CMAJ* 184 (10):1167-1169. DOI: 10.1503/cmaj.112181 (CMAJ = Canadian Medical Association Journal).

Karrow, P.F. and Mackie, G.L. (2013) Postglacial lake shoreline surveys and lacustrine paleobiotic records in northern Joanna M. Bruce and Grey counties, Ontario, Canada. *Journal of Great Lakes Research* 39(1):100–109. DOI: 10.1016/j.jglr.2012.11.005.

Kotthoff, U., Greenwood*, D.R., McCarthy*, F.M.G., Müller-Navarra, K., and Hesselbo, S.P. (2013) Vegetation and climate development on the North American Atlantic Coastal Plain from 33 to 13 million years ago (IODP Expedition 313). *Climate of the Past Discussions* 9: 6551-

6603. doi: 10.5194/cpd-9-6551-2013.

McCune, J.L., Pellatt*, M.G., and Vellend, M. (2013) Multidisciplinary synthesis of long-term human-ecosystem interactions: a perspective from the Garry oak ecosystem of British Columbia. *Biological Conservation* 166:293-300.

McCune, J.L. and Pellatt*, M.G. (2013) Phytoliths of southeastern Vancouver Island, Canada, and their potential use to reconstruct shifting boundaries between douglas-fir forest and oak Savannah. *Palaeogeography, Palaeoclimatology, Palaeoecology* 383-384:59-71.

Neil, K., Gajewski*, K. and Betts, M. (2014) Human-ecosystem interactions in relation to Holocene environmental change in Port Joli Harbour, southwestern Nova Scotia, Canada. *Quaternary Research* 81(2):203-212. DOI: 10.1016/j.yqres.2014.01.001.

Neulieb, T., Levac*, E., Southon, J., Lewis, M., Pendea*, I.F., and Chmura*, G.L. (2013) Potential Pitfalls of Pollen Dating. *Radiocarbon* 55(2-3): 1142-1155. DOI: 10.2458/azu_js_rc.55.16274.

O'Reilly, B.C., Finkelstein*, S.A. and Bunbury, J. (2014) Pollen-derived paleovegetation reconstruction and long-term carbon accumulation at a fen site in the Attawapiskat River watershed, Hudson Bay lowlands, Canada. Arctic. *Antarctic and Alpine Research* 46(1): 6-18. DOI: 10.1657/1938-4246-46.1.6.

Pross, J., Contreras, L., Bijl, P.K., Greenwood*, D.R., Bohaty, S.M., Schouten, S., Bendle, J.A., Röhl, U., Tauxe, L., Raine, J.I., Huck, C.E., van de Flierdt, T., Jamieson, S.S.R., Stickley, C.E., van de Schootbrugge, B., Escutia, C., Brinkhuis, H. and IODP Expedition 318 Scientists (2012) Persistent near-tropical warmth on the Antarctic continent during the early Eocene epoch. *Nature* 488: 73-77. doi: 10.1038/nature11300.

Quilichini, T.D., Douglas, C.J., and Samuels, A.L. (2014) New views of tapetum ultrastructure and pollen exine development in *Arabidopsis thaliana*. *Annals of Botany*, DOI: 10.1093/aob/mcu042.

Refsnider, K.A.; Miller, G.H.; Fogel, M.L.; Fréchette*, B.; Bowden, R.; Andrews, J.T.; and Farmer, G.L. (2014) Subglacially precipitated carbonates record geochemical interactions and pollen preservation at the base of the Laurentide Ice Sheet on central Baffin Island, eastern Canadian Arctic. *Quaternary Research* 81(1):94-105. DOI: 10.1016/j.yqres.2013.10.014.

Schröder-Adams, C.J., Herrle, J.O., Embry, A.F., Haggart, J.W., Galloway*, J.M., Pugh, A.T., Harwood, D.M. (2014) Aptian to Santonian foraminiferal biostratigraphy and paleoenvironmental change in the Sverdrup Basin as revealed at Glacier Fiord, Axel Heiberg Island, Canadian Arctic Archipelago. *Palaeogeography, Palaeoclimatology, Palaeoecology* (in press) http://dx.doi.org/10.1016/j.palaeo.2014.03.010.

van Bellen, S.; Garneau*, M.; Ali, A.A.; Lamarre, A.; Robert, É.C.; Magnan, G.; Asnong*, H.; and Pratte, S. (2013) Poor fen succession over ombrotrophic peat related to late Holocene increased surface wetness in subarctic Quebec, Canada. *Journal of Quaternary Science* 28 (8):748-760. DOI: 10.1002/jqs.2670.

Yanko-Hombach, V., Mudie*, P.J., Kadurin, S., and Larchenkov, E. (2013) Holocene marine transgression in the Black Sea: New evidence from the northwestern Black Sea shelf. *Quaternary International* (in press).

Compiled by A. Beaudoin & F. Pendea
**denotes a CAP member*

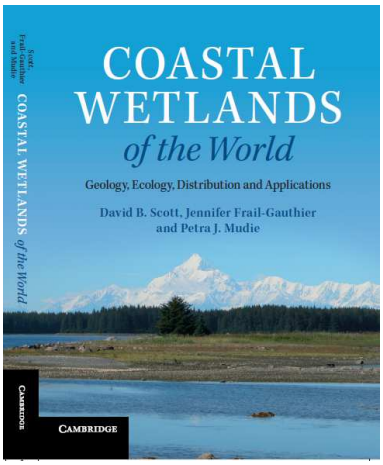
Books of interest

Braman, D.R. (2013) *Triprojectate Pollen Occurrences in the Western Canada Sedimentary Basin and the Group's Global Relationships*. Royal Tyrrell Museum of Palaeontology, Contribution Series, no. 1, 538p.

The Royal Tyrrell Museum of Palaeontology announces the publication of a book on the triprojectate pollen from the Late Cretaceous and Paleogene of Western Canada. The book brings together research results from numerous sections over a broad geographical area and provides a catalog of illustrated specimens. The material is placed within an informal classification system developed to handle the large number of described triprojectate species. An extensive literature search has produced a comprehensive list of described taxa from around the world, and English descriptions are provided for all the taxa, along with figured diagrams. The stratigraphic ranges of the recovered species from Western Canada are documented. Three new genera and 30 new species are described in the publication. A number of holotype specimens previously published from the region are re-illustrated. This publication is the first major publication to bring together the dispersed literature on the group, and should be of interest to all researchers encountering members of the triprojectates.

To obtain copies of this publication contact:
Royal Tyrrell Museum Cooperating Society,
Box 7500 Drumheller, Alberta, Canada T0J 0Y0
Telephone Orders: 1-403-823-8899
Fax Orders: 1-403-823-2102
Orders by email: shop@tyrrellmuseumshop.com
Cost: $99.95 (CAD) plus shipping (examples of shipping costs: Canada ~$16.75: USA ~$26.50: China ~$51.00: Russia ~$51.00; Europe $40.00-$50.00; CAD)

Scott, D. B., Frail-Gauthier, J., & Mudie, P. J. (2014). *Coastal Wetlands of the World: Geology, Ecology, Distribution and Applications.* Cambridge University Press, 364 p.



2014 Conference Calendar

- **Canadian Association of Geographers (CAG) Annual Meeting**
  May 26-31 2014: Brock University, St Catharines, Ontario, Canada.

- **AASP - The Palynological Society, 47th Annual Meeting**
  September 28 - October 3 2014: Will be held in conjunction with the 4th International Palaeontological Congress, in Mendoza, Argentina

- **4th International Paleontological Congress**
  September 28 - October 3 2014:
  Theme: The history of life: a view from the Southern Hemisphere
  Mendoza, Argentina.
  Website:
  http://www.ipc4mendoza2014.org.ar/

- **GSA 126th Annual Meeting**
  October 19-22 2014: Vancouver, British Columbia, Canada
  Website:
  http://www.geosociety.org/meetings/2014/ .

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CAP membership dues are $10 per year in Canadian or US funds payable at the beginning of the year. Lapsed members are removed from the mailing list after one year, following a reminder Members may, if they wish, pay for up to three years in advance. To join, please fill out the the membership form, by hand or in Adobe Reader®, and send it with a cheque (drawn on a Canadian or US bank) or money order payable to CAP to:

Dr. Mary Vetter, CAP Secretary-Treasurer, Luther College, University of Regina, Regina, Saskatchewan, S4S 0A2 CANADA

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