



Canadian Association of Palynologists
Association Canadienne des Palynologues

NEWSLETTER

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PRESIDENT'S MESSAGE

This is my first “President’s Message”, and I would like to start it with reassurance that it is my privilege and huge responsibility to take up this position. Guidance and mentoring by Francine McCarthy and Terri Lacourse have been a great support for me over the last year, and I am especially grateful that I will be able to rely on their Presidential experience and knowledge.

I would like to thank all CAP members, who attended the 2016 Annual General Meeting (AGU) on October 4th at the University of Victoria, for their input and time. Approval of the new By-laws can be considered as the major event of this year or even a decade. Through hard work, this document was put together by an exceptional team over the course of a few years. With great input from the CAP members, the final document was unanimously voted for at the meeting, please see the new By-laws in this Newsletter.

I am saddened that Mary Vetter (Secretary-Treasurer), Alwynne Beaudoin (Website Editor) and Francine McCarthy (President) are retiring from their Executive

positions. I want to praise these exceptional individuals for their enthusiasm and commitment to the Association that they have served for many years. Thank you very much! Your presence will be greatly missed. The outstanding work of Florin Pendea as the Newsletter Editor and Simon Goring as the IFPS Councillor is greatly acknowledged and it will continue in the upcoming years.

It is a great pleasure to welcome new CAP Executive members: Audrey Limoges, Jessie Holst Vincent, and Manuel Bringué. Audrey Limoges was appointed the new CAP President-Elect. Audrey is returning to Canada after finishing her postdoctoral position in Denmark to join the Department of Earth Sciences at the University of New Brunswick as an Assistant Professor. Jessie Holst Vincent (Brock University) was selected to be the new CAP Secretary-Treasurer, and Manuel Bringué (University of South Carolina & University of Victoria) was appointed the Website Editor. We are delighted to have these talented young individuals on board.

CAP is doing well, but declining membership numbers continues to be a concern, and it is my goal as the President to encourage new membership, especially among students, and motivate past CAP members to re-join us. I have been a member of CAP for almost 15 years and I give full credit for my introduction to this association of palynologists to my Ph.D. supervisor Gail Chmura (McGill University). I believe that it should be a part of everyone’s supervisory job to instruct the next generation of palynologists and engage them in societal activi-

CAP EXECUTIVE 2016

President: Vera Pospelova

President-elect: Audrey Limoges

Secretary-Treasurer: Jessie Holst Vincent

Newsletter Editor: Florin Pendea

Website Editor: Manuel Bringué

IFPS Councillor: Simon Goring

ties. This is one of the reasons that we keep our membership fees low, and encourage graduate students to apply for the CAP Student Research Award. The application deadline for the 2017 CAP Student Research Award is March 1. Please do not miss it!

CAP is devoted to promoting the discipline of palynology, facilitating scientific exchange and collaborations, and we have been successful in this mission. I believe that Canada has always been great in hiring palynologists and supporting our research regardless of sub-disciplines, thus fostering internationally recognised experts in the field. In order to keep this good tradition and be able to produce high quality research, adequate research funding is required, and I doubt that Canadian CAP members are happy with where we stand on this. Through the word of mouth, we know that quite a few palynologists either lost their NSERC Discovery grants or were granted considerably reduced amounts from what they deserve or need to succeed. I would think that this may be due to under-representation of our research discipline within NSERC Evaluation Groups or unreasonable expectations on a number of publications and/or trained individuals that can be produced in our time and labor intensive work. I would like to start a discussion and request your feedback on what we should do to reverse this trend, and whether you are willing to share your NSERC experience, so that we can produce a factually supported document to address these issues with our major funding agency.

Finally, we considered a number of options for holding our next AGM, but we have no consensus on that. The 50th Annual meeting of AASP will be in Nottingham (UK) in September (3-7) 2017, but it is unlikely that many CAP members could attend it. Even though many of us are participating in the 11th International Conference on Modern and Fossil Dinoflagellates that will take place in July (17-21) 2017 in Bordeaux (France), it cannot be considered an ideal AGM location since it would not be attended

by terrestrial palynologists. I would like to have your input on where to hold the 2017 AGM.

I look forward to serving CAP as President for the next two years. Please do not hesitate to contact me if you have any questions or suggestions.

Merry Christmas and Happy New Year!

Vera Pospelova,
CAP President 2016-2017
vpospe@uvic.ca



Members in the News

Advice for early career scientists

Dr. John Smol published a valuable opinion paper addressed to early career scientists wishing to find a place in the complex research world we live in today. The paper, titled "Some advice to early career scientists: Personal perspectives on surviving in a complex world" was published in the journal "Ideas in Ecology and Evolution". The paper is open access and can be consulted at:

<http://ojs.library.queensu.ca/index.php/IEE/article/view/6346/5920>

Editor's Notes

Thank you to all who contributed material for this edition of the *CAP Newsletter*:

A. Beaudoin, M. Bringué, M. Chaput, J. Galloway, S. Goring, T. Lacourse, F. McCarthy, P. Mudie, V. Pospelova, A. Price, J. Smol, K. Tilotta, M. Vetter, J. Vincent.

Deadline for Next CAP Newsletter

Please submit items for the next issue of the *CAP Newsletter* (Volume 40, Number 1, May 2017) by April 15, 2017. 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:

Florin Pendea

CAP Newsletter Editor
ifpendea@lakeheadu.ca

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Upcoming Conferences

Geological Association of Canada – Mineralogical Association of Canada (GAC-MAC 2017)

The 2017 Annual meeting of the GAC/MAC in Kingston will coincide with the 175th anniversary of the founding of the Geological Survey of Canada in Kingston, Ontario. The Geological Survey of Canada, Canada's oldest scientific agency, was established by the legislature of the Province of Canada in 1842, in Kingston, Canada West.

The Department of Geological Sciences & Geological Engineering at Queen's and the GSC will be hosting this celebratory event at Queen's University.

Please join us at the conference **May 14-18, 2017**. Registration will be available shortly. Abstract submission is now available.

Website: <http://www.kingstongacmac.ca/en/>

There are likely multiple sessions relevant and of interest to CAP members. A few to highlight are:

Environmental Issues Session E11: The Transport and Fate of Contaminants in the Natural Environment – Heather Jamieson (Queen's); Jennifer Galloway (GSC).

Limiting the impact of natural resource development and remediating former industrial sites requires an understanding of the geo-

logical and microbiological processes controlling contaminant mobility. This session focus on monitoring and characterizing the transport, fate, and impact of potentially hazardous materials in the environment. We welcome research from across the geosciences including laboratory- and field-based studies that can be applied to the protection of ecological and human health. The keynote speaker for this session will be Dr. Karen Hudson-Edwards. This session is sponsored by the Environmental Earth Science Division of the Geological Association of Canada.

Environmental Issues Session EI2: Proxies of Past Environments – Brian Cumming (Queen's); Lisa Neville (GSC); Jennifer Galloway (GSC).

Understanding environmental variability during the Quaternary informs land-use decision making and response to current and future changes. Instrumental records of past environmental conditions extend back no more than ~150 years and are limited in spatial coverage. Proxies of past environments preserved in various environmental media, including lake and marine sediments, ice cores, and tree-rings, can provide a detailed long-term perspective on Earth's processes, including climate, hydrology, weathering, and biogeochemistry. There are a growing number of tools for reconstructing past environments and recent advances provide new insight into the use and application of proxies and improved resolution and accuracy of reconstruction. This session will feature new research on the development and applications of paleoenvironmental proxies for characterizing past environmental conditions.

Quaternary Systems Session QS2: Climate Change and the Response of Earth-Surface Processes in the Arctic – Melissa Lafrenier (Queen's), Scott Lamoureux (Queen's)

The Arctic is warming at an accelerated pace relative to the rest of the globe. Climate change in the Arctic is causing changes to both the thermal regime of surficial materials and hydrology. Together these changes are causing widespread change to earth-surface processes, including permafrost degradation, slope disturbance, thermokarst, sediment transport, and biogeochemical cycles, which all stand to have a substantial impact on terrestrial and aquatic ecosystem function as well as to feedback on climate, inducing additional climate change. This session welcomes submissions on a broad range of topics pertaining to the response of earth-surface processes and environments to recent climate change in the Arctic. The processes of interest include geomorphic, sedimentary and biogeochemical processes acting on slopes or in fluvial, limnological or coastal systems. Examination of the physical and biogeochemical responses of permafrost to warming will be an important component of the session.

The Society of Organic Petrologists (TSOP) Annual Meeting

will be held in Calgary, Alberta, September 21-27th, 2017, with exciting pre- and post-meeting field trips (including to the Burgess Shale!). The web-site will be up and running we hope in early 2017. Interested people can also contact Jennifer Galloway at the address below:

Jennifer Galloway
Geological Survey of Canada
☎ (403) 292-7187
📠 (403) 292-4961
✉ jennifer.galloway@canada.ca

CAP Student Award and Conference Report

by **Michelle Chaput**

PhD Candidate, University of Ottawa
Laboratory for Paleoclimatology and
Climatology

I would like to express my gratitude to the CAP for awarding me with the 2016 CAP Student Research Award. This award allowed me to travel to Utrecht, attend the LandCover6k general meeting and meet face-to-face with researchers I would not otherwise have met.

Conference Report on the 2016 LandCover6k General Meeting/Workshop in Utrecht, the Netherlands

In June 2016 the Copernicus Institute of Sustainable Development hosted the second general meeting/workshop of the PAGES (PAst Global changES) LandCover6k working group in the medieval city center of Utrecht, the Netherlands. LandCover6k is an international working group whose goal is to improve pollen-based land cover and land use reconstructions and develop more accurate and complete land use models and maps for the Holocene.

The meeting was organized by Dr. Kees Klein Goldewijk (Utrecht University) and Dr. Marie-José Gaillard-Lemdale (Linnaeus University) and approximately 40 participants from all parts of the world were in attendance. Most participants were researchers familiar with the fields of quantitative vegetation reconstruction and land use and land cover modelling, however some participants were there to learn new techniques to implement back home.



The meeting was held in a converted church and its location permitted participants to stroll through the beautiful and bustling city center during mornings and evenings. Some participants rented bicycles for a true Dutch experience! The Dom Tower, famous because it is the tallest church tower in the Netherlands and because it survived a tornado in 1674 which destroyed parts of the attached cathedral, was quite a sight to see (and also served as a great reference point!).



The old canals were lined with restaurants and shops, and workshop participants were treated to a canal cruise and tapas meal! The food, flower and clothing markets were great places to sample Dutch cheeses and chocolates and marvel at the variety of tulips available for purchase! We even got to see the markers in the ground depicting the location of the Castellum Trajectum, the Roman fortress built nearly 2000 years ago to protect the northern border of the Roman Empire! The Utrecht University Botanical Gardens were also a must-see.



The workshop itself was very successful. Participants were invited to give a short presentation on their current research, including the use of new or existing methods for pollen studies, exciting results, research obstacles and future perspectives. This gave everyone a chance to catch up on pollen-based analyses and reconstructions being done worldwide.

Round-table discussions concerning pollen-productivity estimates, pollen databases, methodologies unique to certain regions of the world (e.g., the tropics), the incorporation of land cover in regional and global climate models, model assumptions and shortfalls and many other topics took place. This was a great opportunity for modellers, paleo-ecologists, anthropologists, archaeologists and statisticians to share ideas!



Some of the major conclusions of this meeting were that (1) pollen-based vegetation reconstructions are currently ongoing in the Americas, Australia, Asia, Europe, Siberia, and Africa with many employing the Landscape Reconstruction Algorithm (i.e., REVEALS and LOVE models), or biomization

or Modern Analogue techniques, (2) pollen records from sites across all regions in the world are being uploaded daily to the Neotoma Paleoecology Database, (3) digital pollen databases are currently being compiled for many regions lacking open-access data (e.g., Africa, Japan), (4) workshops are needed in all regions of the world on the appropriate use of pollen reconstruction techniques and the quality/type of data that is necessary, (5) we must begin to take into account environmental factors and water transport that could affect pollen productivity and deposition on a site to site basis, (6) pollen productivity simulation experiments are needed, (7) pollen productivity estimates and related products are very useful for validating and improving land cover change models.



If anyone is interested in learning more about the LandCover6k working group or about pollen-based reconstructions and analyses, they can visit the PAGES website (<http://www.pastglobalchanges.org/ini/wg/landcover6k/intro>) or the LandCover6k sub-group 9 blog (<https://lc6ksubgroup9.wordpress.com/>). Information related to upcoming LandCover6k events is included in the monthly PAGES e-newsletter. The next LandCover6k general

meeting/workshop will be held directly after the PAGES 5th Open Science Meeting in Zaragoza, Spain from 16-17 of May, 2017. A session on “Regional syntheses of human-climate-environment interactions” will be taking place during the Open Science Meeting and abstract submissions are welcome.



Student Theses

Andrea M. Price

Ph.D Dissertation

Department of Geography,

McGill University

Supervisor: Dr. Gail L. Chmura

Dinoflagellate cysts as indicators of water quality in Northwest Atlantic coastal waters

Abstract

Nutrient pollution is a global environmental problem. Excess nitrogen and phosphorus in marine coastal waters can significantly degrade water quality, negatively affecting coastal ecosystems, and severely altering the recreational and economic value of the waters through loss of tourism, fishing and aesthetic enjoyment. Determining the total input of nutrients to estuaries, however, is a challenge. One method to evaluate nutrient input is through nutrient loading models. Another method relies upon using indicators to act as early warning signs of water quality degradation. Dinoflagellate cyst assemblages reflect water quality, yet how the eutrophication signal exhibited by cyst assemblages

varies geographically in coastal waters is poorly understood. The overall objective of this thesis is to enhance the development of dinoflagellate cysts as indicators of water quality in coastal waters. I focused on two abiotic parameters, estuary type and empirical nutrient loading, to determine their influence on cyst assemblages.

Dinoflagellate cysts from over 30 different estuaries along the coast of the northeast US (Maine to Delaware), Prince Edward Island (PEI) (Canada) and the northern Gulf of Mexico (NGOM) were analyzed. Cyst assemblages varied by biogeographic province. Those from the Acadian province had higher abundances of *Islandinium? cezare*, *Dubridinium* spp., and *Selenopemphix quanta* while greater abundances of *Spiniferites* spp., and *Lingulodinium machaerophorum* were often observed in the Virginian province.

Within the same biogeographic province cyst assemblages can be distinguished by estuary type (river-dominated, lagoon, coastal embayment or fjord). The type of estuary also has an impact on the relationship between nutrient loading and the proportion of heterotrophic taxa. In the NE US and PEI a positive linear correlation between cysts produced by heterotrophic dinoflagellates and nitrogen loading was found, but the relationship significantly improves when the type of estuary is included. Overall, cysts produced by heterotrophic taxa were more abundant in estuaries with greater nutrient loading (NE US and PEI) or in areas with higher inorganic nutrient concentrations (NGOM). A closer look at individual estuaries reveals a more complex eutrophication signal, one that can vary by estuary.

Research from this thesis contributes to an enhanced understanding of how dinoflagellate cyst assemblages reflect water quality in estuarine waters. For the first time the influence of estuary type was investigated and shown to be a significant parameter impacting cyst assemblages. This study also shows that while, overall, a positive relationship between nutrients and heterotrophic taxa is

present in NW Atlantic coastal waters, individual estuaries may show a different response.

Vandy Bowyer

Ph.D. Dissertation

Department of Anthropology

University of Alberta

Supervisor: Dr. Charles Schweger

Caribou hunting at ice patches: seasonal mobility and long-term land-use in the southwest Yukon

Abstract:

<https://era.library.ualberta.ca/files/bg257f292#.WC59dH1Fw5o>

Rebecca Rainville

Ph.D. Dissertation

Department of Anthropology and

Archaeology

University of Calgary

Supervisor: Dr. Richard Callaghan

Effects of the White River and Mazama tephras on terrestrial and aquatic paleoenvironments in western subarctic Canada, and implications for past human populations.

Abstract:

<http://theses.ucalgary.ca/handle/11023/2740>

Anne Van Nguyen

B.Sc.Hons. Thesis

Department of Geology

University of Calgary

Supervisors: Dr. Jennifer Galloway (Geological Survey of Canada, Calgary) and Dr. Alexander Dutchak (University of Calgary)

Calibration of Middle to Late Jurassic palynostratigraphy to Boreal ammonite zonations in the Sverdrup Basin, Canadian Arctic. .

Abstract

Quantitative palynostratigraphy of the Middle to Late Jurassic strata of the Sverdrup Basin is used to calibrate palynomorph signatures to rare Boreal ammonite occurrences. This multi-fossil integration can improve intra- and inter-basin correlation and chronostratigraphy in high-latitude regions. Based on the identification of 48 spore and pollen taxa, palynological analyses in two stratigraphic sections at Axel Heiberg Island reveal seven defined palynoassemblages that correspond to distinct ammonite zones. Consideration of facies changes, transport and differential sorting lead to the suggestion that the co-occurrence of distinct palynoassemblages with separate ammonite zones is caused by changes in climate. Paleoenvironmental reconstruction of the Sverdrup Basin during the Middle to Late Jurassic is based on the relative abundance of ecologically important spore and pollen taxa such as Taxodiaceae-Cupressaceae and *Laricoidites magnus* pollen, and is interpreted as having humid lowlands with temperate upland regions, eventually shifting to more arid and colder conditions towards the Late Jurassic.

Kristen Tilotta

Master in Environmental Studies Dissertation, Northern Environments and Cultures

Department of Geography and the Environment

Lakehead University

Supervisor: Dr. Florin Pendea

Northern peatlands are one of the most important carbon reservoirs, storing one-third to one-half of the world's soil carbon pool and thus changes in their carbon balance have the potential to cause a positive feedback to climate change. While recent studies have made progress in understanding the climatic controls on the global carbon cycle, few have studied the important interaction between landscape disturbance (via volcanic eruptions), carbon accumulation, and peatland hydrology. Kamchatka Peninsula in the Russian Far East provides a unique opportunity to study long-term peatland hydrology and carbon accumulation with respect to the role of disturbance, as the area has been subjected to repeated landscape disturbance by tephra deposition over the last 10,000 years. In this study, I use a 10,000-year-old peatland record from Krutoberegovo, Kamchatka Peninsula (Russian Far East) to examine the interaction between carbon accumulation, peat surface wetness, and landscape disturbance in the form of peat surface burial by volcanic ash (tephra). I specifically ask whether tephra deposition affected the hydrological regime of the peatland, its nutrient status, and its ability to store carbon. To answer this question, I use a suite of palaeoecological and geochemical analyses as follows. First, I use 16 AMS ^{14}C age measurements to create an absolute timescale for peatland development. Second, I use the peatland chronostratigraphy and measurements of peat carbon content to reconstruct the long-term carbon accumulation rates (LORCA). Third, I employ testate amoeba (TA) as a hydrological proxy to reconstruct peat surface wetness over time. Fourth, I reconstruct the nutrient status of the peatland by comparing the carbon to nitrogen ratios (C/N), where higher nitrogen values and lower carbon values are indicative of more nutrient-rich environments and vice versa. My results show that the Krutoberegovo peatland experienced thirty-four different tephra deposition events during the last 10,000 years, of which nine were considered major regional markers, based on their thick-

ness, unique geochemical signatures, and area of dispersal. The carbon sequestration potential of the Krutoberegovo peatland measured as long-term apparent rates of carbon accumulation (LORCA) shows a wide variability over the course of the Holocene ranging from $74.5 \text{ g C m}^{-2} \text{ yr}^{-1}$ to $7.91 \text{ g C m}^{-2} \text{ yr}^{-1}$, with a substantial decrease in accumulation rates during periods of high tephra loading. Although the mechanisms responsible for this process remain unclear, I hypothesize that changes in carbon sequestration following tephra loading of peat surface could be mediated by changes in microbial activity and wetland vegetation cover. High-resolution analysis of testate amoebae (TA) communities over the course of the Holocene shows a high degree of variability with frequent shifts in taxa dominance. The statistical analysis of testate amoeba taxa in relation to tephra-related environmental variables (total ash content and major eruptions) shows that tephra deposition explains to a large degree the shifts in TA communities. Total ash content explains 77.3% of the taxa variability, while major volcanic eruptions as discrete events explain 6.3%. However, when TA communities are grouped according to their hydrological affinities, tephra deposition does not seem to affect any particular hydrological group suggesting that tephra disturbance does not play a role in peatland hydrology. Analysis of carbon and nitrogen chemistry of the Krutoberegovo peat profile suggest that tephra loading of the peat surface induced a net loss of both carbon and nitrogen. The C/N ratios – a measure of nutrient availability in peatland ecosystems – show a variable but overall increasing trend, which may be related to an autogenic replacement of nutrient rich with nutrient poor wetland plant communities. However, periods with lower or decreasing C/N ratios seem to be associated with high tephra loading, suggesting that tephra deposition may have also played a role.

2016 CAP ANNUAL GENERAL MEETING MINUTES October 4, 2016 (University of Victoria, BC)

Members present:

Audrey Limoges (Skype)
 Carl Jonsson
 Florin Pendea, Newsletter Editor (Skype)
 Francine McCarthy, President (Phone)
 Jessie Holst Vincent (Skype – only the second half of the meeting)
 Manuel Bringué
 Mary Vetter, Secretary/Treasurer (Skype)
 Maximilien (Max) Genest
 Sandy McLean
 Simon Goring, IFPS Councillor
 Terri Lacourse
 Vera Pospelova, President Elect
 Zhen Li

Recording secretary: Manuel Bringué, Max Genest, Mary Vetter

Meeting called to order: Francine McCarthy 10:00 am PDT
 Agenda (appended to the Minutes) accepted by consensus.

Review of the Minutes of the 2015 AGM – Baltimore: Francine McCarthy

Motion to accept the minutes as presented: Simon Goring. Second and acceptance: deferred to the 2017 AGM because no one else present at the 2016 AGM had attended the 2015 AGM.

President's Report: Francine McCarthy
 Appended to the Minutes. Francine thanked the members of the Executive, including those retiring from their Executive positions. Francine encouraged CAP to continue activities promoting CAP, including student research awards, student travel awards (e.g. to GAC/MAC 2017), and the newsletter.

Secretary-Treasurer's Report and Financial Statement: Mary Vetter

Appended to the Minutes. Declining membership numbers continues to be a concern. CAP continues to be in a good financial position with accrued savings, but increased membership numbers would allow us to do more; all CAP members are asked to promote CAP and encourage colleagues and students to become members.

Auditor's Report: Jessie Holst Vincent
 Appended to the Minutes. Terri Lacourse suggested that the auditor not be on the Executive; this was not the case in this instance, although Jessie is nominated for an Executive position. Mary thanked Jessie for undertaking this audit.

Newsletter Editor's Report: Florin Pendea

Appended to the Minutes. Two newsletters were produced, in December 2015 and May 2016, since the last AGM. While the second newsletter was smaller, very interesting submissions were included. The deadline for the December 2016 newsletter is November 15. Simon noted that the article on the Don Brickyards was very interesting, not only to CAP members but to the wider public.

Website Editor's Report: Alwynne Beaudoin

Appended to the Minutes
 Alwynne's work over these many years is deeply appreciated! The website continues to be accessed regularly, with around 500 hits per month. With Alwynne stepping down as Website Editor, CAP may need to purchase a domain and pay hosting fees. While hosting through the University of Victoria might be possible, it was felt that this is not a good long-term solution. There are some free options for hosting that should be explored as even \$20 a year is a sizeable expense for CAP. The new Website Editor will need to explore options. We have an opportunity to update or even sub-

stantially redesign the website. Simon volunteered to assist the new Editor with this.

IFPS Councillor's Report: Simon Goring Appended to the Minutes. The next IFPS Meeting will be at the IPC XIV Congress in Salvadore, Brasil, in October 2016. Charles Wellman will be stepping down as IFPS President, and President-Elect Jean Nicolas Haas (who is also a CAP member) will be replacing him. The new CAP Secretary-Treasurer is asked to send out an email to all CAP members reminding them of the upcoming IFPS meeting in Brasil..

Acceptance of the Reports

Terri moved acceptance of all reports, seconded by Manuel. The motion was passed unanimously.

Election CAP Executive

The following CAP members have agreed to let their names stand for election to the available Executive positions

President: Vera Pospelova

President-Elect: Audrey Limoges

Secretary-Treasurer: Jessie Holst Vincent

Website Editor: Manuel Bringué

A call was made for any additional nominations or volunteers. None were received. Simon moved election by acclamation of the nominee for each of the three positions, seconded by Max. The motion was passed unanimously.

NOTE: Vera Pospelova took over as chair of the meeting, as CAP's new President.

Approval of the proposed new By-laws

It was noted that the current by-laws were implemented in the 1990s, and a number of changes need to be made. In general, changes are needed for two reasons: to facilitate participation in meetings by allowing participation via Skype, telephone, or other electronic means; and to conform our by-laws to the format and content needed for our recent incorporation under Corporations Canada (and deletion

of our incorporation in the Province of Nova Scotia).

A number of comments were received by email. These were mainly minor in scope but very useful and important to consider. Each of these suggestions was discussed. It was agreed to use bold facing on section headings within the by-laws.

It was agreed to continue to accept memberships up to three years in advance rather than to lengthen this term, to allow CAP to raise membership fees in the future. While pre-paid memberships would be honoured, it is good to keep the number of these reasonable so as not to limit CAP's revenues in the future. However, the Secretary-Treasurer will continue to have discretion to accept longer renewals when that makes paying dues easier for members, e.g. members retiring and members from other countries for whom it is often difficult and/or expensive (for them and for CAP due to US cheque processing fees) to submit dues payments. It was also agreed that the Newsletter Editor will put a reminder in the newsletter that if a member does not receive a notice from the Secretary-Treasurer that dues are owed, the member is paid up and in good standing. The Secretary-Treasurer will continue to contact those members who need to renew. The membership form will retain the current wording that membership dues can be paid up to three years in advance. It was agreed that the new Secretary-Treasurer should explore accepting payments by Paypal or, ideally, through some free service.

In response to the suggestion that part of the CAP website be password protected, it was agreed after discussion that this would produce a great deal of work for the Website Editor. As well, it was agreed that the CAP website should include as much information as possible, including recent newsletters, to spread the word about CAP's work and encourage new memberships.

In response to the suggestion that there be a special membership category for students

and/or honourary members, it was agreed that membership fees are very reasonable. Membership classes can be changed in the future, and the CAP Executive could grant an Honourary Membership at any time anyway. As a side note, it was agreed that the list of palynologists on the CAP Website should be deleted as it is not up to date, it would be very difficult to keep it up to date, and this list is really not needed.

Terri moved that CAP retain one class of membership, seconded by Vera. The motion was passed unanimously.

In response to the suggestion that the requirement of two newsletters per year be dropped, the discussion suggested that publication of the newsletters is a very important function of CAP. While amending the requirement to one per year would allow more flexibility, if we drop the requirement of two per year, it is likely the newsletters will either drop to one per year or disappear.

Moved by Francine, seconded by Simon, to retain the requirement of two newsletters per year, but delete the specific reference to May and December (Section 8.1) as publication dates.

CAP must specify a destination for its assets if CAP should be dissolved (Section 7.8). Suggestions were received from Rob Fensome, and Terri suggested that CAP consider IFPS or a Canadian palynologically-related society. It was noted that this decision can not be made at this AGM because such a decision calls for a Special Resolution, and until the By-laws are accepted there is no provision for an electronic vote on a Special Resolution. It was agreed that the Executive would send out a call for suggestions for a designated recipient for CAP's assets should CAP dissolve. Based on suggestions received, the Executive will make a recommendation to the CAP membership and issue a call for a vote on a Special Resolution to resolve this matter.

In response to the suggestion that it be stipulated in the by-laws that new mem-

bers must purchase memberships before any voting at the meeting, it was decided that this was true and is the practice.

Year	Members
2004	43
2005	36
2006	47
2007	51
2008	58
2009	66
2010	64
2011	66
2012	65
2013	65
2014	60
2015	58

In response to the concern that members participating in meetings through electronic access must have their identity verified, it was agreed that the person presiding at the meeting (usually the President or President-Elect) would verify the identity of meeting participants to the best of their ability. It was agreed that this does not need to be stipulated in the by-laws.

In response to the suggestion that a space on the CAP Executive be created for one or more Members at Large, for example for a student, it was noted that any Executive position is available to a student.

Those participating in the meeting were asked to identify any additional questions or concerns with the proposed by-laws.

Terri asked if there is a need to continue to include a report from the IFPS Councillor at the AGM. Simon reminded the meeting that CAP is invested in IFPS through the dues we pay to IFPS every year, and it is important to keep a report, even if verbal. It was agreed to maintain the requirement for a report, but the report can be submit-

ted verbally at the meeting.

Zhen Li suggested that the CAP Website actively help develop communications among CAP members, especially those that would foster collaborative research. It was agreed that this is beyond the scope of CAP and would require a lot of work, but that the CAP Newsletter is a good venue for calling for collaborations and sharing ideas and recent publications.

Simon moved that the proposed new by-laws be accepted except for Section 7.8 (designation of a destination for CAP's assets should CAP be dissolved by the membership), which will require attention from the CAP Executive as outlined above; seconded by Francine. The motion was passed unanimously. The revised by-laws are appended to the Minutes.

Location for 2017 AGM

Vera identified possible venues for the CAP 2017 AGM, followed by discussion. GAC-MAC in Kingston, Ontario, in May 2017. It was agreed that attendance by CAP members is likely to be low.

Dino 11 in Bordeaux, France, in July 2017. It was agreed that while a number of CAP members will likely attend, only CAP members working on dinoflagellates will be attending.

GSA in Seattle, Washington, in October 2017. It was agreed that attendance by CAP members is likely to be low.

Virtual meeting, as the current one.

It was agreed that the Executive will discuss the location (or virtual meeting) for the 2017 CAP AGM, perhaps consulting the CAP membership via a Doodle poll.

Francine noted that the AASP meeting will be in Calgary in 2018, which would be an ideal venue for the 2018 CAP AGM. It was suggested that all CAP members mark this in their calendars. CAP should propose a special session at that meeting. Francine asked that there be an item about a proposed CAP session at the 2018 AASP, including topic ideas, in the next CAP newsletter.

Priorities and Goals [for CAP going forward]

Vera encouraged all CAP members to continue to encourage new members, by reminding colleagues and students of CAP accomplishments and low fees. New members will come as a result of enthusiasm and encouragement by current CAP members. CAP may want to increase the number and value of student awards in the future. Revitalization of the CAP Website is a top priority, with deep thanks to Alwynne for her faithful work over the years.

Other business

Sandy McLean brought up the idea of a potential role for CAP in helping CAP members access literature. Vera suggested that this is not a mandate of CAP, but Simon suggested that including useful links on the website could be useful but very time consuming. Vera suggested that Manuel consider including links to all major palynology labs in Canada (with permission) on the website.

Vera noted that all website content should be approved by the CAP Executive.

Several newsletter ideas were discussed. Perhaps experienced researchers and faculty members could summarize career advice for new faculty members, e.g. share their most important and useful ideas.

Graduate students and any CAP members could be asked to write short paragraphs about their research projects.

Members could contribute articles about their favourite paper or book, something that influenced them greatly.

Encourage CAP members to post ads for graduate students and job ads.

Someone could solicit and organize advice from experienced researchers, such as tips for counting samples.

Manuel thanked outgoing CAP Executive members Francine, Alwynne, and Mary, as well as all previous CAP executives for their time and service. New members and new Executive members were welcomed. Everyone agreed!

The draft Minutes, the Reports, and the new by-laws will be to all CAP members via the next CAP newsletter.

Meeting adjourned: 11:56 am.

2016 REPORTS OF CAP EXECUTIVE DIRECTORS

CAP PRESIDENT'S REPORT

This is my last report as president of CAP, passing the reins to Vera Pospelova after an extended run. I would like to thank all of the members who have served the Association on the Executive and in a variety of other capacities such as performing the audit, contributing to the newsletter, and participating in CAP-sponsored sessions at conferences and attending meetings. I am very pleased that several relatively new members have stepped up to take an active role as members of the CAP Executive, allowing Mary Vetter and Alwynne Beaudoin to retire from the ranks. Once again I would like to formally recognize their very capable long-standing service.

Our finances are adequate to cover our modest expenses that this year basically consisted of incorporation dues and the Student Prize. Hopefully in 2017 we can offer a small travel award to a student or young professional to assist in attending a CAP-sponsored session at the momentous meeting of GAC MAC in Kingston as well, that I suggest would be an excellent venue for the AGM.

I will take a short hiatus from writing feature articles for the CAP newsletter, being out of ideas for the time being, but I encourage members to contribute articles on a variety of topics in order to illustrate the breadth of palynology. I also look forward to fresh

updates to the website: <http://www.scirpus.ca/cap/cap.shtml>.

Respectfully submitted,
Francine McCarthy
CAP President
November 3, 2015

CAP SECRETARY/TREASURER'S REPORT

Membership Report

As of 23 September 2016, CAP has 54 members in good standing who have paid dues for 2016 or who have received a complimentary membership as a result of winning a CAP Student Award.

I would like to extend a special welcome to our new and newly-returned members in 2016: Albert Fulton (Michigan State University), Richard Hebda (University of Victoria), Carl Jonsson (University of Victoria), Sandy McLachlan (University of Victoria), and Qiang Yao (Louisiana State University). It is wonderful to have you as members!

The chart below shows our membership over the past twelve years.

Year	Members
2005	36
2006	47
2007	51
2008	58
2009	66
2010	64
2011	66
2012	65
2013	65
2014	60
2015	58
2016	54

The membership numbers continue to be of concern, as we are losing members to retirement, completion of graduate studies, or career changes faster than we are gaining new members. It is very important that all CAP members encourage students and newly-appointed colleagues to consider membership in CAP!

Financial Report

For the period ending 23 September 2016, the balance in the CAP account is \$6774.96 (compared to \$6891.31 at the 2015 AGM). Of this amount, \$570 represents pre-paid or grants of CAP Student Award memberships for future years. The main reason for the decrease in bank balance over the last year is that, after a number of attempts to reach the IFPS Treasurer, we were able to pay our IFPS dues for 2014, 2015, and 2016 (\$258.00 USD = \$349.25 CAD).

In general, membership receipts during the year balance expenditures. For example, here is a breakdown of annual income and expenditures with 54 members:

- dues receipts are \$540
- the CAP Student Award is \$300
- IFPS dues are approximately \$110 CAD
- fees for filing the annual report to Corporations Canada are \$20

This leaves an annual positive balance of approximately \$110 to spend on support of coffee breaks at conferences and other activities.

Recommendations: CAP's financial position allows us to continue to support, in a very modest way, outreach initiatives. However, a strong membership drive would greatly enhance CAP's ability to continue to carry out meaningful activities.

I recommend that CAP continue to use some of its accrued bank balance to support active promotion of CAP and recruitment of new members. However, CAP will not want its

bank account balance to drop below \$5,000.00 as this minimum monthly balance results in a waiver of monthly banking fees.

Respectfully submitted



Mary Vetter
CAP Secretary/Treasurer
23 September, 2016

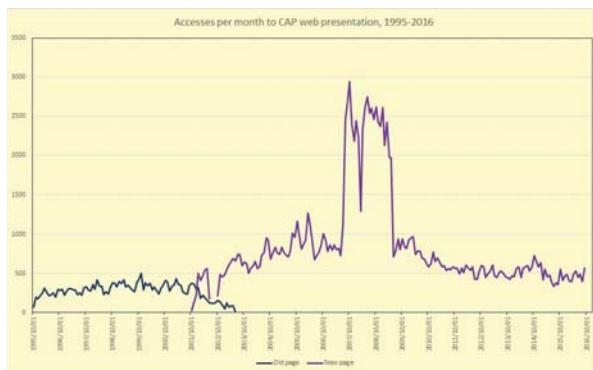
CAP WEBSITE EDITOR'S REPORT

This will be my final report as CAP Website Editor. Manuel Bringué has very kindly volunteered to take over this position and, following confirmation at the AGM, I will be handing over the files to him during the next few weeks. I am grateful to him for stepping up to take on this important outreach role on the CAP Executive. I wish him well and every success with the task. I look forward to following the website as a communication tool for CAP.

This past year has been one of stasis for the presentation. I have continued to maintain the site, though there have been few changes or updates. I have received little new content, other than occasional new entries for the Directory listing, and issues of the *CAP Newsletter* for archiving. The webpage has essentially been functioning an archive and resource of CAP-related material rather than an active site or a venue for engagement with the palynological community.

The site has been active for 21 years, since March 1995. It has been averaging around 500 accesses per month for the last few years (see accompanying chart). Based on experience with other sites, I suspect that many of these hits are from 'bots indexing the site for various search engines.

I will be ensuring that all files and associated documents are up to date before transferring the package to the incoming Website Editor. The site will be hosted at a new venue and I will ensure that users are redirected to the new location.



It has been an honour to serve the Canadian palynological community through involvement with the CAP Executive for so many years - actually since 1989! I would like to thank the members of the Association and colleagues on the Executive for their confidence in me and support through those years. Although stepping down from the Executive, I intend to remain an active member of the Association.

Respectfully submitted
Alwynne B. Beaudoin
 CAP Website Editor
 October 2 2016

CAP NEWSLETTER EDITOR'S REPORT

Since my last report, two issues of the CAP Newsletter have been produced. The December 2015 Newsletter (Vol. 38, No. 2) had 21 pages and was distributed to CAP members on January 19, 2016. Most notably, the December 2015 newsletter featured two articles, one by Simon Goring on the interdisciplinary study of organic walled microfossils and one by F. McCarthy on marine-fresh water transition in the phylum Dinoflagellata. As per CAP Bylaws, this issue

also included minutes of the 2015 CAP Annual General Meeting in Baltimore, Md.

The May 2016 Newsletter (Vol. 39, No. 1) was distributed to members on June 3rd, 2016. It consisted of 16 pages and included an article on the "Toronto beds" from Don Brickyard by Francine McCarthy and Jock McAndrews, with contributions from Leslie Kerr-Lawson, Paul Karrow and James Eckenwalder. The President's Message, Lab news, the Lennart von Post centenary, and Palynfo sections brought up-to-date information to the Canadian palynological community.

I would like to remind our members that our past Newsletters are available in electronic format on the CAP website. Contributions for the next issue of the Newsletter will be accepted until November 15, 2016.

Respectfully submitted,
Florin Pendea
 CAP Newsletter Editor
 September 30, 2016

CAP FINANCIAL AUDIT 2016

Mary Vetter
 Secretary/Treasurer
 Canadian Association of Palynologists
 30 September 2016

Dear Mary,

I have reviewed the financial statements, bank statements, dues payments and membership documents for the Canadian Association of Palynologists (CAP). These documents and the AGM financial report provide a full and fair account of the financial affairs of CAP for the period from October 2015 to October 2016. I consider the financial affairs of CAP to be in good order.

Sincerely,
Jessie H. Vincent PhD

Graduate Opportunities

MSc/PhD Opportunity in Paleoecology and Long-term Environmental Change at the University of Victoria

I am seeking graduate students (MSc or PhD) to join my paleoecology lab in the Dept. of Biology at the University of Victoria, starting May or September 2017.

Research in my lab typically focuses on the development and dynamics of forest communities since the last glaciation and the climatic and non-climatic factors that drive vegetation dynamics on long time-scales. Potential research areas include: long-term forest community dynamics including disturbance regimes; the past effects of tephra deposition on plant communities; and, the links between climate, vegetation and carbon accumulation in peatlands. PhD-level research combining paleoecological techniques with molecular approaches (paleogenetics) is also possible. Students are also encouraged to develop their own research projects related to past ecological and environmental change.

Guaranteed funding for research and salary is available. Ideal candidates will have previous experience in palynology, paleoecology, paleoenvironmental science or a related discipline, and excellent academic standing. Interested students are encouraged to send a CV, unofficial university transcripts, and a brief statement of research interests to tlacours@uvic.ca.

More information at: www.uvic.ca/graduatesstudies and www.uvic.ca/science/biology/graduate.

Terri Lacourse
Associate Professor
Dept. of Biology, University of Victoria

Members in the News

First MES graduate at Lakehead University, Orillia Campus



Kristin Tilotta recently defended her Masters of Environmental Studies thesis entitled “*Long-term relationships between carbon sequestration, hydrology, and tephra disturbance in a northern peatland (Kamchatka Peninsula, Russia)*” at the Orillia campus of Lakehead University. This was the first such defense at the Orillia Campus and was conducted in a state-of-the-art distance learning classroom in order to include her committee at the Thunder Bay campus. I was happy to play a part (as external examiner) in the thesis and the defense was a real milestone for the program and for her supervisor, Dr. Florin Pendea as well as for Kristen, who is expecting another milestone soon, evident in the photo!

Francine McCarthy
Brock University

By-laws of The Canadian Association of Palynologists / L'Association Canadienne des Palynologues

SECTION 1 – GENERAL

In these by-laws unless the context otherwise requires:

"Act" means the Canada Not-For-Profit Corporations Act (S.C. 2009, c.23) including the Regulations made pursuant to the Act, and any statute or regulations that may be substituted, as amended from time to time;

"Association" means the Canadian Association of Palynologists / Association Canadienne des Palynologues;

The name of the Association shall be "The Canadian Association of Palynologists / L'Association Canadienne des Palynologues";

The objectives of the Association shall be to advance and encourage all aspects of palynology in Canada and to promote co-operation between palynologists and those engaged in related fields of study;

The Association is a member of the International Federation of Palynological Societies (I.F.P.S.);

"articles" means the original or restated articles of incorporation or articles of amendment, amalgamation, continuance, reorganization, arrangement or revival of the Association;

"by-law" means these by-laws and any other by-laws of the Association as amended and which are in force and effect;

"Directors" means those members elected

as officers of the Association to manage the business of the Association;

"meeting of members" includes the Annual General Meetings of members and any Special Meetings of members; "Special Meeting of members" includes all members entitled to vote at an Annual General Meeting of members;

notice of meetings and resolutions (ordinary and special) to be considered at the meeting must be published in the Newsletter and/or by email no less than two months before the meeting;

"ordinary resolution" means a resolution passed by a majority (i.e. more than 50%) of the votes cast on that resolution;

"special resolution" means a resolution on which at least 25% of the total membership of the Association casts their vote in person, by proxy, or by email ballot (or survey instrument) in order for the results to be considered legal and binding; passed by a majority of said minimum 25% of the total membership;

"proposal" means a proposal submitted by a member of the Association that meets the requirements of section 163 (Shareholder Proposals) of the Act.

SECTION 2 - MEMBERSHIP

Membership Conditions

Subject to the articles, there shall be one class of members in the Association. Membership in the Association shall be available on an annual (calendar year) basis to any individual interested in furthering the Association's purposes and who has paid the membership dues. None others shall be members of the Association.

No formal admission to membership shall be required, and the entry in the Register

of Members by the Secretary of the name and address of any individual shall constitute an admission to membership in the Association. Their names and addresses will be entered in the Register of Members by the Secretary.

The number of members of the Association is unlimited.

Every member of the Association shall be entitled to attend any meeting of the Association and to vote at any meeting of the Association (or by proxy for any special resolution) and to hold any executive office.

Membership in the Association shall not be transferable.

Membership in the Association shall cease upon the death of a member, or if, by notice in writing to the Association, he or she resigns his or her membership, or if he or she ceases to qualify for membership in accordance with these by-laws, for example, by failure to pay the annual membership dues.

Any institution, inside or outside of Canada, which wishes to receive the Association's Newsletter and which contributes to the support of the Association through payment of the prescribed subscription shall be considered a correspondent of the Association. A correspondent is not a voting member of the Association.

Membership Dues

Annual (calendar year) membership dues shall be determined by the members by resolution.

Members shall be notified in writing (email) of the membership dues at any time payable by them and, if any are not paid within six (6) calendar months of the membership renewal date, the members in

default shall automatically cease to be members of the Association.

SECTION 3 – MEETINGS OF MEMBERS

The Annual General Meeting of the Association shall be held at a time and place that the Directors deem most convenient for the Directors and membership during a given fiscal year. The time and place of this meeting shall be announced in the Newsletter and/or by email at least two months prior to its taking place.

At each Annual General Meeting of the Association, the following items of business shall be dealt with and deemed to be ordinary business:

- Reading of the minutes of the preceding Annual General Meeting;
- President's report;
- Secretary/Treasurer report - including balance sheet for the time period since the last AGM, report of reviewer thereon, and membership report;
- Website Editor's report;
- I.F.P.S. Councillor's report;
- Review of dues structure and revision of same if deemed appropriate;
- Report of nominating committee and submission of other nominations if required;
- Appointment of new nominating committee if required;
- Any resolutions or special resolutions to be considered.

The only persons entitled to vote at a meeting of the members shall be those members in good standing, including any persons who take out a membership at the meeting.

A quorum at the Annual General Meeting consists of five members in good standing, without which no business may be transacted. Attendance via Skype (or any other Internet media) or by phone is acceptable.

The President of the Association shall preside at every meeting of the Association.

If there is no President or if, at any meeting, he or she is not present at the time of holding the same, the President-Elect shall preside.

If there is no President or President-Elect or if at any meeting neither the President nor the President-Elect is present at the holding of the same, the members present shall choose someone of their number to act as presider.

The President or presider shall have no vote except in the case of a tie, in which case the President or presider shall cast the deciding vote.

At any Annual General or Special Meeting, unless a poll is demanded by at least three members, a declaration by the President or presider that a resolution has been carried and an entry to that effect in the minutes of the proceedings of the Association shall be sufficient evidence of the fact, without proof of the number or proportion of the members recorded in favour of or against such resolution.

If a poll is demanded by at least three members present, the poll shall be taken in such manner as the President or presider may prescribe, and the result of such poll shall be deemed to be the resolution of the Association.

A Special Meeting may be called at any time by the President, with the approval of a simple majority of Directors, to deal with time-sensitive and important items of business (i.e. resolutions or special resolutions) that cannot wait for the next Annual General Meeting.

Notice of a Special Meeting shall be announced in the Newsletter and/or by email

at least two months prior to its taking place.

The meeting announcement shall contain an explanation and all background material of the resolution or special resolution to be considered.

A motion, with the mover and seconder indicated, shall be included in the meeting announcement.

Such a meeting may be held online, in which case the voting shall be conducted by an email ballot (or survey instrument). If the item of business is a special resolution, the specifications under Section 1.11 must be followed.

Non-receipt of a Newsletter or email by a member shall not invalidate the result of a vote provided that there is reasonable proof that a Newsletter or email was sent to each member at his or her last known address as recorded by the Secretary/Treasurer.

SECTION 4 – AMENDMENTS

Initiation of, termination of, or changes to affiliation with other societies or institutions must be subject to a special resolution.

Amendments to the by-laws must be subject to a special resolution.

In the case of a meeting at which an amendment is being considered and at which proxy ballots will be accepted, proxy ballots must be received by the President no less than three days before the meeting. Proxy ballots relating to said amendment must be published in the Newsletter and/or by email no less than two months before the meeting, and be in the following form and wording:

PROXY

I, _____, a member in good standing of the Canadian

Association of Palynologists, do hereby appoint the President or Acting President of the Canadian Association of Palynologists as my proxy, to vote for me and on my behalf at the meeting to be held on _____ at _____ or any adjournment thereof.

Dated at _____ this _____ day of _____ 20____.

Member _____
(Signature of Member)

Witness _____
(Signature of Witness)

SECTION 5 – DIRECTORS

The Directors of the Association shall be a President, a President-Elect, a Secretary/Treasurer, a Newsletter Editor, a Website Editor and an I.F.P.S. Councillor.

The management of the activities of the Association shall be vested in the Directors who, in addition to the powers and authorities by these by-laws or otherwise expressly conferred upon them, may exercise all such powers and do all such acts and things as may be exercised or done by the Association and are not hereby or by Statute expressly directed or required to be exercised or done by the Association by Annual General Meeting or Special Meeting.

The President shall have general supervision of the activities of the Association and shall perform such duties as may be assigned to him or her by the Board of Directors from time to time.

The President-Elect shall be available for consultation and work with the President, and shall become familiar with the duties of the President.

The Secretary/Treasurer shall prepare and archive the minutes of all the meetings of the Association and of the Board of Directors, maintain all financial records, report on all financial matters, and maintain the Register of members. The Directors may appoint a person to act as Secretary/Treasurer if the latter is not present at a meeting of the Association, for the duration of the said meeting.

The Newsletter Editor shall produce and distribute at least two Newsletters per year, as specified in Section 8.

The Website Editor shall maintain in a timely manner the website of the Association, as specified in Section 9.

The I.F.P.S. Councillor shall represent and serve the Association on the I.F.P.S. Council, and provide information from the I.F.P.S. to the Association and its members in a timely manner.

SECTION 6 - ELECTION OF DIRECTORS (EXECUTIVE)

Any member of the Association shall be eligible to be elected a Director of the Association.

The nominating committee shall, at the Annual General Meeting, present a suite of candidates who have consented to fill executive positions for the following two fiscal years. Other nominations shall be accepted at the Annual General Meeting but no later.

The I.F.P.S. Councillor is elected by CAP for a term spanning the time between one International Palynological Congress and the next, this term exactly coinciding with the term of office of the I.F.P.S. Council.

All Directors are each elected for a term of two fiscal years, except in the situation of a resignation or removal from office (as

specified in By-law Section 6.14).

The President-Elect automatically becomes the President at the end of the term of the serving President unless he or she becomes ineligible to do so in accordance with these by-laws.

If unopposed, the candidates put forward by the nominating committee shall be accepted by acclamation.

If balloting is necessary for any of the executive positions, ballots will be included in the ensuing issue of the Newsletter and/or by email. The ballots will be counted on the 30th day after the Newsletter was mailed to members or on the date due for ballots as specified in the email.

In the case of a ballot each member in good standing has one vote, except the President or presider, who has no vote except to cast the deciding vote in the case of a tie.

The candidate elected to a particular executive position is the candidate with the most votes.

At the end of each stipulated term of office (as per By-law Section 6.4) all Directors must retire unless re-elected. All Directors are eligible for re-election.

In the event that the Secretary/Treasurer, Newsletter Editor, Website Editor or I.F.P.S. Councillor resigns his or her office or ceases to be a member in the Association, his or her office as Director shall *ipso facto* be vacated. The vacancy thus created may be filled for the unexpired portion of the term by the Board of Directors from among the members of the Association.

In the event that the President resigns his or her office or ceases to be a member in the Association, his or her office as Director shall *ipso facto* be vacated. The vacancy

thus created is to be filled for the unexpired portion of the term plus one fiscal year by the promotion of the President-Elect to office of President.

In the event that the President-Elect is promoted to the office of President, or in the event that the President-Elect resigns his or her office or ceases to be a member in the Association, his or her office of President-Elect shall *ipso facto* be vacated. This situation shall remain until the next Annual General Meeting of the Association, when a competition for the position of President-Elect will take place, as prescribed in these by-laws.

The Association may, by special resolution, remove any Director before the expiration of the period of office and appoint another person in his or her stead. The person so appointed shall hold office during such time only as the Director in whose place he or she is appointed would have held office if he or she had not been removed.

SECTION 7 – FINANCIAL MATTERS

The fiscal year of the Association shall be the period from 1 January in any year to 31 December in the same year.

Financial statements to be presented to an Annual General Meeting shall be reviewed before the meeting by a member of the Canadian Association of Palynologists or some other equivalent organization. In advance of the Annual General Meeting, the Secretary/Treasurer shall make available to such person the complete financial records (bank statements, spreadsheet of financial transactions, and notes authorizing any special financial transactions) of the Association. The reviewer shall review all of the financial records and complete a signed letter, sent to the President with a copy to the Secretary/Treasurer, indicating whether or not the financial records “represent a full and fair account of the financial affairs of

the Canadian Association of Palynologists for the time period covered by the financial report to the Annual General Meeting.

The Association shall make a written report to the members as to the financial position of the Association and the report shall contain a balance sheet and operating account. This report shall be read and presented at the Annual General Meeting for approval, and shall appear in the newsletter and on the Association's website immediately following the Annual General Meeting.

The books and records of the Association may be inspected by any member at any reasonable time within two days prior to the Annual General Meeting.

The Secretary/Treasurer shall submit financial records to Corporations Canada at any point as requested.

The borrowing powers of the Association may be exercised by special resolution of the members.

Contracts, deeds, bills of exchange and other instruments and documents may be executed on behalf of the Association by the President or the President-Elect and the Secretary/Treasurer, or otherwise as prescribed by resolution of the Board of Directors.

If a majority of 75% of the total membership votes to dissolve the Association, the assets of the Association will go to the International Federation of Palynological Societies (IFPS) (<http://www.geo.arizona.edu/palynology/ifps.html>).

SECTION 8 – NEWSLETTER

The Association shall issue to members and correspondents at least two 'Newsletters' per year, and any others as considered appropriate by the Directors.

The Newsletter shall carry the minutes and all reports of the Annual General Meeting.

SECTION 9 – WEBSITE

The Association shall maintain a Website. The Website Editor will update the Website as needed in a timely manner such that all information posted on the Website is accurate.

The Website shall carry the minutes and all reports of the annual meeting.

SECTION 10 – REPORTING TO CORPORATIONS CANADA

The Association shall file annually the following documents, on the dates indicated, with Corporations Canada:

- Annual Return, due between June 19 and August 18 annually (i.e. within 60 days following the date the Association was incorporated under the Not-For-Profit Act, June 19, 2015, as indicated on the Association's Certificate of Incorporation).
- A list of its Directors with their addresses, occupations and dates of appointment or election and, within fourteen days of changes of Directors.
- Change of Registered Office Address, immediately to effect the change.
- Election or appointment of a new Director, resignation or removal of a Director, and any change in the address of a current Director within 15 days of the change or, in the case of a change to a Director's address, within 15 days of being notified of the change.
- Changes to the Articles of Incorporation, as soon as the amendment has been adopted by members.

- Changes to the by-laws, within 12 months of confirmation of by-laws or amendments by members.

SECTION 11 – EFFECTIVE DATE

These by-laws are effective as of the 4th day of October, 2016, as confirmed by a quorum of the members of the Association voting at the 2016 CAP/ACP AGM.

Conference Abstracts

Atlas of modern dinoflagellate cyst distribution in the Black Sea Corridor, including Caspian and Aral Sea

Fabienne Marret¹, Kenneth Mertens², Peta Mudie³, Lyudmila Shumilovskikh⁴, Suzanne Leroy⁵

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⁴*Department of Palynology and Climate Dynamics, University of Göttingen, Untere Karspüle 2, 37073 Göttingen, Germany*

⁵*Institute for the Environment, Brunel University, Uxbridge, UB83PH, London, UK*

Amongst the Non-Pollen Palynomorphs now routinely used for palaeoenvironmental reconstructions, organic-walled dinoflagellate cysts (dinocysts) have been highly valuable for assessing past and current marine conditions, as well as being excellent biostratigraphic indicators. Global distributions have documented the strong influence of sea-surface conditions (temperature, salinity, productivity, nutrients, sea-ice cover) in species occurrence and abundance, and these relationships have commonly been used to quantitatively assess past marine conditions. Although we now have a relatively strong knowledge of dinocyst ecology in most oceans, there are still some parts of the world that are understudied, particularly low salinity seas and the world's largest saline lakes like

Caspian and Aral Seas. We present the first compilation of recent dinocyst distributions from 185 surface samples collected in the Black Sea Corridor (BSC) which is a series of marine basins extending over 3,880 km from the Aegean to the Aral Sea (including Marmara, Black, Azov and Caspian Seas). Here, recent anthropogenic activities have deeply influenced marine ecosystems and biodiversity. By studying both modern and past distributions of this important phytoplankton group, we can provide a baseline of natural vs. anthropogenic land-sea linkage impacts. A large diversity of 71 taxa have been identified, and they are described and illustrated using updated taxonomy in accord with new studies and/or biomolecular data. Several cyst species show distinct morphotypes that are linked to specific sea-surface conditions in the low salinity seas.

Maps of distribution and statistical analysis show the strong influence of annual and seasonal sea-surface salinity, as well as temperature, to a lesser degree. The most common taxon, *Lingulodinium machaerophorum*, dominates most of the assemblages except in the Caspian Sea, where the Ponto-Caspian endemic *Impagidinium caspienense* is the main dinoflagellate. Species associated with marine conditions are well distributed in Marmara and the Black Sea, such as *Operculodinium centrocarpum*, *Spiniferites mirabilis* and *S. ramosus*. In contrast, *Spiniferites cruciformis*, which was first described from early Holocene sediments from the Black Sea, today occurs in low abundance in the northern Black Sea, and in the Caspian and Aral Seas. A few taxa in the low salinity Black Sea, e.g. *Achomosphaera andalousiensis*, may be modern relicts of more widespread Mio-Pliocene distributions. In addition, based on late Quaternary records, we have been able to estimate when species have entered these seas, either due to climatic conditions or anthropogenic activities. We have also compiled a list of 364 thecate dinoflagellate taxa reported for the BSC and show that relative to the global oceans, a high percentage (up to 36%) form cysts in the low salinity seas.

This modern database provides an important baseline for global biodiversity inventories and for future quantitative reconstructions of past salinity and for monitoring the impact of anthropogenic changes associated with urbanization, pollution, increased shipping and industrial development.

Featured article

Palynology of surface samples, Ukrainian Shelf, NW Black Sea: first report

Mudryk, I.¹, Mudie, P. J.², and Zolotarev, G.³

¹Department of Physical and Marine Geology, 2 Shampansky Per., Odessa I.I. Mechnikov National University, Odessa 65058, Ukraine; inowl@ro.ru

²Geological Survey Canada-Atlantic, 1 Challenger Drive, Dartmouth, Nova Scotia, B2Y 4A2 Canada; mudiep@ns.sympatico.ca

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Keywords: Pollen, dinoflagellate cysts, algal remains, paleoceanography, pollution

Introduction. Marinopalynology studies were made using 15 surface sediment samples from the Ukrainian Shelf, NW Black Sea, as part of an environmental monitoring program EMBLAS (Environmental Monitoring of the Black Sea) within the European Marine Strategy Framework Directive. The purpose of the EMBLAS studies is to prepare for more effective protection of the waters of the European Seas in the future. The palynological samples are from water depths of 13 – 52 m and include nearshore to outer shelf locations between the Danube Delta (Fig. 1, sites 5-7) and the Crimean Peninsula (Fig. 1, site 12). This is a region of quasi-permanent anti-cyclonic gyres formed by the Rim Current seaward of sites 8 and 9 (Fig. 1) and of strong mixing with large but annually variable amounts of discharge from the Danube, Dniester, Bug and Dnieper Rivers. The palynological data include pollen and terrestrial spores that originate from vegetation onshore and are transported to the sea by wind and river transport (Mudie et al., 2011). The data-set also includes: (1) resting spores of organic-walled dinoflagellate cysts that are sensitive indicators of salinity (Mertens et al., 2012) and eutrophication

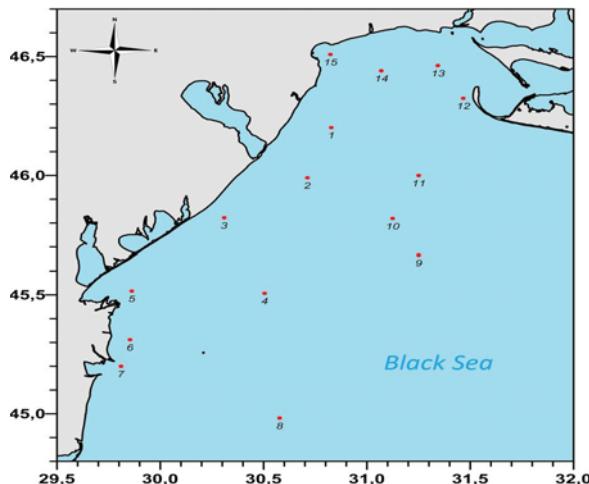
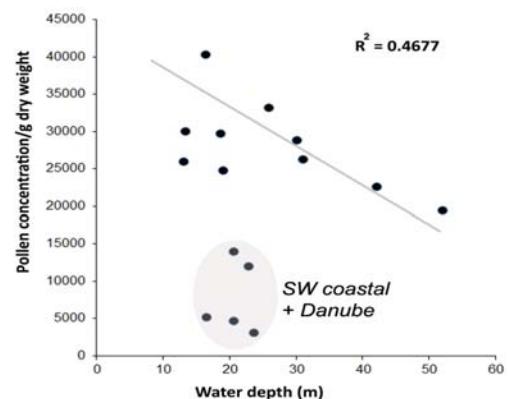


Figure 1 (Left). Map of surface sample distribution, Ukrainian Shelf, NW Black Sea.
Figure 2 (Right). Pollen concentration vs. water depth for samples in Fig. 1



(Giosan et al., 2012); (2) remains of aquatic algae, including freshwater species; (3) fungal spores that can indicate soil erosion, and (4) microforaminiferal linings derived from benthic foraminifera. The results of the surface sample investigation will be used in planning for improved protection of the Black Sea environment through better understanding of pollution sources (from air or river discharge) and the potential for increase outbreaks of harmful algae (HABs), including toxic dinoflagellates.

Methods. Surface sediment samples for this study were obtained on 2016 cruises of RV Mare Nigrum, where concurrent oceanographic measurements also includes water temperature, salinity, transparency, pH, dissolved oxygen, and Chlorophyll-a. Palynomorphs were prepared for microscope study using the Kiev University method of sample treatment which is based on the method used at Sapienza University of Rome. First, 10% HCl is used to remove carbonate from the sediment sample of 2 g dry weight after addition of 2 *Lycopodium* tablets and boiling for 10 minutes. After washing with distilled water until neutral pH, then 15% Na₄P₂O₇ is used to disperse the sediment particles to remove clays after boiling for 10 minutes. After washing with distilled water, cold 40% HF is used to remove silicates by chemical digestion. Residues are mounted on microscope slides in glycerine gel.

Results. Although the grain size analysis shows that about half of the samples are coquina with large quantities of shell fragments >10 mm maximum diameter, all the palynology samples produced moderate to large amounts of terrestrial pollen and spores (3179–40,400 grains/g pollen), and smaller amounts of non-pollen palynomorphs (NPP), including dinoflagellate cysts (dinocysts), aquatic algae, fungal spores and organic microforaminiferal linings. A large diversity of pollen taxa was obtained (70 taxa: mostly arboreal species but including 32 kinds of

herbs and 17 aquatic plants). All samples were dominated by bisaccate tree pollen, mainly *Pinus* spp., and by wind-transported herb pollen (Poaceae, chenopods, *Artemisia* and other tubuliform Asteraceae typical of agricultural areas and steppe grassland), with small amounts of 17 water-transported aquatic herb species. This pattern suggests a strong influence of wind transport from boreal forests north of the coastal region where the land has long been largely cleared for agriculture. Few pollen species distribution patterns can be discerned, e.g. presence of *Ephedra* seems to mark the Dnieper drainage, and overall there is a lesser dominance of *Fraxinus*, *Salix* and *Ambrosia* pollen than prevails off the Danube Delta riparian forest area. There is a weak correlation ($R^2 < 0.25$) between pollen concentration and water depth (proxy for distance offshore) but if the group of five Danube + SW nearshore samples (Figure 2) are removed from the statistics, a correlation of $R^2 = 0.4677$ is found to mark the expected exponential decrease of pollen concentration with water depth/distance offshore. Overall, the low presence of aquatic algae (*Pediastrum/Botryococcus*) and fungal spores indicate minimal fluvial influence and fluvial soil erosion at the study sites. Dinoflagellate cyst concentrations., including HAB species *Lingulodinium machaerophorum* and *Operculodinium centrocarpum*, are relatively low. Dinoflagellate species diversity number is also low ($N = 9$) compared to values of $N = 17$ –30 reported by Marret et al. (2015) using a cold processing method with sieving. The Mare Nigrum dinocyst concentrations/g show no clear correlation with water depth (Figure 3), or with salinity (between 7.64 and 18.29 psu), temperature (from 7.48–11.3°C) or oxygen, and they show little correlation with % sand contrary to the classical patterns reported for macrotidal shelf seas. However, after removal of two outlying samples (Sites 6 and 12), a relatively strong correlation ($R^2 = 0.697$) is found between dinocyst concentration and Chlorophyll-a values (Figure 4). This is the

first quantitative confirmation of a link between dinocyst and diatom populations (= Chl-a proxy values) that are preyed on by some plankton-stage dinoflagellates, including *L. machaerophorum* motile stage. Overall, the numbers and diversity of the Mare Nigrum zoomorphs, including microforaminiferal linings, seems to be low — (0)50–2031 linings/g — compared to Danube Shelf data with values of 60 – 2839/g (Frail-Gauthier and Mudie, 2014, Table 2), but more work is required for a large group of Unknown NPP.

Conclusions: The initial results of the marinopalynological study point to the importance of offshore wind transport of particulate organic matter, probably by strong northern winds, and relative smaller amounts of fluvial transport. The method chosen for palynological processing of coarse-grained coquina-type sediments is excellent for pollen-terrestrial spore recovery but it results in under-representation of dinocysts and microforaminifera. The dinocysts recovered include HAB species that can be toxic for shellfish and perhaps should be monitored using less severe processing methods without boiling. Regardless, the initial results indicate an im-

portant link between dinocyst concentrations and Chlorophyll-a values. This link with high Chl-a was suggested by Marret et al. (2015) for the Danube and Sevastopol gyre regions but has not previously been statistically validated.

Acknowledgments

This paper is a contribution to EMBLAS “Environmental Monitoring in the Black Sea” project. It also contributes to IGCP 610 project “From the Caspian to Mediterranean: Environment change and human response during the Quaternary.” The third author thanks staff of “Mare Nigrum” for help in obtaining sediment material.

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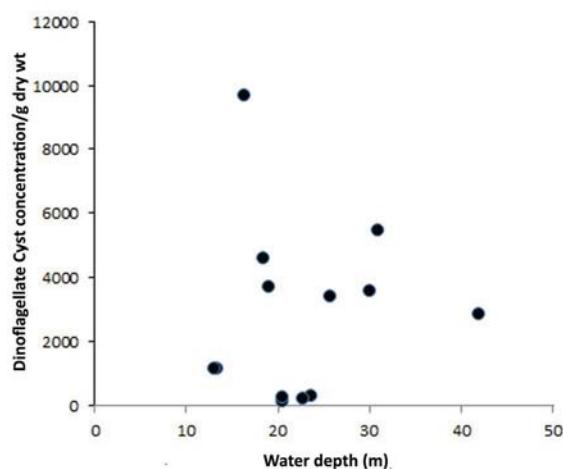
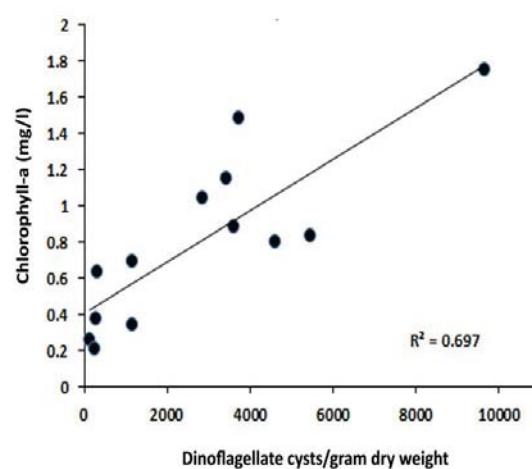


Figure 3 (Left). Dinocyst concentration/g vs. water depth for samples in Fig. 1

Figure 4 (Right) Dinocyst concentrations vs. Chlorophyll-a values for 13 of 15 sites in Fig. 1



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Thank you for your input!

The regulations governing Canadian non-profit organizations dictated that CAP must pass a special resolution to decide on the allocation of funds should CAP dissolve. A “special resolution” as laid out in Section 1.12 of our new by-laws means a resolution on which “at least 25% of the total membership of the Association casts their vote in person, by proxy, or by email ballot (or survey instrument) in order for the results to be considered legal and binding; passed by a majority of said minimum 25% of the total membership.

A Doodle poll was set up to put the decision to a vote, with the IFPS as a suggested recipient. Members were also allowed to suggest an alternative recipient and provide comments. 29 members voted, representing 53% of the total membership, satisfying the 25% minimum required for a special resolution. 27 members selected the IFPS as the recipient of residual funds and 2 members suggested other organizations and uses for the money. 93% of members who voted supported the IFPS as a suggested recipient.

Members were encouraged to comment within the poll. Some members suggested that the funds should stay within CAP and be used for scholarships or grants for students and research instead of being given away. Please note that by the time members decide to dissolve CAP, the executive would likely have depleted the assets in an attempt to boost membership, through initiatives such as scholarships and awards. Consequently, the remaining assets will be too small to support an ongoing scholarship, and there would no one left to manage it.

I would like to thank the membership for taking the time to vote and provide helpful feedback. Also, thank you to Mary Vetter for help setting up the Doodle Poll and the rest of the Executive for their helpful input during my first task as Secretary/Treasurer.

Jessie Vincent



Recent Publications

Davis, W.J., Schröder-Adams, C., *Galloway, J.M., Herrle, J., and Pugh, A. 2016. U-Pb geochronology of bentonites from the Upper Cretaceous Kanguk Formation, Sverdrup Basin, Arctic Canada: Constraints on sedimentation rates, biostratigraphic correlations and the late magmatic history of the High Arctic Large Igneous Province. *Geoscience Magazine*. *In press*. doi:10.1017/S0016756816000376.

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