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Dear Selection Committee,

I am honoured to nominate Dr. John P. Smol, OC, PhD, FRSC, for the **2017-18 CAUT Lee Lorch Award**. For over 30 years, Smol has made important contributions to all aspects of academic life – teaching, research, and service. His commitment, his work's widespread impact, and his dedication to the communication of his results make him an excellent candidate for this award.

#### RESEARCH

Professor John P. Smol is an internationally acclaimed scientist who has made distinct and profound contributions to identifying ecological changes in the world's surface waters and the biota they support due to human and natural agents. He has also been highly influential in bringing scientific data to inform evidence-based environmental policy around the world. A professor of biology and environmental studies at Queen's University, and holder of the *Canada Research Chair in Environmental Change*, Professor Smol is widely considered one of Canada's top environmental scientists and the world's leading paleolimnologist (an environmental scientist who studies long-term changes in aquatic ecosystems).

Recognizing the myriad of environmental stressors affecting our aquatic ecosystems (e.g. acid rain, eutrophication, exotic species, climate change, contaminant transport), Smol pioneered many of the approaches that are now used worldwide to study long-term ecological changes in lakes and rivers. His research has been instrumental in moving paleolimnology from a largely descriptive science to a quantitative and precise science with powerful analytical properties for ecological and biological conservation research. He has established the baseline and platform for future work on water quality, acidification, contaminant transport, climate change and changing wildlife stocks in critically important ecosystems that are applicable to a wide range of environmental issues.

### *Development of New Approaches for Studying Long-Term Environmental Change*

A fundamental focus of Smol's early environmental work was on studying the effects of acidic precipitation on lake systems. Given the scarcity of historical pH measurements for most regions, paleolimnological reconstruction of past water quality conditions using lake sediment cores were needed to provide the standard against which to measure long-term changes in pH. His ecological-based approaches provide a long-term record of how the biological community has changed in response to acidification and other stressors. The ecological transfer functions and models he and his colleagues developed are the *only* techniques that provide data on pre-impact conditions of lakes and answer the questions of when, and to what degree, lakes have acidified as a result of human activities, and how lake biota has changed. This body of work paved the way for many more applications in paleolimnology by Smol and his colleagues, as described below, and by countless others in this burgeoning field of which he is the acknowledged leader.

From 1987-1992, Smol was the Project Manager for the Paleoecological Investigation of Recent Lake Acidification (PIRLA-II) project, a large paleolimnology program funded by the U.S. Environmental Protection Agency. The data produced in Smol's lab proved crucial in the acid rain debate: it was their paleolimnological data which showed conclusively that lakes had indeed acidified as a result of human influences and that many currently fishless lakes had lost their populations as a result of acidification. Smol received a citation from the U.S. government for his "outstanding contributions" to the U.S. national assessment program, which eventually led to the Clean Air Act of 1991. His findings proved essential for lake-management decisions, including setting realistic targets for mitigation strategies and studying the trajectories of anthropogenic influences and recovery. These problems have important economic (e.g. fisheries, tourism) and health (e.g. water quality) implications worldwide.

Smol and his colleagues have been instrumental in identifying new environmental issues affecting lakes, such as calcium declines, which is partly a legacy of acid rain and logging, and demonstrating the importance of this previously unidentified problem for conservation issues. They have also developed and implemented many new biological protocols for assessing nutrient enrichment (eutrophication) in freshwater ecosystems. Using a combination of ecological approaches to reconstruct environmental changes in different regions of a lake, Smol's research has demonstrated the considerable effects of changing levels of nutrients in surface waters on the biological community. This work has contributed to the development of guidelines for determining what proportion of land around a body of water can be safely set aside for agricultural, residential, and other types of development. Techniques to assess changes in deep water oxygen levels in lakes have also been developed using benthic invertebrate indicators. These levels are critical to the survival of fish and assist with the sound environmental management of lakes and other aquatic settings.

*Providing the Temporal Perspective to Environmental Issues – Petroleum and Mining Industries*

Smol and his colleagues have also played a key role in determining the environmental repercussions on surface waters of new industrial developments, such as the expanding oil sands operations in western Canada. Smol, his postdoctoral fellow Joshua Kurek, and colleagues at Environment Canada showed unequivocally how the pollutants entering lakes could be linked to the oil sands operations. He and his students published another study showing that the liquid waste storage facilities (i.e. sumps) the petroleum industry excavated in the permafrost in the Arctic are now leaking. Clearly, the “permafrost” is no longer a “permanent storage facility.” Similarly, he has continued to develop and apply new approaches to forensic studies of the long-term effects of various mining industries on our waterways demonstrating the long-term impacts of Arctic gold mining on the water resources that Northern Indigenous peoples depend on.

*A Leader in the Development and Study of Bioindicators, Water Quality, and Long-Term Environmental Change in the Arctic*

Thirty-four years ago, when Smol began his High Arctic research, these lakes and the biota they contain were *terra incognita*. Smol pioneered the description of the once very poorly described biota (especially microbiota) that are contained in remote Arctic lakes, ponds and rivers. These bioindicators are critically important in environmental assessments because they form the basis for the reconstruction of the ecological history of Arctic systems. Therefore, sedimentary profiles are an invaluable record of a lake’s response over time to stressors such as climate change. Smol's work has been instrumental in tracking climate change in polar regions.

Smol and his team have provided key data to show that High Arctic pond and lake biology has changed dramatically over the last century, consistent with climate warming. He has also documented the disappearance of entire ecosystems. His highly influential studies show very clearly the “human footprint” on climate patterns in polar regions. Well before the issue was on political and scientific agendas, Smol and colleagues published a seminal paper in *Science* (Douglas et al., 1994) that used diatoms (a type of algae) preserved in pond sediment cores to show the effect of what, they believed, was human-induced climatic warming in the High Arctic. These extremely controversial results garnered very impressive scientific and media attention. Smol’s findings prompted the establishment of research programs throughout the circumpolar regions of North America, Greenland, and Lapland, and a large meta-analysis documenting widespread climate-related changes across the circumpolar Arctic. In 2013, he and his colleagues published another keystone paper where they showed that one of the last refugia from global warming (the ecologically important region of the Hudson Bay Lowlands) had succumbed to global warming, affecting fish resources on which Indigenous peoples depend. Smol and his colleagues have also shown similar and sobering changes for Northern bison populations, another important resource to Indigenous peoples.

*Conservation Biology Meets Paleolimnology: Long-term Ecological Changes in Seabirds and Salmon Populations and Biovector Transport of Nutrients and Pollutants*

In a related ecological area, Smol's work with colleagues at the University of Ottawa has demonstrated how seabirds, salmon and other organisms are transporting nutrients and contaminants from the oceans to Northern lakes and rivers and thus to Northern communities. These influential and innovative studies have now been expanded to temperate sites, e.g. the Great Lakes. His first papers on this topic focus on anadromous fish populations that move nutrients from the ocean as they migrate to freshwaters to reproduce, and a second series of papers describe how seabirds are similarly transporting pollutants such as PCBs from the ocean into Northern lakes and terrestrial ecosystems through their guano. Like many of Smol's discoveries, these findings have received tremendous media and scientific attention. These approaches are now being used around the world to assess and monitor new nutrient and contaminant pathways as well as to reinforce the understanding that coastal communities, such as those in the Arctic and Antarctic, once believed to be insulated from such pollution, are in fact extremely sensitive to activities conducted in other parts of the world.

*Deciphering the Pathways and Ecological Repercussions of Past Aboriginal Societies*

Working with archaeologists, Smol and his colleagues have determined the ways in which past Arctic peoples (e.g. the Thule Inuit, the Dorset) and other Aboriginal peoples have affected their ecosystems, and to simultaneously reconstruct the climates and other aspects of the environment that allowed past peoples to thrive or that contributed to their decline. Once again, this work has garnered international attention and is now being attempted in other regions. Working with M. Douglas at the University of Alberta, Smol and his colleagues have revealed that the oldest record of human impact on lakes can be traced back to the Thule whalers of the High Arctic – almost 1000 years ago. This work provides evidence of long-term, human-induced changes in the North by tracking the migration of Indigenous peoples.

Smol has authored over 530 journal publications and book chapters. He has completed 21 books, and is working on his 22<sup>nd</sup> book for the *Excellence in Ecology* series as the recent recipient of the *International Ecology Institute Prize*. He has lectured on every continent (over 1000 conference presentations) and given many keynote addresses, such as the inaugural 2016 August Thienemann Lecture in Berlin. Identified as an ISI Highly Cited Researcher in 2006, Smol is the *most cited* paleolimnologist on the planet. His textbook *Pollution of Lakes and Rivers: A Paleoenvironmental Perspective* was the first textbook dedicated to paleolimnology; now in its second edition (and a 3<sup>rd</sup> edition in preparation), a Chinese translation is also now in press.

Since 1990, Smol has received six honorary doctorates and over 60 national and international research and teaching awards, including the 2004 *NSERC Herzberg Gold Medal for Science and Engineering* – “Canada's highest honour for research excellence in science and engineering.” Some highlights since 2009 include: *Northern Science Award* from Polar Knowledge Canada

(2016); *McNeil Medal for the Public Awareness of Science* from the Royal Society of Canada (RSC) (2015), making Smol the first scientist to win three individual RSC medals, having previously won the *Miroslaw Romanowski Medal* (environmental science) and the *Flavelle Medal* (biological sciences); *NSERC Brockhouse Canada Prize* for interdisciplinary research (2014); chosen by the Council of Ontario Universities (2015) as one of the top 50 game-changing historical moments in Ontario research over the past 100 years for his work on developing the use of lake sediments to study climate change; one of nine *Change Makers* by Canadian Geographic Magazine (2013); *Officer of the Order of Canada* (2013); *Einstein Professorship*, Chinese Academy of Sciences (2012); *Cowles Award*, Association of American Geographers (2012); and Fellow of The Royal Canadian Geographical Society (2010). A full list of his awards and accolades can be found in his CV, appended as supplementary material.

## TEACHING

Professor Smol is not only a prolific and distinguished researcher, but also an outstanding educator with the drive and ability to impress the importance and fundamentals of environmental science upon a new generation of citizens and future leaders. He teaches courses about limnology and long term-environmental change at Queen's throughout the year. What makes John Smol such an excellent teacher stems from his teaching philosophy: help students tap their strength and potential; provide them with a solid foundation of information and concepts; provide the appropriate social, political and scientific context for the information; provide them with opportunities for hands-on exploration; integrate students as much as possible into active field work; help them develop their communication skills, appreciate criticism and learn from mistakes. A further example of his devotion to undergraduate education is his co-authored textbook *Ecology: A Canadian Context* (now in its 2<sup>nd</sup> edition). Given that his undergraduate courses are routinely over-subscribed, it is perhaps no surprise that Canada's *Maclean's* magazine has repeatedly identified Professor Smol as one of Queen's most popular professors.

Recognized at his home university, as well as nationally and internationally, for his teaching excellence and dedication to students, he has received 12 *teaching, mentoring and public education awards and honours*, including the 2001 *W. J. Barnes Teaching Excellence Award*. Conferred by the Arts and Science Undergraduate Society at Queen's, this award is "... the highest tribute the Society can pay to an individual for teaching excellence ... in recognition of outstanding teaching and dedication to students." In 2006, he received the *Chancellor A. Charles Baillie Teaching Award*, the University's highest award for education, as well as the inaugural *Award for Excellence in Graduate Supervision*, in recognition of his outstanding record as a graduate student mentor. In 2012, he was awarded in Japan the *Ramon Margalef Excellence in Education Award* from the Association of Sciences of Limnology and Oceanography to recognize "his outstanding

work with educational duties of teaching undergraduate courses and mentoring graduate students.”

Importantly, his teaching awards also include the *3M National Teaching Fellowship* (considered by many to be Canada’s top undergraduate teaching award). Interestingly, I understand that John Smol was the first FRSC to ever be awarded the *3M Teaching Fellowship* – a clear acknowledgement of his dedication to *both* research and teaching. (This dedication is further evidenced in his 2007 institutional document “Blending research and teaching: An important synergism.”) In 2010, *Nature* magazine named Smol *Canada’s Top Mid-Career Science Mentor*.

Perhaps the most telling evidence of his talents as a mentor is the continued and steady success of his graduates at securing excellent academic appointments. With ~80 graduate students passing through his lab, about the same number of honours undergraduate students, and over 20 post-doctoral fellows, Smol’s mentorship program is likely unprecedented in Canada. Many of his graduates have filled key scientific positions, including four Canada Research Chairs, the former Director of the Canadian Circumpolar Institute, key positions in Environment Canada and Climate Change, Parks Canada, the Department of Fisheries and Oceans, provincial ministries, and two associate deans.

Internationally, Smol is frequently granted visiting professorships where he is able to lecture or give short courses on his work to students around the world. I stress that he does this as an *unpaid volunteer*, despite his remarkable work schedule and other commitments. Since only 2012, he has been a visiting professor at: South China Normal University, Guangzhou, China; Universidad Nacional (Bogotá), Universidad de los Andes (Bogotá), and Universidad del Norte (Barranquilla), Colombia (2015); Universidad Nacional Autónoma de México (UNAM), Mexico City, Mexico (2014); Universidad Nacional Autónoma de Nicaragua (UNAN), Centro para la Investigación en Recursos Acuáticos de Nicaragua (CIRA-UNAN), Managua, Nicaragua (2014); Yunnan Normal University, Kunming, China (2013); Slovak Academy of Sciences (2013); University of Concepción, Chile (2013); Facultad de Ciencias Naturales y Museo, La Plata, Argentina (2012); University of Granada, Spain (2012); Einstein Professor, Chinese Academy of Sciences (2012); Botanical Institute, Brazil (2012); and the Universidad de la República, Montevideo, Uruguay (2012). As I submit this document, Smol is leaving for Sri Lanka to deliver a keynote address and provide another short course. These opportunities have allowed him to spread his methodologies and approaches to new developing regions that desperately need this information for ecological protection and conservation biology.

After being recognized with several prestigious teaching and mentoring awards, Smol began receiving invitations to provide talks and workshops focussed on mentoring young scientists. To date, he has provided 20 such presentations on five continents. After making one such presentation, the editor of *Ideas in Ecology and Evolution* invited him repurpose his lecture as a

paper, which was recently published as an article entitled “Some advice to early career scientists: Personal perspectives on surviving in a complex world” (*Ideas in Ecology and Evolution* 9: 19-23; appended to this nomination). Within a few weeks of publication, it had been downloaded over 1,000 times.

Professor Smol’s dedication to teaching goes much further than the classroom, field site, or laboratory. Smol exemplifies the scientist whose work is not done until its lessons are broadcast not only to academics and students, but to decision-makers and the general public – all whom should be aware of critically important changes in the world’s water environment due to human and natural agencies. For example, Smol frequently volunteers his time to local environmental groups as well as to public education. For example, he regularly lectures to Later Life Learning, a non-profit educational program for retired individuals who are dedicated to continued learning, but he also advocates the importance of educating children (as young as age 3) on environmental issues. For instance, Smol co-organized with colleagues at the Ontario Ministry of Natural Resources “Love your Lake Day” at Charleston Lake Provincial Park. This successful event included a public lecture and a children’s lakeside session describing the life that thrives in lakes. Smol has also been a weekly volunteer for the Partners In Research Virtual Researcher on Call (VROC) program, where he shares his passion for environmental science (via video) with high school Biology students nationwide. (In 2013, Partners In Research recognized Smol with the inaugural *Science Ambassador Award*, acknowledging his commitment to promoting the benefit of his research through public outreach). Smol is a popular invited speaker at museums, environmental clubs, and lake association groups, where audiences appreciate his efforts to present the science in a way that is accessible and engaging. Many of his books are dedicated to non-specialist audiences, including his co-authored textbook *Ecology: A Canadian Context*.

Smol is in high demand as a public speaker and is an authoritative voice to which many turn on issues of science and the environment. He is a favourite of the media because of the straightforward language he uses in explaining his results and for the obvious passion he brings to his concerns for the environment. Smol gives dozens of TV, radio and press interviews on science each year. There are hundreds of examples, but within the last few years Smol released a paper on the Alberta Oil Sands (published in PNAS) that made tremendous waves in the national and international media, including interviews in the *New York Times*, the *Globe and Mail*, the *Vancouver Sun*, and appearances on *CBC’s The National* and *Quirks and Quarks, As It Happens*, *TV Ontario*, *Fox Business News*, and on Chinese, German and Swedish media channels.

As noted by Industry Minister, David Emerson, on Smol’s receipt of the *Herzberg Gold Medal*, “... many Canadians also know him from his tireless efforts to inform the public about the impact of his lake studies. At home and abroad, he is an ambassador for the very best of what Canadian research offers to the world, and his work underscores the vital importance of fundamental research.” Not surprisingly,

Smol was awarded the *T. Geoffrey Flynn Advancement Champion Award* – Queen’s University’s highest award for service in recognition of his outreach teaching and public education. In 2015, the Royal Society of Canada presented Smol with the *McNeil Medal for the Public Awareness of Science*, our national academy’s highest award for scientific outreach.

Professor Smol utilizes his role as public intellectual to stress the importance of his crucial findings on environmental issues to policy-makers. He acted as a lead speaker and participant during the Kyoto Protocol debate with Environment Minister David Anderson, and he has been invited to speak as part of the federal “Bacon and Eggheads” lecture series on Canada’s Parliament Hill. Smol was one of three ecology experts invited to discuss water quality issues at the 2000 EcoSummit in Ottawa. He has headed working groups, based on Parliament Hill, collaborating with politicians and other policy makers to ensure continued support for fundamental and applied research. In addition, he was a panellist at *The Freshwater Summit* and asked to chair *The Biodiversity Summit*, and has just been invited to keynote at the *2018 Muskoka Summit on the Environment*.

## SERVICE

Smol has served on many committees at Queen’s since the beginning of his faculty appointment in 1984. He has never shied away from service work, but rather sees it as a critical component to supporting his own discipline, his academic department, his institution, and science most broadly.

Institutionally, he started in his career with smaller commitments including the University Herbarium Committee (1984) and various faculty search committees, and quickly escalated his service to include academic development committees (e.g. Environmental Studies Steering Committee), student-focussed committees (e.g. Academic Advisor, Environmental Science Program), and committees responsible for the development and delivery of numerous institutional initiatives. For example, he was co-author of Queen’s University’s Academic Plan, and continues to serve as the Advisor for the Senate Policy on Integrity in Research, in which he provides oversight on research conduct across the entire university enterprise. Since 2001, he has served on the review panel for the Queen’s University Entrance and Chancellor’s Scholarships and Awards.

Smol also selflessly volunteers his time to work with the broader student community at Queen’s and elsewhere. For example, he has repeatedly provided workshops with the Society for Professional and Graduate Students’ *Expanding Horizons* program, including annual (twice in some years) workshops on preparing for conferences, or presentations on “Preparing for your Academic Career.” This year also marks the 20<sup>th</sup> anniversary that Smol has helped organize and



lecture at the Field Safety Workshop – an initiative that he played a key role in starting in 1998. Remarkably, Smol has presented in each of the annual workshops. Working with the Teaching and Learning Centre, Smol has led workshops on “Mentoring Graduate Students” for new faculty, as well as workshops on better understanding of the peer review system and publishing. Each year at Queen’s and elsewhere (on five continents), Smol presents lectures and leads discussions on the general topic of “Advice to Early Career Researchers” which was recently published (and is attached to this nomination as supplementary material). It is not surprising that he is the 2017 winner of the *School of Graduate & Professional Students Staff/Faculty Excellence Award* for going above-and-beyond any reasonable expectations our university has for service commitments.

Within the Canadian academic scene, Smol has freely offered his time to a variety of activities, including serving in various roles at NSERC, quite possibly holding a record for number of committees! For example, he served as a panel member on the selection board for NSERC’s Vanier Scholarships and Banting Fellowships; as chair of the NSERC site visit for the Major Resource Support application for the C.C.G.S.; and on the grant panels for NSERC Discovery Grants, Strategic Partner Grants, Northern Supplement Grants, Equipment Grants International Polar Year grants, and others. He has served as an external reviewer of various academic departments, as an advisory board member for the Polar Continental Shelf Project, and on the research advisory committee of the Museum of Nature. He has graciously worked with the Canadian Association for Graduate Studies (CAGS), the Canada Research Chairs program, the Association of Canadian Universities for Northern Studies (ACUNS), the E.W.R. Steacie Foundation of the National Research Council. For seven years, he has served on the Board of Directors for Canadian Science Publishing – a not-for-profit that publishes the prominent Canadian science journals. A full list of Smol’s service commitments is provided in his CV.

He has published numerous op-eds (many with outspoken environmental advocate Dr. David Schindler, the 2105 Lee Lorch Award winner) in a variety of outlets to encourage the public and government to consider the vital importance of studying, preserving and protecting the environment. The following articles in particular make impactful statements about the attention these issues deserve, and the seriousness and timeliness of action:

- Schindler, D.W. and Smol, J.P. 2006. Remember the environmental imbalance (an open letter to the Prime Minister). Published as a guest editorial in the *Ottawa Citizen*, February 8, 2006; page A25.
- Smol, J.P. 2010. Opinion: The folly of denial. *Queen’s Alumni Review*: 2010, issue 3, 10-11. <http://www.queensu.ca/gazette/alumnireview/stories/folly-denial>
- Schindler, D.W., Smol, J.P., and Weaver, A.J. 2011. Sleepwalking toward our 2020 climate targets. Op-ed in *The Toronto Star*, available online August 31, 2011.

<http://www.thestar.com/opinion/editorialopinion/article/1047635--sleepwalking-toward-our-2020-climate-targets>

- Smol, J.P., Schindler, D.W., Dillon, P.J., Vincent, W.F., Hecky, R., Carpenter, S.R., Likens, G.E., and Moss, B. 2012. Water and wisdom: an open letter to Ottawa. Op-ed in the *Globe and Mail*, available on line June 5, 2012. <http://www.theglobeandmail.com/commentary/water-and-wisdom-an-open-letter-to-ottawa/article4230768/>
- Schindler, D.W. and Smol, J.P. 2012. After Rio, Canada lost its way. Op-ed in the *Ottawa Citizen*, available on line June 20, 2012.
- Schindler, D.W. and Smol, J.P. 2016. How Trudeau can pass the science test: By restoring the Fisheries Act to its full strength, the government can meet its own standard for scientific integrity. Published as a guest editorial in *The Hill Times*, June 15, 2016; page 25.

This work in Canada is matched by a long string of international commitments, including being a contributor to the U.S. Climate Change Science Program, to the Arctic Climate Impact Assessment (ACIA), and to the Conservation of Arctic Flora and Fauna (CAFF) overview, to name a few. Smol has also been very active on international service committees. For example, he served on the steering committee for the National Sciences Foundation (NSF) Paleoclimates of Arctic Lakes and Estuaries (PALE) panel; the international steering committee of the Human Impact on Lake Ecosystems and the Role of Palaeolimnology; the grant evaluation panel, Water Frameworks directive for the Environmental Protection Agency of Ireland; and on the International Union of Geological Sciences, Commission on Geological Sciences and Environmental Planning working group. He was an invited participant to the workshop on “Antarctic and Arctic Environmental Lessons Learned” at the University of Queensland, and served on the international program committee for the 18<sup>th</sup> International Conference on Environmental Indicators in Hefei, China. A complete list of international service is provided on his CV. Smol is a true international ambassador for science, emphasizing by example and action the value of research and education.

Three events, all occurring within the last year, demonstrate his commitment and influence in bringing sound evidence-based science to the policy table. Smol was asked to moderate and act as a panellist at the Canadian Science Policy Conference, where he chaired the session on climate change. Just recently, Smol was in Ottawa giving invited testimony to Canadian parliamentarians on proposed revisions to the Canadian Environmental Protection Act. In addition, at the award presentation for the *Northern Science Award* and the *Centenary Medal*, Canada’s Minister of Indigenous and Northern Affairs noted: “*The research techniques Smol has developed have profoundly influenced climate change science and brought a much better understanding of how Arctic environments have changed over time. His work has been critical for Northern communities by stimulating improvements to environmental stewardship, community management, and in a wide variety of other areas.*” Furthermore, Dr. David Scott (President of Polar Knowledge Canada)

stated: “Dr. Smol has made an exceptional contribution to the advancement of research in freshwater techniques and has become the go-to person to understand changes in the Arctic ecosystem.” When one considers that only about a third of Professor Smol’s research program is in the Northern regions, one gains a better scope of the true breadth and depth of his contributions. His influence reaches the highest level of government.

Within his discipline, Smol was the founding Editor-in-Chief of the international *Journal of Paleolimnology*, a position he held for 21 years. When he moved from this role to Consulting Editor, the journal was amongst the top-ranked in the field of aquatic sciences and environmental change. Smol is currently on his third 5-year term as Editor-in-Chief of the journal, *Environmental Reviews* (5-year Impact Factor ~4.6) and as the series book editor of *Developments in Paleoenvironmental Research*. Additionally, he is on the editorial boards of ten other journals. In 2012, Smol was elected Chair of the *International Paleolimnology Association* (elected for a second term).

Overall, John Smol’s commitment to every facet of academic life is staggering. He has worked hard to answer questions about the impacts of human activities on the environment, and he ensures that his discoveries are shared with his students and the public at large. Through his service work, he has helped Queen’s uphold its international reputation of excellence in our three pillars (teaching, research and service) and keep all processes running smoothly and efficiently. He is deeply committed to every part of his work at Queen’s and would make an exceptionally deserving recipient of the CAUT Lee Lorch Award.

Sincerely,

A handwritten signature in blue ink, appearing to read 'BC', with a stylized flourish extending to the right.

Brian Cumming  
Professor and Head  
Department of Biology, Queen’s University