



The largest natural history museum in Canada known for: nature inspiration and engagement; Arctic knowledge and exploration; species discovery and change; and a 14.6 million specimen collection housed at a 76 hectare research campus.

2016-2017 ANNUAL REPORT

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message from the chair



STEPHEN HENLEY
Chair, Board of Trustees

Sustainability is a word increasingly heard in governance at a micro level with respect to the ongoing health and viability of an enterprise, and at a macro level with respect to our ability to maintain a regenerating natural environment capable of supporting current global trends of increasing population, economic growth, and energy consumption. Responding to both of these aspects of sustainability have been central themes to progress at the Canadian Museum of Nature (CMN) in the past four years.

At the macro level, the CMN conducts research to create knowledge which has direct relevance to understanding environmental change. And, through the national natural history collection, it maintains a scientific body of evidence that is vital to environmental management. At the micro level, to continue this important research, the Museum itself must become a sustainable museum enterprise and to be relevant, the Museum must be clear in the value it provides to the scientific community and through public engagement, to the population at large.

The progress made on the macro and micro front over the past four years, aligned with the strategic plan moving forward, has placed the Museum on a sustainable path to playing a vital role in creating a sustainable natural future for Canada and the world. This progress has momentum and that momentum is directly tied to the passionate professionals who work and volunteer for the Museum.

I personally believe in the mission and mandate of the Canadian Museum of Nature, Canada's national museum of natural history and natural sciences. I have witnessed a dramatic change in its position in Canada and the world. The

Museum is clearly a national museum of international first rank that is increasingly known for global excellence in arctic knowledge, global influence in species discovery, and courageous national leadership in inspiration and public engagement.

It takes courage and creativity to transform people's expectations of a natural history museum operating within a 21st century global context and the Museum has done exactly that. It also takes a knowledgeable, committed, and experienced ecosystem to support a collaborative and collegial approach to museum management, and so I encourage you to continue to be an active and engaged stakeholder of YOUR national museum.

Thank you for your enthusiasm and support for the Canadian Museum of Nature and for the system of national museums that it is a vital part of.

message from the president and chief executive officer



MARGARET BECKEL
President and Chief Executive Officer

CEO's Reflections on 2016

Black-eyed Susans, Canada Goose, NatureForAll, science Ignites, Norwegian Royals, Arctic digital access, Rudolphina, the Beaty gift and record attendance. What a year!

The Global Arctic Science Summit Week in Fairbanks, Alaska. A gathering of scientists, NGOs, academics, government, and industry all seeking to advance understanding and use of arctic knowledge.

Bugs and Birds refreshed and reopened. Our natureLIVE Gallery was refreshed and expanded to deliver more space and more engagement for our younger visitors. Birds moved to the third floor to ensure the higher ceiling of the fourth floor meets the height needs of our special exhibits.

Landscapes of Canada Gardens opened. The gardens were filled with Black-eyed Susans bringing smiles and engagement from our visitors.

Lishman Sculpture unveiled. William Lishman shared the story of the iceberg sculpture from idea to creation to installation.

Ultimate Dinosaurs welcomed 100,000 visitors. Everything changed after our T-Rex pack did yoga on Parliament Hill. 2 million views on YouTube!

NatureNocturne celebrates its 4th season. Our ever popular program to engage young professionals continued to inspire.

natureTALKS got economic in May. In partnership with the EcoFiscal Commission from McGill and the Economic Club of Canada, we debated the merits of an economic lens on nature.

Research field season with almost 200 days in the field. A very productive and buggy field season.

Natural Leaders events in Vancouver, St John's, and Ottawa. Three engaging events that attracted the community and corporate leaders in three cities who were interested in learning about their national museum of natural history and sciences.

CMN co-hosts pavilion at the International Union for Conservation of Nature (IUCN) world congress in Hawaii and helps launch the #NatureForAll global engagement campaign. Nature Nocturne rocked the congress!

CMN helps lead the Global Biodiversity Information Facility (GBIF). Our Vice President, Research & Collections became Vice Chair of the board of GBIF and helped to ensure its value is understood and leveraged around the world.

Reptiles inspire and surprise our visitors young and old. Over 60% of our general visitors chose to experience the live animal experience in our fall/winter season special exhibit.

CMN hosts the first annual Nature Inspiration Summit. Our first natureSCENE hosted individuals and organizations committed to understanding and addressing nature deficit disorder.

Third annual Nature Inspiration Awards and second Lifetime Achievement Award. Another year of inspiring finalists and winners dedicated to creative and innovative approaches to connecting people with nature.

Arctic Digital Access Portal discussion in Washington. Making arctic knowledge available to the world! Museums,



libraries, and research institutes gathered to discuss new ways to collaborate and share collections, research, and traditional knowledge of the arctic.

Rudolph or Rudolphina revisited for the holiday season. Who knew that Santa's reindeer were all female? The evidence based on specimen research confirms it.

Cleaning blitz week deals with dust on the dinos, whale tails, building repairs and training.

Beaty Family made the largest philanthropic investment in the Museum's history. Our Beaty Centre for Species Discovery is transformed.

46 venues hosted a travelling exhibit or suitcase.

39 specimen loans to **16** international and **23** Canadian institutions.

26 countries engaged in scientific research collaborations.

1,400 media stories or mentions.

153 million digital downloads of our collections data.

6,200 membership households.

\$10.8 million in cash and in-kind committed to the life and future of the museum.

134 individual staff with passion for our purpose.

230 volunteers tirelessly supporting our educators and scientists to bring nature's past, present, and future to life in a meaningful way.

Thank you all for your support. Together we are saving the world for future generations with evidence, knowledge, and inspiration!



ASSESSMENT OF RESULTS FOR 2016-2017

In 2016-2017, the Museum advanced year three of a new strategic plan that leveraged its research and collections strengths in Arctic Knowledge and Species Discovery. New approaches to the design and delivery of visitor experiences enabled the Museum to attract and inspire new audiences. These new engaging experiences led to higher memberships, higher membership renewal and provided a foundation for enhanced fundraising. Overall higher levels of engagement led to a better understanding of and connection with Canada's natural world.

STRATEGIC OBJECTIVE #1:

Create a Centre for Arctic Knowledge and Exploration that **transforms people's understanding of Canada's Arctic** and its relationship with Canada as a country in a 21st century global context.

Strategies: Advance a five year program to enhance and advance the research, collections, education and exhibition programs focussed on Canada's Arctic within a national and global context.

- Unveil the Arctic sculpture and associated programming
- Fund the final phases of the Canada Goose Arctic Gallery
- Host the first annual Arctic Science Symposium
- Launch the 2017 year of the Arctic at the Museum leading to the Canada Goose Arctic Gallery opening

The arctic sculpture was unveiled in June with tours of the Landscapes of Canada Gardens. Budget 2016 provided essential funding for the final phases of the Arctic Gallery. The first Arctic Science Symposium was held January 28, 2017, launching a year of arctic programming.

Outcome #1: Be a global museum leader in Arctic Knowledge and Exploration.

Performance Measures:

Outcome	Measure	2014–2015 to 2018-2019 Performance Target	2016–2017 Performance Target (actual)
Be a global museum leader in Arctic Knowledge and Exploration	• Number of participants in Arctic themed experiences: gallery, exhibit, program, digital	• From 250,000 annually to 1 million annually	• 500,000 (745,136)
	• Funds raised supporting Arctic research, collections and engagement programming	• From \$100,000 annually to \$500,000 annually	• \$400,000 (\$1,555,000)
	• Number of contacts with the Museum of Nature and its experts and collections for Arctic related content, expertise and collaboration	• From 50 annually to 200 annually	• 75 (140)
	• Awareness of the Museum's Arctic content and expertise as measured by media mentions, stories, etc.	• From 150 to 200 stories and mentions annually	• 175 (128)

STRATEGIC OBJECTIVE #2:

Create a Centre for Species Discovery and Change that **transforms people's understanding of the relevance of species diversity** to their lives now and in the future.

Strategies: Advance a five year program to advance and disseminate the research, collections, education and exhibition programs explaining Canada's species diversity aligned with the United Nations Convention on Biodiversity 2020 program.

- Position the Museum's leadership in species discovery at national and international conferences and events
- Seek funding for essential scientific equipment
- Co-host a pavilion at the IUCN world congress
- Participate in a national bioblitz
- Host public "Science in Action" events at both Museum locations

The Museum continues to be a magnet for research and data sharing collaboration across Canada and around the world. Partnerships with natural history museums, research institutes, universities and government agencies expanded our reach and impact. Budget 2016 provided funding for essential scientific equipment that is key to fulfilling our mandate and attracting scientific talent. The IUCN world conservation congress pavilion profiled the museum's role in nature inspiration, engagement and research with thousands of organizations and individuals. The annual open house at the research campus and the Science By Night open house at the downtown location welcomed thousands of individuals who normally would not have access to our scientists.

Outcome #2: Be a national leader and global influencer in advancing and sharing knowledge about species discovery and change.

Performance Measures:

Outcome	Measure	2014–2015 to 2018-2019 Performance Target	2016–2017 Performance Target (actual)
Be a national leader and global influencer in advancing and sharing knowledge about species discovery and change	• Number of publications	• From 40 annually to 60 annually	• 50 (66)
	• Number of new species described by the Museum	• From 10 to 20 species	• 20 (38)
	• Number of collaborators involved in the work the Museum does	• From 200 to 400 collaborators	• 250 (219)
	• Number of new experts being guided by us	• From 20 to 30 students/post docs	• 25 (30)
	• Number of collections acquired	• From 10,000 to 50,000 lots	• 22,000 (34,363)
	• Amount of data shared digitally through nature.ca	• From 1 million to 5 million downloads and retrievals From 10% from the Museum to 100% from collaborations	• 4 million (37 million)
	• Percentage of GBIF memberships funded	• From 10% from the Museum to 100% from collaborations	• 100% (100%)

STRATEGIC OBJECTIVE #3:

Create a Centre for Nature Inspiration and Engagement that **transforms people's expectations of the Canadian Museum of Nature as a destination** for discussion, connection and exploration with nature's past, present and future that advances understanding and respect for Canada's natural world.

Strategies: Advance a five year program of inspiration and engagement activities on-site and off-site that deliver a different and compelling approach to connection and engagement with nature.

- Invest in new audience research to guide programming
- Leverage new products and approaches created by the Centre for Nature inspiration and Engagement.
- Profile the Museum's science at national natureTALKS events
- Pilot new technology that leverages collection's knowledge for public engagement

Foundational research completed and guiding future planning. NatureTASTES and natureSCENE attracting new adult audiences. Museum science profiled at ArcticNet, IUCN, GBIF and Beaty Biodiversity Museum. Prototype apps developed and tested in collaboration with partners.

Outcome #3: Be a national leader in nature inspiration experiences on-site and off-site.

Performance Measures:

Outcome	Measure	2014–2015 to 2018 - 2019 Performance Target	2016–2017 Performance Target (actual)
Be a national leader in nature inspiration experiences on-site and off-site	• Number of visitors attending the VMMB and NHC generated experiences	• From 1 to 3 million	• 2 million (2.65 million)
	• Change in membership renewal rate and total memberships	• From 4,200 and 42% renewal to 5,000 and 60% renewal	• 5,000 and 55% renewal (6,006 and 68%)
	• Change in reach of museum expertise demonstrated by number of collaborations, conference presentations and workshop	• From 20 to 30 events	• 30 events (94)
	• Number of organizations collaborating with the Museum for content and experience creations	• From 25 to 100 collaborations	• 75 collaborators (144)
	• Funds raised in support of nature inspiration, content and experiences	• From \$100,000 to \$500,000 annually	• \$400,000 (\$692,134)

STRATEGIC OBJECTIVE #4:

Position the Natural Heritage Campus (NHC) as a centre of excellence in collections management and knowledge creation, advancement and sharing by becoming a collections collaborator with institutions around the world seeking to collect, preserve, digitize and disseminate specimens that document the nature of Canada.

Strategies: Advance a five year program that positions the NHC as a globally excellent research, collections, administration and experience site that advances understanding and respect for nature.

- Advance the collections digitization and access project aligned with the Museum's role with GBIF thus leveraging its technology in providing greater online access to its collections and knowledge
- Advance the conversation of collections data management from MIMSY to K-EMU
- Invest in digital data technology and student staffing to support digitization

Digitization of new specimens ongoing and digitization of backlog continues as funding allows. Canada's membership in GBIF essential to maintaining museum knowledge presence in the global knowledge community. Collections system transformation on track and going live in 2017. Major gift will support digitization of arctic collection.

Outcome #4: Be a global museum leader in natural heritage collections storage, study, preservation, digitization and dissemination.

Performance Measures:

Outcome	Measure	2014–2015 to 2018-2019 Performance Target	2016–2017 Performance Target (actual)
Be a global museum leader in natural heritage collections storage, study, preservation, digitization and dissemination	• Number of roles in national and international collections management and research bodies	• From 10 to 50	• 35 (98)
	• Growth of collections through new signature public and private sources gifted to the Canadian Museum of Nature	• Increase collection by 1% over plan timeframe	• 1% (1%)
	• Access to NHC on-site and digitally through the Museum and third party created experiences	• From 25 million downloads and retrievals to 100 million annually	• 75 million (134 million)
	• Position relative to Alliance of Natural History Museums of Canada collections for # of Canadian collections digitized	• From 700,000 digitized Canadian specimens to 1 million.	• 810,000 (812,285)

STRATEGIC OBJECTIVE #5:

Create a **sustainable business enterprise model of operation** that leverages the Museum's strategic imperatives: knowledge and discovery, inspiration and engagement, presence, performance and advancement.

Strategies: Advance a five year program of continuous innovation in all aspects of the Museum operation in order to create a financial and operational model that sustains the Museum now and into the future.

- Launch a collaborative national museums positioning campaign anchored by the Canada 150 celebrations
- Launch phase 2 of the natureTRANSFORMS major gifts campaign
- Invest in corporate digital infrastructure that enables business processes and enhances the visitor experience
- Continue to leverage the Council of CEOs with collaborative procurement, profile raising and exhibit planning coordination
- Seek out funding for PILT costs
- Seek out funding for essential deferred maintenance projects

National museums passport launched in summer 2016. Phase two of the campaign underway and on track to completion by end of strategic plan cycle in 2018. Budget 2016 investments funding the upgrades needed to corporate digital infrastructure. Council of Museum CEO's collaborated on marketing, exhibit planning, co-creation of programming and Canada 150 promotion. Budget 2016 increased base funding for PILT, however no funding for Quebec property taxes. Budget 2016 funding essential deferred capital maintenance projects with the exception of environmental collections controls systems and Finance/Human Resource management systems.

Outcome #5: Be a national leader in sustainable museum enterprise operations within an international best practice context.

Performance Measures:

Outcome	Measure	2014–2015 to 2018-2019 Performance Target	2016–2017 Performance Target (actual)
Be a national leader in sustainable museum enterprise operations within an international best practice context	• Earned revenue as % of total budget	• From 17 to 20%	• 20% (29%)
	• Penetration of tourist market	• From 10% market penetration to 20% market penetration	• 12% (13.1%)
	• Advancement revenue as % of earned revenue	• From 15% to 20%	• 17% (20%)
	• Number of experience connections per FTE	• From 28,000 to 35,000 per FTE	• 31,000 (25,967)
	• Conversion of connections to stakeholders relationships	• From 16,000 members to 20,000 members	• 20,000 (24,024)
	• Number of media mentions and stories	• From 500 mentions to 1200 mentions per year	• 1200 (1,411)
	• Align the performance management and succession plans to support the enterprise model with the skills and human resource practices needed	• Combined and integrated approach – year three	• Fully integrated PMP, people development and succession plan



SCIENTIFIC
RESEARCH PROGRAM
FOR 2016-2017

The Museum has Research Scientists, Curators and Senior Research Assistants who create and develop this program of work. Each of the multi-year projects draws upon the resources of the Museum as well as contributions from a significant list of collaborators. This list is a reference to understand the topics being investigated, the range of activities, and who is involved. The information in this document is summarized from the pages of the detailed research proposals (available upon request), and also provides links to the corresponding Research and Collections web-pages at nature.ca.

This fiscal-year there is a total of twenty-three projects. In this document we detail twenty of them. The other three will follow when the new scientists who are in the process of being hired, have arrived and established the activities in Palaeobiology, Mineralogy and Botany.



MINERALOGY

1.

Title: The Role of Crystal Chemistry in Species Discovery and Change

Principal Investigator: Scott Ercit

Abstract:

Crystal chemistry is the study of how the physical and chemical properties of a material are related to its atomic structure. The material can be a mineral or a synthetic phase, the latter of which can be either organic or inorganic. The working premise of crystal chemistry is that by understanding atomic systematics of minerals and compounds one can and will eventually be able to predict and model their behaviour in the natural world. This activity is a basic need of mineralogical research. Preliminary study can be done at the CMN, but crystal structure analysis must be done at other sites with the appropriate equipment.

2.

Title: The Speciation and Evolution of Alkaline Environments: Trace Elements, Accessory Minerals and Magma.

Principal Investigator: Paula C. Piilonen

Abstract:

The foci of this study are extremely evolved suites of highly alkaline basalts and syenitic rocks. These rocks record melting in specialized environments at various depths within our planet, coupled with extreme evolution, that together produce exotic and sometimes economic deposits of rare metals such as niobium, zirconium, thorium and rare-earth elements. The complex chemistry of the deposits is typically concentrated in accessory minerals; consequently, studies concentrating on

the chemistry of these minerals are among the best ways to trace the evolution of their hosts. Key goals of the study are to determine how these elements behave during the generation and evolution of magmas, and to discover new ways that these elements and their mineral hosts can be used to study the generation and evolution of magmas.

3.

Title: Minerals as Tools: Trace Elements, Accessory Minerals and Granitic Pegmatites

Principal Investigator: Scott Ercit

Abstract:

Simply put, even in 2015 we don't really understand how granitic pegmatites form. These rocks record melting in specialized environments at various depths within our planet's crust, coupled with extreme evolution, that together produce exotic and sometimes economic deposits of rare metals. The complex chemistry of the deposits is typically concentrated in accessory minerals; studies focusing on the chemistry of these minerals are among the best ways to trace the evolution of their hosts. Key goals of the study are the development of tools and models involving the behaviour of trace elements: determining how these elements behave during the generation and evolution of acidic magmas, and discovering new ways that these elements and their hosts can be used to study the generation and evolution of acidic magmas.



PALAEOBIOLOGY

1.

Title: Species coexistence and change during the Late Cretaceous of North America

Principal Investigator: Jordan Mallon

Abstract:

The Late Cretaceous period of North America (~85–66 Ma) witnessed an explosion in dinosaur diversity, followed by a decline in some groups leading up to the end-Cretaceous mass extinction. Internal processes, like niche partitioning, and external processes, like sea level and climate change, are among the factors that have been invoked to account for the rise and subsequent fall of dinosaur diversity. Addressing these matters may therefore shed light on related conservation issues today. My approach combines fieldwork with integrative and collaborative research to investigate the evolution and palaeoecology of Canadian dinosaurs within this broader context.

2.

Title: Changing faunas and human activities in the Canadian Northwest coast for the past 6000 years.

Principal Investigator: Kathlyn Stewart

Abstract:

Changes in past environments, faunas and human activities are compared between southern and northern coastal British Columbia. Field excavations were undertaken at four northern BC sites, funded by SSHRC grants of \$75,000 and \$175,000. I undertook most of the analysis of the fish, birds and mammals throughout the project. Findings from these data have been presented to the public, at scientific conferences, and in peer-reviewed journals. I and my colleagues are now analysing fauna and artefacts from a large southern BC archaeological site (Maplebank). The findings will be published both in a Royal BC Museum-published book geared to the public, and in a peer-reviewed journal.

3.

Title: Study on the Mesozoic reptiles (mainly diapsids) from Canada and China

Principal Investigator: Xiao-chun Wu

Abstract:

New marine reptiles, such as sauropterygians, thalattosaurs, archosauromorphs, turtles from the Triassic, and new terrestrial dinosaurs and other vertebrates from the Jurassic have been continuously collected in south-west China by our Chinese collaborators. Studies of these new finds will be significant to better understand faunal changes during the Triassic and the Tr-J transition from marine to terrestrial environments on a global scale.

The study of new reptiles in the upper Cretaceous (77 to 65 Ma ago), and the early-middle Paleogene (35 Ma ago) in southern Alberta and China will continue and to increase our understanding of the diversity and number of dinosaurs and other vertebrates before and after the K-Pg extinction. This work will increase our knowledge of the response of the vertebrate assemblages to their paleoenvironments and geological events during the periods.

4.

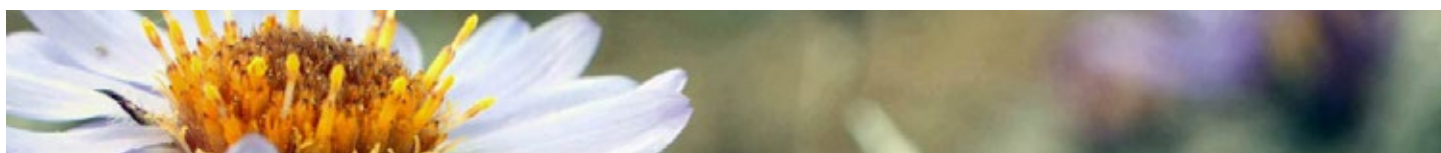
Title of Activity: Vertebrate Evolution, Hominids and Environmental Change in the Later Cenozoic

Principal Investigator: Kathlyn Stewart

Abstract:

The "Revealing Hominid Origins Initiative" (RHOI), based, at UCalifornia, was awarded US\$2.5 million to investigate early hominins, vertebrates and environmental change. My role was to coordinate data on fish fossils recovered at hominin sites. The RHOI has ended, with several resulting publications and my naming 10 species of fossil fish. Extending from RHOI now are two projects: 1) investigating the role of fish in the diet and evolution of hominins. This has resulted in journal articles, presentations, books, and popular articles; I was invited speaker at two conferences in London UK, expenses paid; 2) investigating Mio-Pliocene hominin sites, vertebrates and environments in eastern Africa for evolutionary and environmental information. I have recently received fossil fish for analysis from Olduvai Gorge, and a trip to eastern Africa (2016) will allow analysis of new fish fossils from Ethiopia and Kenya.

Other



BOTANY

1.

Title: ArcticNet Phase 2

Principal Investigator: Michel Poulin

Abstract:

Photosynthesis is limited by pack ice that blocks light and prevents vertical mixing of nutrients from deep water. Rapid spring melt limits the exchange of nutrients with the production area by establishing a layer of fresh water above a deeper saline layer. This stratification affects the taxonomic composition of microalgae. The primary goal of this second Phase is to increase our understanding of the biophysical processes responsible for maintaining plankton productivity at the hot spots identified in Phase I. In addition, there is a high probability of introduction of harmful/Toxic substances in Canadian polar waters.

2.

Title: Biodiversity of the Canadian Arctic Flora

Principal Investigators: Lynn Gillespie and Jeffery Saarela

Abstract:

This research program aims to increase our knowledge of the diversity and distribution of Canadian Arctic vascular plants. This knowledge is fundamental to understanding how the Arctic flora may be impacted by environmental change, and provides baseline data for conservation, ecological monitoring, and predictive modeling studies. The main goals of the project are to: produce a new flora treating all Canadian Arctic vascular plant species; produce DNA barcode data for all Canadian Arctic vascular plants; undertake field expeditions to the Arctic; analyse patterns of species and genetic diversity across the Canadian Arctic; and conduct systematic studies of taxonomically problematic species complexes.

3.

Title: Taxonomy and phylogenetics of grasses (Poaceae) and their monocot relatives

Principal Investigator: Jeffery M. Saarela

Abstract:

I conduct taxonomic and phylogenetic research on grasses, sedges and their relatives. I conduct collections-based studies, which provide comprehensive baseline data on plant nomenclature, morphology, and distribution in time in space, providing up-to-date information that is critical for understanding and monitoring organismal responses to environmental change. I use DNA sequence data to produce DNA-based identification tools, identify major lineages and reconstruct their evolutionary relationships, develop and clarify taxonomic classifications, characterize patterns of molecular evolution, and understand patterns of morphological change within and among lineages. I make extensive field collections, and all material is deposited in the National Herbarium of Canada. Other

4.

Title: Phylogenetic and molecular systematics of flowering plants: species discovery and evolutionary history

Principal Investigator: Lynn Gillespie

Abstract:

This research program aims to increase our knowledge of the systematics and evolution of flowering plants, focusing on the grass tribe Poeae and the spurge family Euphorbiaceae. We use phylogenetic analyses of molecular data and detailed morphological studies to assess current taxonomy and classification, explore the evolution of morphological and ecological traits, and examine historical biogeography. Our goals are to understand evolutionary relationships over time and space, devise new classifications reflecting phylogenetic history, discover species and genera new to science, and produce taxonomic revisions and floristic treatments.



5.

Title: Freshwater micro-organism diversity and environment (FMODE): multi-proxy approach to systematics, global biodiversity, Arctic toxicology, impact assessment and environmental change using conventional and genetic markers

Principal Investigator: Paul B Hamilton

Supervising Scientist: Michel Poulin

Abstract:

Diatoms are markers of habitat integrity, anthropogenic impacts and environmental change. This research is within two strategic themes (directive to inspire understanding & respect for nature). Diversity in environmentally stressed systems will be aligned with Canadian and global biodiversity. Impacts of mercury and organic contaminants will be assessed in the Canadian Arctic. The taxonomy of *Neidium*, *Pinnularia*, *Surirella* and *Nitzschia* will be studied. Diatoms are biomarkers for nutrient and metal pollution. A multi-proxy protocol will be taken to evaluate cryptic species using morphology and gene barcoding. The objective is to link global microbial biodiversity with environmental health and biogeography.



6.

Title: Bryophytes of Canada

Principal Investigator: Jennifer Doubt

Supervising Scientist: Michel Poulin

Abstract:

This research on mosses, liverworts and hornworts supports the understanding of plant diversity and conservation in Canada, and builds a key strength of the National Herbarium of Canada. Bryophytes provide all the ecosystem services that plants provide worldwide, while also filling unique roles specific to their distinctive size and biological traits, making life possible in extreme terrestrial environments, notably the Arctic. Bryophytes have yet to be studied in detail in most parts of Canada, creating abundant opportunity for discovery and meaningful contribution to natural history knowledge.

7.

Title: Canadian Arctic Marine Protists (CAMP)

Principal Investigator: Michel Poulin

Abstract:

The CAMP project aims to document the diversity of Canadian Arctic marine protists before changes in species composition and distribution occur in relation to on-going climate change. A key component of CAMP is to raise awareness and foster a better knowledge and understanding of the microscopic world of marine autotrophic unicellular eukaryote cells in the Arctic for the scientific community, Northerners, the general public and decision-makers. The main goal of CAMP is to address the science knowledge gap regarding marine autotrophic eukaryotes, with the publication of original, well-illustrated papers to the identification of the Canadian Arctic marine protists.





ZOOLOGY

1.

Title: Systematics of New World Weevils (Coleoptera: Curculionidae)

Principal Investigator: Robert Anderson

Abstract:

This proposal is for an ongoing project on the systematics of weevils of the New World using standard methods of morphological systematics to assess the taxonomy, classification, distribution and natural history for various taxa. The primary focus will be on systematics, biogeography and evolution of the fauna of leaf litter, particularly those members of the tribe Lymantini (Molytinae) and Cryptorhynchini (Cryptorhynchinae). Primary target areas for study are Central America, the West Indies and North America. Studies will include taxonomic revisions, descriptions of new species, biogeographic assessments of endemism and species richness and faunal reviews. Opportunities for collaboration on molecular studies will be pursued where appropriate.

2.

Title: Systematics, Faunistics and Conservation of Canadian Fishes

Principal Investigator: Brian W. Coad

Abstract:

This activity seeks to resolve a series of outstanding systematic problems in Canadian fishes, based on the collections in CMN. It responds to requests for assistance from Canadian organisations. The faunistic part of the activity addresses the topics of the history of species, zoogeography, extinction, and biodiversity, forming baseline data for analyses of issues such as environmental change and conservation. It serves to disseminate information on Canadian fish biodiversity to popular and scientific audiences. The activity also forges links with other institutions on common problems and performs collaborative research, and links with other departments within CMN.

3.

Title: Living on the cold ocean floor: biodiversity and the effects of icebergs, natural gas and resource extraction.

Principal Investigator: Kathleen Conlan with Ed Hendrycks

Abstract:

This research explores the diversity and patterns of marine life on three cold ocean floors: the Arctic, the Antarctic and the abyssal deep. Numerous unusual and unknown species are being discovered and community patterns are being assessed in relation to impacts from iceberg groundings, natural gas seeps and hydrocarbon extraction. The results will enhance our understanding of the diversity and dynamics of cold oceans and will help us to predict responses to climate change and seafloor resource extraction.

4.

Title: Native freshwater mussels of Canada: studies on their taxonomy, distribution & decline

Principal Investigator: André L. Martel

Abstract:

This research focuses on three aspects of a speciose yet declining group of bivalve molluscs within Canada, native freshwater mussels (Unionacea). (1) Species differentiation and taxonomy are studied by comparative morphology of their glochidia larvae and of siphonal apertures of adults, and by mtDNA analysis. (2) Distribution is assessed during field surveys in selected rivers and lakes. (3) Temporal changes in freshwater mussel communities are evaluated, with emphasis on species loss, by comparing recent field surveys to historical collection records, by looking at the impact of non-native invasive species, and by evaluating the status of rare and endangered species.





5.

Title: Ecology and Taxonomy of Northwest Atlantic/Arctic Marine Invertebrate Species

Principal Investigator: Jean-Marc Gagnon

Abstract:

This research project contains four activities that look at taxonomic, biogeographic and ecological questions for North Atlantic and Arctic species of crustaceans, mollusc and polychaete. The first activity examines population differentiation and distribution for the Lady Crab (*Ovalipes ocellatus*) in the Northwest Atlantic; a collaboration with DFO- Moncton, an Ottawa U Honours student and US researchers. The second activity was started in June 2012, as a collaboration with a Barcode of Life post-doctoral researcher; it was been on hiatus but will be reactivated. We are comparing morphological traits and DNA information for scavenging amphipods of the northwest Atlantic and Canadian Arctic. The third activity aims to describe a new *Chaetopterus* species (Polychaeta) from the St. Lawrence Estuary. The fourth activity is a continuation of the research on the newly described species of giant file clam, *Acesta cryptadelphe*.

6.

Title: Morphogenetic Characterizations of Great Carnivores and Implications for their Conservation in Canada

Principal Investigator : Kamal Khidas

Abstract:

The morphogenetic characteristics and their variation are studied in the Canadian Lynx, Gray Wolf, Polar Bear and Brown Bear, in order to identify significant evolutionary units and, possibly, to validate taxa, previously described or to be revealed, by elucidating the mechanisms of adaptation and evolution (microevolution) of the populations. An important part of these studies will be the influential environmental factors and the revelations that will be made about the impacts of spatial patterns of habitats and changes in the environment on the distribution of these units. Finally, it will be possible to refine conservation strategies for these species.



OUR PEOPLE

BOARD OF TRUSTEES

The Board of Trustees is the Museum's governing body, responsible to Parliament through the Minister of Canadian Heritage. The 11 members are Governor-in-Council appointees from all regions of Canada. Through accountability and strategic policy and planning frameworks, the Board provides corporate direction and delegates authority to the President and CEO for the management of the Museum. In 2016-2017, the Board met four times, either in person, by conference call or by videoconference. Ten meetings of the Committees of the Board were held.

Standing Committees

Executive Committee

Stephen Henley, Chair

Mandate: The Executive Committee's sole purpose is to act for the Board on urgent matters arising between regular Board meetings in cases where it is not possible to convene a meeting of the Board, and to do other things as delegated by the Board to the Committee

Audit and Finance Committee

Ron Calderoni, Chair

Mandate: The Audit and Finance Committee is responsible for overseeing the Canadian Museum of Nature's standards of integrity and behaviour, the integrity and credibility of the Canadian Museum of Nature's financial reports, and the systems and practices of internal control.

Governance and Nominating Committee

Nicholas Offord, Chair

Mandate: The Governance and Nominating Committee is responsible for monitoring when terms of office for members of the Board of Trustees expire and for recommending to the Board individuals to be nominated for appointment or reappointment as Trustees, to undertake annually the President's performance review and to monitor key human resource matters and policies.

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COMMUNICATING RESEARCH RESULTS

Research and Collections Staff

Museum staff published 67 articles in refereed journals – which have other scientists review all articles submitted before they are accepted for publication – and 18 in non-refereed publications. Museum staff also published a selection of books, reports and other papers. A complete list follows (names in boldface are Museum staff members). Publications are listed in the language in which they are written.

Refereed publications

Anderson, R.S. and **A.B.T. Smith.** 2017. In Memoriam Anne Elizabeth Howden (Thompson). *The Coleopterists Bulletin*, 71:155-158.

Spanton, T.G. and **R.S. Anderson.** 2016. Classification of weevils of the genus *Panscopus* Schönherr (Coleoptera: Curculionidae: Entiminae: Tropiphorini). *The Coleopterists Bulletin Monograph*, 15:1-86.

Barrios-Izas, M.A., **R.S. Anderson** and J.J. Morrone. 2016. A taxonomic monograph of the Mesoamerican leaf-litter inhabiting weevil genus *Plumolepilius*, new genus, Barrios & Anderson (Coleoptera: Curculionidae, Molytinae, Conotrachelini). Part I: Mexico, Guatemala and El Salvador. *Zootaxa*, 4168:61-91.

Webster, R.P., **R.S. Anderson**, V.L. Webster, C.A. Alderson, C.C. Hughes, J.D. Sweeney. 2016. New Curculionoidea records from New Brunswick, Canada with an addition to the fauna of Nova Scotia. *Zookeys*, 573:367-386.

Esmaeili, H.R., H. Mehraban, K. Abbasi, S. Eagderi, Y. Keivany and **B.W. Coad.** 2017. Review and updated checklist of freshwater fishes of Iran: Taxonomy, distribution and conservation status. *Iranian Journal of Ichthyology*, 4(1):1-114.

Ünlü, E., Ö. Gaygusuz, T. Çiçek and **B.W. Coad.** 2016. New record and distribution extension of the big-scale sand smelt *Atherina boyeri* (Atherinidae) in the upper Tigris River basin, Turkey. *Journal of Applied Ichthyology*, 33(1):63-68.

Coad, B.W. 2016. Review of the freshwater cuskfishes of Iran (Family Lotidae). *Iranian Journal of Ichthyology*, 3(4):229-235.

Coad, B.W. 2016. Review of the lampreys of Iran (Family Petromyzontidae). *International Journal of Aquatic Biology*, 4(4):256-268.

Coad, B.W. 2016. Review of the pikes of Iran (Family Esocidae). *Iranian Journal of Ichthyology*, 3(3):161-180.

Coad, B.W. 2016. Review of the perches of Iran (Family Percidae). *International Journal of Aquatic Biology*, 4(3):143-170.

Esmaeili, H.R., G. Sayyadzadeh, **B.W. Coad** and S. Eagderi. 2016. Review of the genus *Garra* Hamilton, 1822 in Iran with description of a new species: a morpho-molecular approach (Teleostei: Cyprinidae). *Iranian Journal of Ichthyology*, 3(2):82-121.

Coad, B.W. 2016. Review of the freshwater eels of Iran (Family Anguillidae). *International Journal of Aquatic Biology*, 4(2):102-107.

Coad, B.W. 2016. Contribution to the knowledge of the snakeheads of Iran (Family Channidae). *Iranian Journal of Ichthyology*, 3(1):65-72.

Jouladeh Roudbar, A., S. Eagderi, H.R. Esmaeili, **B.W. Coad** and N. Bogutskaya. 2016. A molecular approach to the genus *Alburnoides* using COI sequences data set and the description of a new species, *A. damghani*, from the Damghan River system (the Dasht-e Kavir Basin, Iran) (Actinopterygii: Cyprinidae). *ZooKeys*, 579:157-181.

Conlan, K.E., M.A. Bousfield, **E.A. Hendrycks**, E.L. Mills, **F.R. Cook** and C.G. Gruchy. 2016. A tribute to Dr. Edward Lloyd Bousfield, 1926-2016. *Canadian Field-Naturalist*, 130(4):359-372.

Doubt, J. and **R.T. McMullin.** 2016. Status of lichens and bryophytes on Middle Island: declining Carolinian habitat at Canada's southernmost point. *Northeastern Naturalist*, 23:134-140. DOI: 10.1656/045.023.0110.

Fraser, D. 2017. Can latitudinal richness gradients be measured in the fossil record? *Paleobiology*, 1:16. DOI: [10.1017/pab.2017.2](https://doi.org/10.1017/pab.2017.2).

Cabi, E., R.J. Soreng, **L.J. Gillespie** and E. Boudko. 2017. *Alopecurus goekyigitiana* (Poaceae, subtribe Alopecurinae sensu stricto), a new species from Turkey based on morphological and molecular investigation. *Turkish Journal of Botany*, 41:189-199.

Bouffard, D.E. and **L.J. Gillespie.** 2016. Rhizophoraceae. In: Flora of North America North of Mexico, pp. 154-155., vol. 12. Flora of North America Editorial Committee (Eds.), Oxford University Press, New York.

Cabi, E., R.J. Soreng, **L.J. Gillespie** and N. Amiri. 2016. *Poa densa* Troitsky, an overlooked Turkish steppe grass, and the evolution of the bulbs in *Poa*. *Willdenowia*, 46(2):201-211. DOI: 10.3372/wi.46.46201.

Cardinal-McTeague, W.M. and **L.J. Gillespie.** 2016. Molecular phylogeny and pollen evolution of Euphorbiaceae tribe Plukenetieae. *Systematic Botany*, 41:329-347.

Giussani, L.M., **L.J. Gillespie**, M.A. Scatagliini, M.A. Negritto, A.N. Anton and R.J. Soreng. 2016. Breeding System Diversification and Evolution in American *Poa* supersect. Homalopoa (Poaceae: Poae: Poinae). *Annals of Botany*, 118:281-303. DOI:10.1093/aob/mcw108.



Gillespie, L.J. 2016. Euphorbiaceae: Mercurialis. *In: Flora of North America North of Mexico*, pp. 161-162, vol. 12. Flora of North America Editorial Committee (Eds.). Oxford University Press, New York.

Gillespie, L.J. 2016. Euphorbiaceae: Caperonia. *In: Flora of North America North of Mexico*, pp. 179-181, vol. 12. Flora of North America Editorial Committee (Eds.). Oxford University Press, New York.

Gillespie, L.J. 2016. Euphorbiaceae: Mercurialis. *In: Flora of North America North of Mexico*, pp. 225-226, vol. 12. Flora of North America Editorial Committee (Eds.). Oxford University Press, New York.

Gillespie, L.J. 2016. Euphorbiaceae: Mercurialis. *In: Flora of North America North of Mexico*, pp. 441-442, vol. 12. Flora of North America Editorial Committee (Eds.). Oxford University Press, New York.

Lefebvre, K., **P.B. Hamilton** and F.R. Pick. 2017. A comparison of molecular markers and morphology from *Neidium* taxa (Bacillariophyta) from eastern North America. *Journal of Phycology*. DOI: 10.1111/jpy.1253.

Ponader, K.C., M.G. Potapova, N. Desianti, **P.B. Hamilton**, I. Lavoie and S. Campeau. 2017. *Gomphonema caperatum* sp. nov., *G. obstipum* sp. nov. and similar taxa from rivers of North America. *Diatom Research*, 32(1). DOI: [10.1080/0269249X.2016.1272496](https://doi.org/10.1080/0269249X.2016.1272496).

Pinseel, E., P. Vanormelingen, **P.B. Hamilton**, W. Vyverman, B. Van de Vijver and K. Kopalova. 2017. Molecular and morphological characterization of the *Achnanthydium minutissimum* complex (Bacillariophyta) in Petuniabukta

(Spitzbergen, High Arctic) including the description of *A. digitatum* sp. nov. *European Journal of Phycology*, 52. DOI: [10.1080/9670262.2017.1283540](https://doi.org/10.1080/9670262.2017.1283540).

Balasubramanian, K., J.C. Taylor and **P.B. Hamilton**. 2017. Two New Species of *Achnanthydium* Kützing (Bacillariophyceae) from Kolli Hills, Eastern Ghats, India. *Fottea*, 17:65-77. DOI: 10.5507/fot.2016.020.

Eun, Y., **E.A. Hendrycks** and Y.-H. Kim. 2016. The family Hyalidae (Crustacea: Amphipoda: Talitroidea) from Korean waters. 2. Genus *Protohyale* Bousfield & Hendrycks, 2002. *Zootaxa*, 4175(3):231-248. DOI:10.11646/zootaxa.4175.3.3.

Prentice, J.-M., J. Bowman, **K. Khidas**, E.L. Koen, J.R. Row, D.L. Murray and P.J. Wilson. 2017. Selection and drift influence genetic differentiation of insular Canada lynx (*Lynx canadensis*) on Newfoundland and Cape Breton Island. *Ecology and Evolution*, 2017:1-14. DOI: 10.1002/ece3.2945.

Mallon, J.C. 2017. Recognizing sexual dimorphism in the fossil record: Lessons from non-avian dinosaurs. *Paleobiology*, 1-13. DOI:10.1017/pab.2016.51.

Xing, H., **J.C. Mallon** and **M.L. Currie**. 2017. Redescription of the skull of *Edmontosaurus regalis* (Ornithischia: Hadrosauridae), with comments on the phylogeny and biogeography of Hadrosaurinae. *PLoS ONE*, 12(4):e0175253. DOI: [10.1371/journal.pone.0175253](https://doi.org/10.1371/journal.pone.0175253).

Ósi, A., E. Prondvai, **J.M. Mallon** and E.R. Bodor. 2017. Diversity and convergences in the evolution of feeding adaptations in ankylosaurs (Dinosauria: Ornithischia). *Historical Biology*, 29:539–570.

- Mallon, J.C.**, C.J. Ott, P.L. Larson, E.M. Luliano and D.C. Evans. 2016. *Spiclypeus shipporum* gen. et sp. nov., a boldly audacious new chasmosaurine ceratopsid (Dinosauria: Ornithischia) from the Judith River Formation (Upper Cretaceous: Campanian) of Montana. *PLoS ONE*, 11(5): e0154218. DOI: 10.1371/journal.pone.0154218.
- Genovese, A., C. Cudon, **A.L. Martel** and A. Cattaneo. 2016. Molluscan assemblages under multiple stressors in a large fluvial lake. *Fundamental and Applied Limnology*, 188(4):289-307.
- McMullin, R.T.** and A. Arsenault. 2016. The calicioids of Newfoundland, Canada. *Opuscula Philolichenum*, 15:92-104. DOI: http://sweetgum.nybg.org/science/op/biblio_list.php?BucVolume_tab=15.
- McMullin, R.T.** and B.C. Dorin. The Chic-Choc Mountains are the last southern refuge for Arctic lichens in eastern North America. *Arctic Science*, 2:183-193. DOI: 10.1139/as-2015-0024.
- McMullin, R.T.** and J.C. Lendemer. 2016. Lichens and Allied Fungi of Awenda Provincial Park, Ontario: Diversity and Conservation Status. *American Midland Naturalist*, 176:1-19. DOI: 10.1674/0003-0031-176.1.1.
- McMullin, R.T.** and J.C. Lendemer. *Megalaria allenae* (Ramalinaceae), a new sorediate species from southeastern North America previously confused with *M. pulvereae*. *The Bryologist*, 119:290-297. DOI: 10.1639/0007-2745-119.3.290.
- McMullin, R.T.**, J.C. Lendemer and F. Lutzoni. 2016. A *Liber Amicorum*: Irwin Brodo. *The Lichenologist*, 48:343-346. DOI: 10.1017/S0024282916000360.
- McMullin, R.T.**, J.L. Allen and J.P. Pagé. 2016. *Physconia subpallida* new to Québec, from Gatineau Park. *Opuscula Philolichenum*, 15:92-104. DOI: http://sweetgum.nybg.org/science/op/biblio_list.php?BucVolume_tab=15.
- McMullin, R.T.**, J.C. Lendemer, H.E. Braid and S.G. Newmaster. 2016. Molecular insights into the lichen genus *Alectoria* (Parmeliaceae) in North America. *Botany*, 94:165-175. DOI: 10.1139/cjb-2015-0186.
- McMullin, R.T.**, L.L. Bennett, O.J. Bjorgan, D.A. Bourque, C.J. Burke, M.A. Clarke, M.K. Gutgesell, P.L. Krawiec, R. Malyon, A. Mantione, A.T. Piotrowski, N.Y. Tam, A.C. Van Natto, Y.F. Wiersma, and S.G. Newmaster. 2016. Relationships between air pollution, population density, and lichen diversity in the Niagara Escarpment World Biosphere Reserve. *The Lichenologist*, 48:593-605. DOI: 10.1017/S0024282916000402.
- Brown, T.A., S.T. Belt, M. Gosselin, M. Lévasseur, **M. Poulin**, C.J. Mundy. 2016. Quantitative estimates of sinking sea ice particulate organic carbon based on the biomarker IP₂₅. *Marine Ecology Progress Series*, 546:17-29.
- Gastineau, R., G. Hansen, N.A. Davidovich, O. Davidovich, J.F. Bardeau, I. Kaczmarek, J.M. Ehrman, V. Leignel, Y. Hardivillier, B. Jacqueline, **M. Poulin**, M. Moranaçais, J. Fleurette, J.L. Mouget. 2016. A new blue-pigmented hasleoid diatom, *Haslea provincialis*, from the Mediterranean Sea. *European Journal of Phycology*, 51:156-170.
- Pennesi, C., **M. Poulin**, C. Totti. 2016. Phylogenetic relationships and biogeography of the diatom genus *Mastogloia* (Bacillariophyceae): revision of the section Ellipticae including the description of new taxa. *Protist*, 167:148-173.
- Wiktor, J., A. Tatarek, J.M. Węśławski, L. Kotwicki, **M. Poulin**. 2016. Colonies of *Gyrosigma eximium*: a new phenomenon in Arctic tidal flats. *Oceanologia*, 58:336-340.
- Saggiomo, M., **M. Poulin**, O. Mangoni, L. Lazzara, M. De Stefano, D. Sarno, A. Zingone. 2017. Spring-time dynamics of diatom communities across landfast and underlying platelet-ice in Terra Nova Bay, Ross Sea, Antarctica. *Journal of Marine Systems*, 166:26-36.
- Blais, M., M. Ardyna, M. Gosselin, D. Dumont, C. Marchese, S. Bélanger, J.E. Tremblay, Y. Gratton, **M. Poulin**. 2017. Contrasting interannual changes in phytoplankton productivity and community structure in the coastal Canadian Arctic Ocean. *Limnology and Oceanography*, DOI:10.1002/lno.10581.
- Simo-Matchim, A.-G., M. Gosselin, **M. Poulin**, M. Ardyna, S. Lessard. 2017. Summer and fall distribution of phytoplankton in relation to environmental variables in Labrador fjords, with special emphasis on *Phaeocystis pouchetii*. *Marine Ecology Progress Series*, DOI: 10.3354/meps12125.
- Bluhm, B.A., H. Hop, I.A. Melnikov, **M. Poulin**, M. Vihtakari, R.E. Collins, R. Gradinger, T. Juul-Pedersen, C. von Quillfeldt. 2017. Sea ice biota. In: State of the Arctic Marine Biodiversity Report, pp. 33-61, T. Barry, C. Price, M. Olsen, T. Christensen, M. Fredriksen (Eds.). Conservation of Arctic Flora and Fauna International Secretariat, Akureyri, Iceland.
- Lovejoy, C., C. von Quillfeldt, R.R. Hopcroft, **M. Poulin**, M. Thaler. 2017. Plankton. In: State of the Arctic Marine Biodiversity Report, pp. 63-83, T. Barry, C. Price, M. Olsen, T. Christensen, M. Fredriksen (Eds.). Conservation of Arctic Flora and Fauna International Secretariat, Akureyri, Iceland.
- Saarela J.M.**, **P.C. Sokoloff** and **R.D. Bull**. 2017. Vascular plant biodiversity of the lower Coppermine River valley and vicinity (Nunavut, Canada): an annotated checklist of an Arctic flora. *PeerJ*, 5:e2835. DOI: 10.7717/peerj.2835.
- Patterson, D., D. Mozzherin, **D. Shorthouse** and A. Thessen. 2016. Challenges with using names to link digital biodiversity information. *Biodiversity Data Journal*, 4:e8080. DOI: 10.3897/BDJ.4.e8080.
- Pinzon, J., J.R. Spence, D.W. Langor and **D.P. Shorthouse**. 2016. Ten-year responses of ground-dwelling spiders to retention harvest in the boreal forest. *Ecological Applications*, 26:2581-2599. DOI: 10.1002/eap.1387.
- Sokoloff P.C.**, **P.B. Hamilton**, **C.E. Freebury** and **J.M. Saarela**. 2016. "The "Martian" Flora: new collections of vascular plants, lichens, fungi, algae, and cyanobacteria from the Mars Desert Research Station". *Biodiversity Data Journal*, 4:e8176. DOI: 10.3897/BDJ.4.e8176.

Sokoloff P.C., C.J. Chapman and **L.J. Gillespie**. 2016. Evidence for hybridization and introgression in two Canadian Arctic louseworts: *Pedicularis langsдорffii* subsp. *arctica* and *Pedicularis hirsuta*. *Botany*, 94:369-389. DOI: 10.1139/cjb-2015-0264.

Stewart, K.M., G. Keddie, S. Crockford, G. Frederick and R.J. Wigen. 2017. [Abstract]. The Maplebank site: New findings and reinterpretation along the North American Northwest Coast. In: Individual Abstracts of the SAA 82nd Annual Meeting, p 549. Vancouver BC, March/April.

Stewart, K.M. and A.M. Murray. 2017. Biogeographic implications of fossil fishes from the Awash River, Ethiopia. *Journal of Vertebrate Paleontology*, 37:1. DOI: 10.1080/02724634.2017.1269115.

Bibi, F., M. Pante, A. Souron, **K.M. Stewart**, S.Varela, L. Werdelin, J.-R. Boisserie, M. Fortelius, L. Hlusko, J. Njau, I. de la Torre. 2017. [Abstract]. A new fauna from the Oldowan-Acheulean transition at Olduvai Gorge, Tanzania, and the paleoecology of the Serengeti. Annual Conference of the European Association of Vertebrate Palaeontologists, Journal of Vertebrate Paleontology, Munich, Germany.

Li, C., **X.-C. Wu** (corresponding author), L.-J. Zhao, S.J. Nesbitt, M.R. Stocker, L.-T. Wang. 2016. A new armored archosauriform (Diapsida: Archosauromorpha) from the marine Middle Triassic of China, *The Science of Nature*, DOI: 10.1007/s00114-016-1418-4.

Cheng, Y.-N., **X.-C. Wu** (corresponding author), **T. Sato**, S.-Y. Shan. 2016. *Dawazisaurus brevis*, A New Eosauroptrygian from the Middle Triassic of Yunnan, China. *Acta Geologica Sinica*, 90: 401-420.

Ji, Q., **X.-C. Wu**, Y.-N. Cheng, F.-F. Ten, X. Wang, N. Ji. 2016. Fish hunting ankylosaurs (Dinosauria, Ornithischia) from the Cretaceous of China. *Journal of Geology*, 40(2):183-190.

Stocker, M.R., S.J. Nesbitt, L. Zhao, **X.-C. Wu**, C. Li. 2016. Mosaic evolution in phytosauria: the origin of long-snouted morphologies based on a complete skeleton of a phytosaur from the middle Triassic of China. *Journal of Vertebrate Paleontology*, supplement to 36(5):232.

Wang, W., C. Li, **X.-C. Wu**. 2016. An adult specimen of *Sinocyamodus xinpuensis* (Sauroptrygia: Placodontia), with new information on cyamodontoid ontogeny. *Journal of Vertebrate Paleontology*, supplement to 36(5):246.

Non-refereed publications

Owfi, F., M. Rabbaniha, **B.W. Coad** and C. Gilberson. 2016. [Abstract]. Persian Gulf fish species biogeography, based on habitat similarity. The Fourth Iranian Conference of Ichthyology, Ferdowsi University of Mashhad, 20-21 July.

Zareian, H., H.R. Esmaeili, A. Gholamhosseini, N. Alwan and **B.W. Coad**. 2016. [Abstract]. Taxonomic status of the Mond scraper, *Capoeta mandica* (Teleostei: Cyprinidae) based on morphological and molecular data. The Fourth Iranian Conference of Ichthyology, Ferdowsi University of Mashhad, 20-21 July.

Coad, B.W. and J.D. Reist. 2016. Bibliography on the Marine Fishes of Arctic Canada. *Canadian Manuscript Report of Fisheries and Aquatic Sciences*, 3101. v + 509 pp., <http://waves.vagues.dfo-mpo.gc.ca/Library/364139.pdf>.

Hamilton, P.B. and K. Lefebvre. 2016. [Abstract]. Genetic and morphological variation in *Gyrosigma acuminatum* across eastern North America. 24th International Diatom Symposium. Quebec City, 21-26 September.

Ponader, K.C., M. Potapova, N. Desianti, **P.B. Hamilton**, I. Lavoie and S. Campeau. 2016. [Abstract]. Species of *Gomphonema* with wide axial areas from North America. 2016. 24th International Diatom Symposium. Quebec City, 21-26 September.

Lefebvre, K. and **P.B. Hamilton**. 2016. [Abstract]. A comparison of molecular barcodes and morphology of *Neidium* (Bacillariophyta) of North America. 24th International Diatom Symposium. Quebec City, 21-26 September.

Stachura-Suchoples K., **P.B. Hamilton** and R. Jahn. 2017. [Abstract] On typification of confused and worldwide reported species *Navicula iridis* Ehrenb. 11th Central European Diatom Meeting, Prague, Czech Republic, 22-25 March.

Hamilton, P.B. and G.D. Haffner. 2017. [Abstract]. Past & Present: Changes in species diversity in diatom populations within a paleo-core from Lake Towuti, Indonesia. Workshop and International Seminar - Potential Conservation of Sulawesi Ancient Lakes for Human Welfare. Palu, Sulawesi, 13 January.

Khidias, K. and **S. Tessier**. 2016. [Abstract]. Building next-generation collections: Challenges in digitizing already digitized collections. Society for the Preservation of Natural History Collections, Berlin, Germany, 20-25 June.

Mallon, J.C., C.J. Ott, P.L. Larson, E.M. Iuliano and D.C. Evans. 2016. [Abstract]. A bodacious new ceratopsid (Dinosauria: Ornithischia) from the Judith River Formation (Upper Cretaceous: Campanian) of Montana. *Canadian Society of Vertebrate Palaeontology Abstracts*, program, schedule of events, 56-57.

Mallon, J.C., D.L. Fraser, D.B. Brinkman, R.L. Nydam and C. Scott. 2016. [Abstract]. Terrestrial vertebrate diversity in Late Cretaceous North America. *Society of Vertebrate Paleontology Abstracts*, programs, schedule of events, 181.



Christison, B.E. and **J.C. Mallon**. 2016. [Abstract]. Report on the first Canadian dinosaur finds. *Canadian Society of Vertebrate Palaeontology Abstracts*, program, schedule of events, 29-30.

Ósi, A., E. Prondvai, **J.C. Mallon** and E.R. Bodor. 2016. [Abstract]. Táplálkozással kapcsolatos jegyek evolúciója Ankylosauria dinoszauruszoknál. *In: Evolution of feeding characters in ankylosaurs*, pp. 24. A. Bosnakoff and A. Virág, (Eds.). Magyar Őslénytani Vándorgyűlés, Hungarian Paleontological Symposium, Kozárd.

Harbo, R., **A.L. Martel**, J.B. Madill and G. Wilson. 2016. Freshwater mussel surveys in the Nanaimo and Cowichan Rivers, Vancouver Island, B.C., June-July, 2015. *The Dredgings, Newsletter of the Pacific Northwest Shell Club*, 56(3):3-5.

Deduke, C., **McMullin**, R.T. and A. Arsenault. 2016. Survey of the lichen-forming ascomycetes found at the 2016 NL Foray. *Omphalina*, 7(8):68–76.

McMullin, R.T. 2016. *Hypogymnia pulverata* - a new North American population discovered in Labrador, Canada. *Omphalina*, 7(8):17–19.

McMullin, R.T. 2016. On the trail with field botanists. *ON Nature Magazine*, Spring: 37.

McMullin, R.T. and Y.F. Wiersma. 2016. Arboreal lichens of the Happy Valley-Goose Bay region of Labrador. *Omphalina*, 7(8):26–37.

Rufolo, S.J. 2016. Analysis and Interpretation of the Tell Ziyadeh Faunal Assemblages. *In: Homesteads on the Khabur: Tell Ziyadeh and Other Settlements*, pp. 287-349. F.A. Hole and Y. Tonoike (Eds.). BAR Publishing, Oxford.

Reports and other

Stark, J.S., **K.E. Conlan**, K.A. Hughes, S. Kim and C.C. Martins. 2016. Sources, dispersal and impacts of sewage and wastewater in Antarctica. Antarctic Environments Portal. <https://www.environments.aq/information-summaries/sources-dispersal-and-impacts-of-wastewater-in-antarctica/>.

COSEWIC. 2016. COSEWIC assessment and status report on the Porter's Twisted Moss *Tortula porter* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 37 pp. http://www.registrelep-sararegistry.gc.ca/default_e.cfm. (Prepared by **J. Doubt**)

COSEWIC. 2016. COSEWIC assessment and status report on the Pygmy Pocket Moss *Fissidens exilis* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 28 pp. (http://www.registrelep-sararegistry.gc.ca/default_e.cfm). (Prepared by **J. Doubt**)

Range, E., **C. Leckie** and **L. Ciperá**. 2016. Labeling Natural History Collections. Society for the Preservation of Natural History Collections (SPNHC) Wiki Best Practices. https://spnhc.biowikifarm.net/wiki/Labeling_Natural_History_Collections.

Mallon, J.C. 2016. Holiday Decorating around the Office. Society of Vertebrate Paleontology blog. <http://vertpaleo.org/Society-News/Blog/Old-Bones-SVP-s-Blog/December-2016/Holiday-Decorating-around-the-Office.aspx>, 19 December.

Mallon, J.C. 2016. For Your Bookshelf: Ancient Earth Journal Series. Society of Vertebrate Paleontology blog. <http://vertpaleo.org/Society-News/Blog/Old-Bones-SVP-s-Blog/September-2016/For-Your-Bookshelf-Ancient-Earth-Journal-Series.aspx>, 26 September.

Mallon, J.C. 2016. Taphonomic Processes: Not Just Destructive by Nature. Society of Vertebrate Paleontology blog. <http://vertpaleo.org/Society-News/Blog/Old-Bones-SVP-s-Blog/July-2016/Taphonomic-Processes-Not-Just-Destructive-by-Natu.aspx>, 4 July.

Mallon, J.C. 2016. Ultimate Dinosaurs: Like Problems Inspire Like Solutions. Canadian Museum of Nature blog. <https://canadianmuseumofnature.wordpress.com/2016/06/16/ultimate-dinosaurs-like-problems-inspire-like-solutions/>, 16 June.

Mallon, J.C. 2016. Dinos of Canada stamps Stampede into Canada Post Outlets. Canadian Museum of Nature blog. <https://canadianmuseumofnature.wordpress.com/2016/05/26/dinos-of-canada-stamps-stampede-into-canada-post-outlets/>, 26 May.

Mallon, J.C. 2016. *Spiclypeus shipporum*, the New Dino in Town. Canadian Museum of Nature blog. <https://canadianmuseumofnature.wordpress.com/2016/05/20/spiclypeus-shipporum-the-new-dino-in-town/>, 20 May.

Mallon, J.C. 2016. A Tribute to Paleontology Volunteers. Society of Vertebrate Paleontology blog. <http://vertpaleo.org/Society-News/Blog/Old-Bones-SVP-s-Blog/April-2016/A-Tribute-to-Paleontology-Volunteers.aspx>, 20 April.

Martel, A.L. and **J.B. Madill.** 2016. Canadian Freshwater Pearly Mussels (Unionacea) and Species Discovery at the Canadian Museum of Nature. First Canadian Freshwater mussel meeting. Canadian Technical Report of Fisheries and Aquatic Sciences 3164. <http://waves-vagues.dfo-mpo.gc.ca/Library/363570.pdf>, Burlington, Ontario. 30 March.

Cenci, M., B. Rivière, S. Guerre, J. Lami et **A.L. Martel.** 2016. *Détection de la moule zébrée en 2015 et 2016 dans les rivières Gatineau et des Outaouais et sensibilisation.* Agence de bassin versant des 7. Rapport technique pour la ville de Gatineau. 35 p., décembre.

Martel, A.L. and **J.B. Madill.** 2016. Searching for pearly mussels in the Rideau River during the hottest days of summer. Canadian Museum of Nature blog. <https://canadianmuseumofnature.wordpress.com/2016/07/25/>, 25 July.

Rufolo, S.J. 2016. Mammoth, Mammoth, Tusked and Hairy, How Does Your Garden Grow? Canadian Museum of Nature blog, <https://canadianmuseumofnature.wordpress.com/2016/06/23/mammoth-mammoth-tusked-and-hairy-how-does-your-garden-grow/>, 3 June.

Rufolo, S.J. 2016. Making Mammoths Come to Life. Canadian Museum of Nature blog, <https://canadianmuseumofnature.wordpress.com/2016/08/11/making-mammoths-come-to-life/>, 11 August.

Rufolo, S.J. and **K. M. Stewart.** 2016. Palaeoecological inferences from fish fossils at the Kanapoi site, Kenya. Poster presentation, Salt Lake City, Utah. October.

Sokoloff P.C. 2016. Flat Plants from a Flat Land. Above and Beyond Magazine. pp: 46-49. <http://arcticjournal.ca/flat-plants-from-a-flat-land/>.

Sokoloff P.C. 2016. How can I prepare at home for life on Mars? Metro News Canada, 17 June.

Sokoloff P.C. 2017. Plants 2 Papers: The Sequel. Canadian Museum of Nature blog. <https://canadianmuseumofnature.wordpress.com/2017/02/17/plants-2-papers-the-sequel/>, 17 February.

Sokoloff P.C. 2016. Windswept Wonders: Collecting Plants and Lichens in Arviat. Canadian Museum of Nature blog. <https://canadianmuseumofnature.wordpress.com/2016/08/18/windswept-wonders-collecting-plants-and-lichens-in-arviat/>, 16 August.

Sokoloff P.C. 2016. Summertime Fieldwork in Canada's Accessible Arctic. Canadian Museum of Nature blog. <https://canadianmuseumofnature.wordpress.com/2016/06/29/summertime-fieldwork-in-canadas-accessible-arctic/>, 29 June.

Sokoloff P.C. 2016. The "Martian" Flora: Extreme Life in Extreme Environments. Canadian Museum of Nature blog. <https://canadianmuseumofnature.wordpress.com/2016/06/13/the-martian-flora-extreme-life-in-extreme-environments/>, 13 June.

Sokoloff P.C. 2016. Northern Plants in the Capital: Mer Bleue Bog. Canadian Museum of Nature blog. <https://canadianmuseumofnature.wordpress.com/2016/06/08/northern-plants-in-the-capital-mer-bleue-bog/>, 8 June.

Sokoloff P.C. 2016. Hey, You Stole My Chloroplast! Canadian Museum of Nature blog. <https://canadianmuseumofnature.wordpress.com/2016/05/03/hey-you-stole-my-chloroplast/>, 3 May.

Stewart, K.M. and M. Coyne. 2017. Cabinets, cabinets everywhere: the sequel. Canadian Museum of Nature blog. <https://canadianmuseumofnature.wordpress.com/2017/01/18/cabinets-cabinets-everywhere-the-sequel/>, 18 January.

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Refereed publications

Konishi, T., **M.W. Caldwell**, T. Nishimura, K. Sakurai and **K. Tanoue**. 2016. A new halisaurine mosasaur (Squamata: Halisaurinae) from Japan: the first record in the western Pacific realm and the first-documented binocular vision in mosasaurs. *Journal of Systematic Palaeontology*, 14 (10):809-839. DOI: 10.1080/14772019.2015.1113447.

Street, H.P. and **M.W. Caldwell**. 2017. Rediagnosis and redescription of *Mosasaurus hoffmannii* and an assessment of species assigned to the genus *Mosasaurus*. *Geological Magazine*, 154:521–557.

Simões, T.R., **M.W. Caldwell**, A. Palci and R.L. Nydam. 2017. Squamate Phylogeny and Giant Taxon-Character Matrices: Quality of Character Constructions Remains Critical Regardless Of Size. *Cladistics*, 33:198-219.

Paparella, I., E.E. Maxwell, A. Cipriani, S. Roncace and **M.W. Caldwell**. 2016. *Gengasaurus nicosiai* gen. et sp. nov., the first ophthalmosaurid ichthyosaur from the Upper Jurassic of the Marche Apennines, Central Italy. *Geological Magazine*, pp. 1-22. DOI: 10.1017/S0016756816000455.

Jimenez-Huidobro, P., T. Simoes and **M.W. Caldwell**. 2016. Recharacterization of *Tylosaurus nepaeolicus* Cope, 1874, and the recognition of *Tylosaurus kansasensis* Everhart, 2005, as a junior synonym. *Cretaceous Research*, 65:68-81.

Abdel-Fattah, Z.A., M.K. Gingras, **M.W. Caldwell**, S.G. Pemberton and J.A. MacEachern. 2016. The *Glossifungites* Ichnofacies and Sequence Stratigraphic Analysis: A Case Study from Middle to Upper Eocene Successions in Fayum, Egypt. *Ichnos*, 23:157-179.

Simões, T.R., R.L. Nydam, **M.W. Caldwell**, G. Funston, M. Doschak. 2016. Reacquisition of the lower temporal bar in lizards provides a rare case of convergent evolution. *Scientific Reports*, 6:24087, DOI: 10.1038/srep24087, pp. 1-12.

Simões, T.R., **M.W. Caldwell**, R.L. Nydam and P. Huidobro. 2016. Osteology, phylogeny and functional morphology of two Jurassic lizard species and the early evolution of scansoriality in geckoes. *Zoological Journal of the Linnean Society*, pp. 1-26. DOI: 10.1111/zoj.12487.

Jimenez-Huidobro, P. and **M.W. Caldwell**. 2016. Reassessment and reassignment of the early Maastrichtian mosasaur *Hainosaurus bernardi* Dollo, 1885 to *Tylosaurus* Marsh, 1872. *Journal of Vertebrate Paleontology*, 36(3). DOI: 10.1080/02724634.2016.1096275.

Wilson, L.E., K. Chin, K. and **S.L. Cumbaa**. 2016. A new Early Devonian (Emsian) arthrodire from the Northwest Territories, Canada, and its significance for paleogeographic reconstruction. *Canadian Journal of Earth Sciences*, 53(12):1476-1483. DOI: 10.1139/cjes-2016-0053.

Grice, J.D., H. Friis and R. Kristiansen. 2016. New data for chavenite and ferrochavenite. *Canadian Mineralogist*, 54:21-32.

Grice, J.D., **R. Rowe** and **G. Poirier**. 2016. Garronite-Na, a new zeolite species from Mont Saint Hilaire, Quebec. *Canadian Mineralogist*, 54:1-14.

Raade, G., **J.D. Grice**, **R. Rowe**. 2016. Ferrivauxite, a new phosphate mineral from Llallagua, Bolivia. *Mineralogical Magazine*, 80:311-324.

Leaman, D.J. 2016. Medicinal plants in wetlands. In: *The Wetland Book. I: Structure and Function, Management and Methods*, pp.1-4. C.M. Finlayson et al (Eds.), Springer Science+Business Media Dordrecht. DOI: 10.1007/978-94-007-6172-8_210-1.

Castka, P., **D.J. Leaman**, D. Shand, D. Cellarius, T. Healy, A. Te Pareake Mead, M.R. Benites de Franco, A. Timoshyna. 2016. Certification and Biodiversity – How Voluntary Certification Standards impact biodiversity and human livelihoods. *Policy Matters* 21. CEESP and IUCN. Gland, Switzerland.



Levin, G.A. and **L.J. Gillespie** (Eds.). 2016. In: Flora of North America North of Mexico, pp. 603, vol. 12. Magnoliophyta: Vitaceae to Garryaceae. Oxford University Press, New York.

Levin, G.A. 2016. *Acalypha* (Euphorbiaceae). In: Flora of North America North of Mexico, pp. 162-172, vol. 12, Magnoliophyta: Vitaceae to Garryaceae. Oxford University Press, New York.

Levin, G.A. 2016. *Cnidocolus* (Euphorbiaceae). In: Flora of North America North of Mexico, pp. 196-198, vol. 12, Magnoliophyta: Vitaceae to Garryaceae. Oxford University Press, New York.

Levin, G.A. 2016. Picrodendraceae. In: Flora of North America North of Mexico, pp. 235, vol. 12, Magnoliophyta: Vitaceae to Garryaceae. Oxford University Press, New York.

Levin, G.A. 2016. Putranjivaceae. In: Flora of North America North of Mexico, pp. 368-370, vol. 12, Magnoliophyta: Vitaceae to Garryaceae. Oxford University Press, New York.

Levin, G.A., and **L.J. Gillespie**. 2016. In: Flora of North America North of Mexico, pp. 156-160, vol. 12, Magnoliophyta: Vitaceae to Garryaceae. Oxford University Press, New York.

Levin, G.A., W.J. Hayden, M.S. Vorontsova, and P. Hoffmann. 2016. Phyllanthaceae. In: Flora of North America North of Mexico, vol. 12, Magnoliophyta: Vitaceae to Garryaceae, pp. 328-347. Oxford University Press, New York.

Ma, J., P.W. Ball and **G.A. Levin**. 2016. Celastraceae. In: Flora of North America North of Mexico, pp. 111-132, vol. 12, Magnoliophyta: Vitaceae to Garryaceae. Oxford University Press, New York.

Lewis, C.J. and S.R. Brinker. 2017. Notes on new and interesting lichens from Ontario, Canada – III, *Opuscula Philolichenum*, 16:153-187.

Peck, S.B. and J. Cook. 2016. A review of the small carrion beetle genus *Dissochaetus* Reiter (Coleoptera: Leiodidae: Cholevinae) in Mexico. *Dugesiana*, 23(2):79-108.

Sikes, D.S., S.T. Trumbo and **S.B. Peck**. 2016. Cryptic diversity in the New World burying beetle fauna: *Nicrophorus hebes* Kirby; new status as a resurrected name (Coleoptera: Silphidae: Nicrophorinae). *Arthropod Systematics and Phylogeny*, 74:299-309.

Gnaspini, P., C. Antunes-Carvalho and **S.B. Peck**. 2016. Two new synonymies at the generic level in Neotropical Ptomaphagini (Coleoptera, Leiodidae, Cholevinae). *Zootaxa*, 4132(2):272-274.

Ryan, M.J., **R.B. Holmes**, **J.C. Mallon**, M. Loewen and D.C. Evans. 2017. A basal ceratopsid (Centrosaurinae: Nasutoceratopsini) from the Campanian Oldman Formation (Campanian) of Alberta, Canada. *Canadian Journal of Earth Sciences*, 54. 14pp. DOI: 10.1139/cjes-2016-0110.

Mitchell, W.T., **N. Rybczynski**, C. Schröder-Adams, **P.B. Hamilton**, **R.Y. Smith** and M. Douglas. 2016. Stratigraphic and Paleoenvironmental Reconstruction of a Mid-Pliocene Fossil Site in the High Arctic (Ellesmere Island, Nunavut): Evidence of an Ancient Peatland with Beaver Activity. *Arctic*, 69(2):185-204. DOI: [10.14430/arctic4567](https://doi.org/10.14430/arctic4567).

Smith, A.B.T. 2016. Five new species of *Trigonopeltastes* Burmeister and Schaum from Central America with new country records for other New World Trichiini (Coleoptera: Scarabaeidae: Cetoniinae). *ZooKeys*, 617:91-127.

Ballerio, A. and **A.B.T. Smith**. 2016. "rolls up like armadillo": Darwin's forgotten encounters with the Ceratocanthinae (Coleoptera, Scarabaeoidea Hybosoridae). *Archives of Natural History*, 43:357-360.

Smith, A.B.T. 2016. Corrections to Neotropical *Rhinaspis* Perty and *Plectris* LePeletier and Audinet-Serville (Coleoptera: Scarabaeidae: Melolonthinae) classification and nomenclature. *Insecta Mundi*, 463:1-6.

Smith, A.B.T. and J. Mondaca. 2016. A new genus and species of Tanyproctini (Coleoptera: Scarabaeidae: Melolonthinae) from the Coquimbo Region of Chile. *Insecta Mundi*, 464:1-6.

- Moss, P.T., **R.Y. Smith** and D.R. Greenwood. 2016. A window into mid-latitude Early Eocene environmental variability: a high-resolution palynological analysis of the Falkland site, Okanagan Highlands, British Columbia, Canada. *Canadian Journal of Earth Sciences*, 53(6):605-613. DOI: 10.1139/cjes-2015-0167.
- Glon, H.E., D.R. Shiels, E. Linton, **J.R. Starr**, A.L. Shorkey, S. Fleming, S.K. Lichtenwald, E.R. Schick, D. Pozo and A.K. Monfils. 2017. A five gene phylogenetic study of Fuireneae (Cyperaceae) with a revision of *Isolepis humillima*. *Systematic Botany*, 42:26-36.
- Jiménez-Mejías, P., M. Hahn, K. Lueders, **J.R. Starr**, B.H. Brown, B.N. Chouinard, K.-S. Chung, M. Escudero, B.A. Ford, K.A. Ford, S. Gebauer, B. Gehrke, M.H. Hoffmann, X.-F. Jin, J. Jung, S. Kim, M. Luceño, E. Maguilla, S. Martín-Bravo, M. Míguez, A. Molina, R.F.C. Naczi, J.E. Pender, A.A. Reznicek, T. Villaverde, M.J. Waterway, K.L. Wilson, J.-C. Yang, S. Zhang, A.L. Hipp and E.H. Roalson. 2016. Megaphylogenetic specimen-level approaches to the *Carex* (Cyperaceae) phylogeny using ITS, ETS, and *matK* sequences: implications for classification. *Systematic Botany*, 41:500-518.
- Pham, K.K., M. Hahn, K. Lueders, B.H. Brown, L.P. Bruederle, J.J. Bruhl, K.-S. Chung, N.J. Derieg, M. Escudero, B.A. Ford, S. Gebauer, B. Gehrke, M.H. Hoffmann, T. Hoshino, P. Jiménez-Mejías, J. Jung, S. Kim, M. Luceño, E. Maguilla, S. Martín-Bravo, R.F.C. Naczi, A.A. Reznicek, E.H. Roalson, D.A. Simpson, **J.R. Starr**, T. Villaverde, M.J. Waterway, K.L. Wilson, O. Yano, S. Zhang and A.L. Hipp. 2016. Specimens at the center: An informatics workflow and toolkit for specimen-level analysis of public DNA database data. *Systematic Botany*, 41:529-539.
- Spalink, D., B.T. Drew, M.C. Pace, J.G. Zaborsky, **J.R. Starr**, K.M. Cameron, T.J. Givnish and K.J. Sytsma. 2016. Biogeography of the cosmopolitan sedges (Cyperaceae) and the area-richness correlation in plants. *Journal of Biogeography*, 43:1893-1904.
- Henderson, J. and **R. Waller**. 2016. Effective conservation decision strategies. *Studies in Conservation*, 61(6):308-323.
- ## Non-refereed publications
- Cook, F.R.** 2016. [Book Review]. Herpetology, fourth edition, by F.H. Pough, R.M. Andrews, M. L. Crump, A.H. Savitzky, K.D. Wells and M.C. Brandley. 2015. Sinauer Associates, Inc., Sunderland, Massachusetts. 591 pp. *Canadian Field-Naturalist*, 130(1):83-84.
- Cook, F.R.** 2016. Retirement of CFN Book Review Editor, J. Roy. *Canadian Field-Naturalist*, 130(3):258-259.
- Wrigley, R.E., T.D. Galloway, J.R. Duncan and **F.R. Cook**. 2017. Tribute to W.B. Preston, 1937-2013. *Canadian Field-Naturalist*, 130(4):355-358.
- Cook, F.R.** 2017. [Book Review]. Peterson Field Guide to Reptiles and Amphibians of Eastern and Central North America, fourth edition, R. Powell, R. Conant and J.T. Collins (Eds.). Houghton Mifflin Harcourt, Boston and New York. *Canadian Field-Naturalist*, 130(4):373-374.
- Belley, P.M., **M. Picard**, **R. Rowe** and **G. Poirier**. 2016. Selected Finds from the Highway 5 Extension, Wakefield area, Outaouais, Québec, Canada. *Rocks & Minerals*, 91(6):558-67.
- Chevrais, M., Z. Johanson, K. Trinajstić, J. Long, C. Morel, **C.B. Renaud** and R. Cloutier. 2016. [Abstract]. New clues on origins of axial skeleton regionalization and appendicular skeleton: Ontogenetic evidence from fossil and extant jawless vertebrates. 6th Meeting of European Society for Evolutionary Developmental Biology. Uppsala, Sweden, 26-29 July.
- Umeno, A. and **K. Tanoue**. 2016. Description of Dinosaur Teeth from the Upper Cretaceous Judith River Formation in Montana. *Fukuoka University Science Reports*, 46(2):77-84.
- Urano, Y., R. Matsumoto, S. Kawabe, **K. Tanoue**, T. Ohashi and S. Fujiwara. 2016. [Abstract]. Growth orientations of rhamphothecae in extant beaked animals with implications to the reconstruction of the beaks in extinct taxa. 11th International Congress of Vertebrate Morphology, Washington DC, 2016, 29 June 29 – 3. July.
- Ryan, M.J.**, K. Chiba, D.C. Evans, **J.C. Mallon**, A.R. Fiorillo and R.S. Tykoski. 2016. [Abstract]. Evolution of pachyrostran centrosaurines in the Late Cretaceous of northern Laramidia. *Society of Vertebrate Paleontology Meeting Program and Abstracts*, 215.
- Waller, R.** 2016. Risk Assessment and Assignment of Environment Parameters. Pp. 33-41, In: S. Stauderman and W.G. Tompkins (Eds.) *Summit on the Museum Preservation Environment*, Smithsonian Institution Scholarly Press. Washington. <http://opensi.si.edu/index.php/smithsonian/catalog/book/111>
- ## Reports and other
- Benda, C.D., R.W. Nyboer and **G.A. Levin**. 2016. Natural Quality Assessment of the Forest Preserves of Cook County, Illinois. INHS Technical Report 2016(53). Illinois Natural History Survey, Champaign, Illinois, 145 pp.
- Ford, B.A., **J.R. Starr**, É. Léveillé-Bourret, K.T. Nguyen, A.T. Vu and S.A. Ford. 2016. Vietnam: Center of Origin for the World's Largest Flowering Plant Genus. Final Project Report for National Geographic Society Research and Exploration Grant # 9441-14. 16 pp. + 25 digital photographs + 42 video clips.
- Waller, R.** and T. Thomas. 2016. *Library and Archives Conservation Education Survey: Report of Results*. 88 pp. <http://artconservation.buffalostate.edu/sites/artconservation.buffalostate.edu/files/uploads/LACEsurvey.pdf>.



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Amanda & Jackie Dawson-Cliff,
Ottawa, ON

Sandra De Souza & Daniel Oleskevich,
Ottawa, ON

Ken Desorcy, Lake Echo, NS

Marilyn Eaman-Brammer,
Ottawa, ON

Gisela & Paul Egli, Baie D'Urfe, QC

Laura Evans & Tony Giovando,
Ottawa, ON

Sandra Garland & Roger Camm,
Ottawa, ON

Carol Gill, Ottawa, ON

Tara Goetze & Leopold Papez,
Ottawa, ON

Nancy Hampton, Fitzroy Harbour, ON

Mirtha Herrera & Gustavo Miller,
Gatineau, QC

Judith Holman & Peter Gahlinger,
Ottawa, ON

Judith Jeswiet, Kingston, ON

Sandra Koch & Marc Dicaire,
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Susan Moore, Ottawa, ON

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Constanza Musu & Patrick Leblond,
Rockliffe, ON

Heather & Murray Nicolson, Ottawa, ON

Heidi O'Brien, Ottawa, ON

Barry Read, Ottawa, ON

John W. Reynolds, Kitchener, ON

Jessica Roberts & Jason Dubois,
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Carol Seal, Ottawa, ON

Dan Smythe, Ottawa, ON

Evelyn & Brian Swan, Orleans, ON

Valerie Tait & Shane Woodside,
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France Tremblay & Richard Coxford,
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Mary & John Udd, Ottawa, ON

Annie Vaillant & Martin Leclerc,
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Ottawa, ON

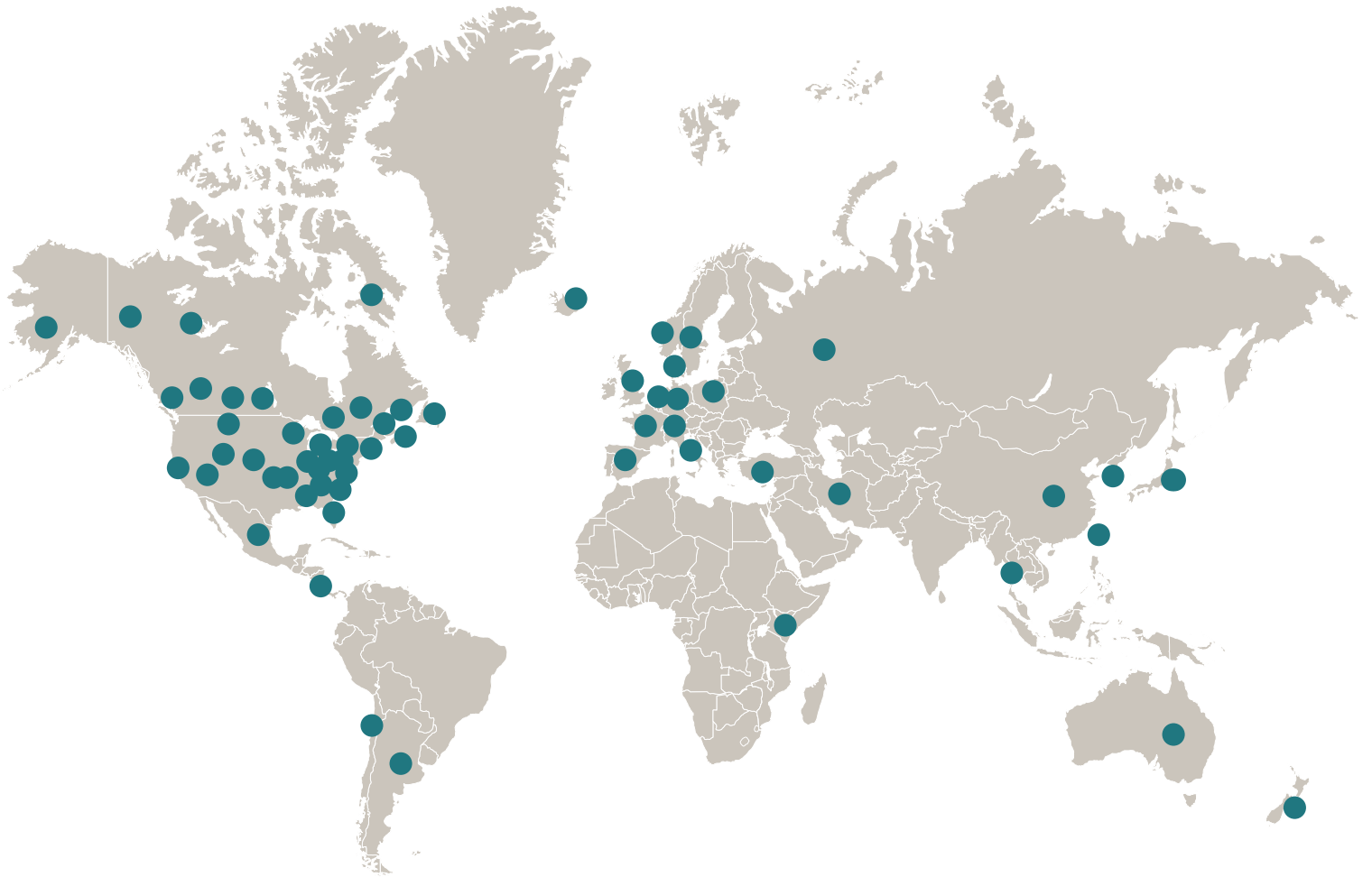
NatureLEGACY

Gregory Huyer & Scott Rufolo, Ottawa, ON





COLLABORATORS



Our reach and impact is both national and international:

- Our travelling exhibits reach over 1 million people each year.
- We research and collaborate in over 110 cities around the world.
- Our collections are loaned to organizations in over 70 cities around the world.

Collaborators are organizations such as universities, research institutes, museum or government agencies that work with the Museum on a range of projects including research activities, programming and exhibitions. These affiliations are part of the Museum's regional, national and international network, allowing the Museum to share its resources with others and enhance its effectiveness in connecting people with nature.

INTERNATIONAL

Akvaplan-NIVA, Fram Centre for Climate and the Environment, Tromsø, Norway

American Museum of Natural History, New York, New York

American Institute for Conservation for Historic and Artistic Works (AIC), Washington, DC

Arizona State University, Tempe, Arizona

Arizona Weis Earth Science Museum, Menasha, Wisconsin

Arkansas State University, Jonesboro, Arkansas

Auburn University, Auburn

Austin Peay State University, Clarksville

Australian Museum, Sydney, Australia

Black Hills Institute, Hill City, South Dakota

California Academy of Sciences

California State University, Los Angeles, California

Carnegie Museum of Natural History, Pittsburgh

Central Michigan University, Mt. Pleasant, Michigan

Charles University, Prague, Czech Republic

Children & Nature Network, USA

Chinese Academy of Sciences, Shanghai, China

Ciudad Universitaria, Copilco, Coyoacan, Mexico City, Mexico

Clemson University, Clemson

Cleveland Museum of Natural History, Cleveland, Ohio

Colorado Plateau Museum of Arthropod, Flagstaff

Conservation of Arctic Flora and Fauna (CAFF), Akureyri, Iceland

Cornell University, Ithaca, New York

Curtin University, Bentley, Australia

Dankook University, Yongin-si, South Korea

Duke University, Durham

Embassy of Canada, Panama City, Panama

Eötvös University, Budapest, Hungary

Experimenta in Heilbronn, Germany

Flinders University, Adelaide, Australia

Florida Department of Agriculture and Consumer Services, Gainesville, Florida

Florida State University Coastal and Marine Laboratory, St. Teresa, Florida

Fort Hays State University, Hays

Fullerton Museum Centre, Fullerton, California

German Centre for Marine Biodiversity Research, Senckenberg, Hamburg, Germany

GHD, Doha, Qatar

Global Biodiversity Information Facility, Copenhagen, Denmark

High Commission of Canada, Singapore

Hungarian Natural History Museum, Budapest, Hungary

Icelandic Institute of Natural History, Akureyri, Iceland

Indian River Research and Education Centre, Ft. Pierce

Indiana University – Purdue University Fort Wayne, Fort Wayne, Indiana

Institute of Technology Cambodia, Phnom Penh, Cambodia

Instituto de Botánica Darwinion, San Isidro, Argentina

Instituto Nacional de Pesquisas da Amazonia, Manaus, Brazil

International Union for the Conservation of Nature, Switzerland

Karl-Franzens-Universität Graz, Graz, Austria

Kutztown University, Kutztown

Lindblad Expeditions, New York, New York

Louisiana State University, Baton Rouge

Macquarie University, North Ryde, Australia

Michigan State University, East Lansing

Midwestern University, Glendale, Arizona

Ministry of Mines and Energy, Phnom Penh, Cambodia

Missouri Botanical Garden, St. Louis, Missouri

Montana State University, Bozeman

Moss Landing Marine Laboratories, California State University, Moss Landing, Australia

Musée national d'histoire naturelle, Paris, France

Museo Nacional de Historia Natural, Rio de Janeiro, Brazil

Museum für Naturkunde, Berlin, Germany

Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts

Museum of China, Beijing, China

Namik Kemal University, Tekirdağ, Turkey

COLLABORATORS

National Institute for Agro-Environmental Sciences, Tsukuba, Japan

National Museum, Prague, Czech Republic

National Museum of Natural History Naturalis, Leiden, Netherlands

Natural History Museum, London, United Kingdom

Natural History Museum, Oslo, Norway

Natural History Museum, Reykjavik, Iceland

Natural History Museum, University of Kansas, Lawrence, Kansas

Natural History Museum of Denmark, Copenhagen, Denmark

Natural History Museum of Helsinki, Helsinki, Finland

Natural History Museum of Utah, Salt Lake City

Naturhistoriska riskmuseet, Stockholm, Sweden

Netherlands National Herbarium, Naturalis, The Netherlands

North Carolina Museum of Natural Sciences, Raleigh, North Carolina

North Carolina State University, Raleigh, North Carolina

Northern Illinois University, DeKalb, Illinois

Oceans North, Washington, DC

Ohio University, Athens, Ohio

Philadelphia University, Philadelphia, Pennsylvania

Project Passenger Pigeon, Chicago

Purdue University North Central, Westville, Indiana

Royal Belgian Institute of Natural Sciences, Brussels, Belgium

Royal Botanical Garden, Edinburgh, United Kingdom

Russian Academy of Sciences, St. Petersburg, Russia

San Bernardino County Museum, Redlands, California

Scripps Institution of Oceanography, San Diego, California

Senckenberg Forschungsinstitut und Naturmuseum, Frankfurt, Germany

Senckenberg Museum of Natural History Görlitz, Görlitz, Germany

Senckenberg Institute and Museum, Wilhelmshaven, Germany

Shiraz University, Shiraz, Iran

National Museum of Natural History, Smithsonian Institution, Washington, DC

Society for the Preservation of Natural History Collections, New York City, New York

South Dakota Geological Museum, Rapid City, South Dakota

Southern Illinois University, Carbondale, Illinois

Staatliche Naturhistorische Sammlungen, Dresden, Germany



State University of New York College of Environmental Science and Forestry, Syracuse, New York

Stephen F. Austin State University, Nacogdoches, Texas

Sternberg Museum of Natural History, Fort Hays State University, Hays, Kansas

Swedish Museum of Natural History, Stockholm, Sweden

TDWG – Biodiversity Information Standards, San Francisco, California

Texas Natural Science Center, Austin, Texas

The Field Museum, Chicago, Illinois

The Morton Arboretum, Lisle, Illinois

The Natural History Museum, London, United Kingdom

The New York Botanical Garden, Bronx, New York

Tokyo Gakugei University, Tokyo, Japan

Tomsk State University, Tomsk, Russia

Tulane University (FishNet), New Orleans, Louisiana

U.S. Fish and Wildlife, Anchorage, Alaska

Universidad Autónoma de Queréaro

Universidad de Panama, Panama City, Panama

Universidad Nacional de la Plata, La Plata, Argentina

Universidad Pablo de Olavide, Seville, Spain

Universidade de São Paulo, São Paulo, Brazil

Universidade Federal de Mato Grosso, Cuiaba, Brazil

Universidade Federal de Viçosa, Viçosa, Brazil

Universidade Federal do Paraná, Curitiba, Brazil

Universitat de Barcelona, Barcelona, Spain



Università dell'Aquila, L'Aquila, Italy

Università di Urbino Carlo Bo, Urbino, Italy

University of Alaska, Fairbanks, Alaska

University of Bergen, Bergen, Norway

University of California (VertNET), Berkeley, California

University of Chicago, Chicago, Illinois

University of Colorado, Boulder, Colorado

University of Copenhagen, Copenhagen, Denmark

University of Florida, Gainesville, Florida

University of Georgia, Athens, Georgia

University of Hamburg, Hamburg, Germany

University of Hawaii at Manoa, Honolulu, Hawaii

University of Illinois, Urbana, Illinois

University of Kansas, Lawrence, Kansas

University of Kentucky, Lexington, Kentucky

University of Michigan, Ann Arbor, Michigan

University of Mississippi, Oxford, Mississippi

University of Mostaganem, Mostaganem, Algeria

University of New Mexico, Albuquerque, New Mexico

University of Oslo, Oslo, Norway

University of Tasmania, Hobart, Tasmania

University of Tokyo, Merguro, Tokyo, Japan

University of Torino, Torino, Italy

University of Wisconsin, Madison, Wisconsin

Victoria Museum, Melbourne, Australia

University of Uppsala, Uppsala, Sweden

University of Washington, Seattle, Washington

University of Wisconsin, Madison, Wisconsin

University of Wrocklaw, Wrocklaw, Poland

Wenatchee Valley Museum & Cultural Centre,
Wenatchee, Washington

Western Kentucky University, Bowling Green, Kentucky

Western Washington University, Bellingham, Washington

Zoologisches Forschungsmuseum Alexander Koenig,
Bonn, Germany

NATIONAL

Alberta

Angkor Gold Corporation, Sexsmith
Arctic Institute of North America, University of Calgary
Edmonton Northlands, Edmonton
Esplanade Arts and Heritage Centre, Medicine Hat
Faculty of Veterinary Medicine, University of Calgary
Lloydminster Cultural & Science Centre, Lloydminster
Okotoks Culture & Heritage Centre, Town of Okotoks
Peace River Museum, Peace River
Pembina Lobstick Historical Society, Evansburg
Pipestone Creek Dinosaur Initiative, Clairmont
Provincial Museum of Alberta, Edmonton
Royal Alberta Museum, Edmonton
Royal Tyrrell Museum of Palaeontology, Drumheller
Stuart MacPherson Public Library, Lac la Biche
University of Alberta, Edmonton
University of Calgary, Calgary

British Columbia

Allan Brooks Nature Centre, Vernon
Bamfield Marine Science Centre, Bamfield
Beaty Biodiversity Museum, Vancouver
Chu Cho Environmental, Prince George
Fort Steele Museum, Fort Steele
Geological Survey of Canada, Vancouver
Ministry of Environment and BC Parks, Victoria
Qualicum Beach Museum, Qualicum Beach
Royal British Columbia Museum, Victoria
The Exploration Place, Prince George,
University of British Columbia, Vancouver
Vancouver Aquarium, Vancouver
West Coast Aquatic Stewardship Association,
Alberni Aquarium, Port Alberni

Manitoba

Arctic Climate Change Youth Forum
Build Films, Winnipeg
Canadian Museum for Human Rights, Winnipeg
Fisheries & Oceans Canada, Winnipeg
Fort La Reine Museum, Portage la Prairie
The Manitoba Museum, Winnipeg
University of Manitoba, Winnipeg

New Brunswick

Atlantic Canada Conservation Data Centre, Sackville
Fisheries and Oceans Canada, Moncton
New Brunswick Provincial Museum, St. John
Université de Moncton, Campus d'Edmundston, Edmundston
University of New Brunswick, Fredericton
Newfoundland and Labrador
Arctic Eider Society, St. John's
Canadian Forest Service, St. John's
Food First, St. John's
Johnson Geo Centre, St. John's
Long Point Lighthouse, Twillingate
Memorial University of Newfoundland, St. John's
Subsea 7, St. John's

Northwest Territories

Avataq Cultural Institute
Dene Nation
Department of Culture and Lands Protection,
Tucho Government

Department of health and Social Services,
Government of NWT

Gwich'in Social and Cultural Institute, Fort McPherson
Inuvialuit Regional Corporation, Inuvik
Prince of Wales Northern Heritage Centre, Yellowknife
Tracking Change Project

Nova Scotia

Canadian Museum of Immigration at Pier 21, Halifax
Dalhousie University, Marine Affairs Program, Halifax
Fisheries and Oceans Canada, Dartmouth
Geological Survey of Canada, Bedford Research Institute,
Dartmouth
Mersey Tobeatic Research Institute, Kempt
Nova Scotia Environment, Halifax
Nova Scotia Museum of Natural History, Halifax
Parks Canada, Halifax
Saint Mary's University, Halifax
St. Francis Xavier University, Antigonish

Nunavut

Government of Nunavut**Kitikmeot Heritage Society**, Nunavut**Nunavut Arctic College**, Research Institute, Iqaluit**Unikkaat Films**, Iqaluit

Ontario

Agriculture and Agri-Foods Canada, Ottawa**Algonquin College**, Ontario**Alpine Gems**, Kingston**Art Gallery of Guelph**, Guelph**Biodiversity Institute of Ontario**, Guelph**Cambridge Butterfly Conservator**, Cambridge**Camp Kawartha****Canada Council for the Arts**, Ottawa**Canada Science and Technology Museum**, Ottawa**Canadian Association for Conservation**, Ottawa**Canadian Biodiversity Information Facility**, Ottawa**Canadian Conservation Institute**, Ottawa**Canadian Committee of the International Union for the Conservation of Nature**, Ottawa**Canadian Forest Service**, Ottawa**Canadian Geographic****Canadian Mining Hall of Fame**, Toronto**Canadian Wildlife Federation**, Ottawa**Canadian Wildlife Service**, Ottawa**Canterbury High School**, Ottawa**Carleton University**, Ottawa**Children's Hospital of Eastern Ontario**, Ottawa**City of Ottawa Museums & Historic Sites**, Ottawa**Committee on the Status of Endangered Wildlife in Canada**, Ottawa**Creative Nature Studio**, Cornwall**Department of Biology, Geography, Environmental Studies**, Carleton University, Ottawa**Department of Linguistics**, Carleton University, Ottawa**Dufferin County Museum & Archives**, Mulmur**Ecology Ottawa**, Ottawa**Elephant Thoughts**, Collingwood**Embassy of Japan**, Ottawa**Enviro Science et faune**, St-Eugène**Environment Canada**, Ottawa**Fisheries and Oceans Canada**, Ottawa**Fehleley Fine Arts**, Toronto**Fleming College**, Peterborough**Foreign Affairs, Trade and Development**, Ottawa**Forest School Canada****Forum for Young Canadians****Geomatics and Cartographic Research Centre**, Carleton University, Ottawa**Geological Survey of Canada****Gordon Foundation**, Toronto**Grimsby Museum**, Grimsby**Ikebana International Ottawa Chapter**, Ottawa**Indigenous Walks****Indigenous and Northern Affairs Canada**, Ottawa**Inuit Circumpolar Council**, Ottawa**Inuit Tapiriit Kanatami**, Ottawa**Ivanhoe Cambridge Atrium 1000****Lambton Heritage Museum**, County of Lambton**Land Force Central Training Centre**, Meaford**Lateral Office**, Toronto**Laurentian University**, Sudbury**Lennox and Addington County Museum**, Napanee**Live History Shows**, Toronto

COLLABORATORS

Living EARTH

Maker Mobile

Meet the North, Ottawa

Mining Association of Canada, Ottawa

Ministry of Natural Resources, Ottawa

The Museum, Kitchener

Municipality of Strathroy-Caradoc, Strathroy

Museum on Tower Hill, Parry Sound

Museum Windsor, Windsor

Muskoka Boat and Heritage Centre, Gravenhurst

National Arts Centre, Ottawa

National Capital Commission, Ottawa

National Committee on Inuit Education, Ottawa

National Gallery of Canada, Ottawa

National Wildlife Research Centre, Environment Canada, Ottawa

Natural Resources Canada, Ottawa

Nature Canada, Ottawa

Nature Connections

Nipigon Historical Museum, Nipigon

Nunavut Sivuniksavut, Ottawa

Oceans North, Ottawa

Ontario Natural Heritage Information Centre, Peterborough

Ontario Nature, Ottawa

Ontario Ministry of Environment and Climate Change (MOECC), Ottawa

Ontario Ministry of Natural Resources, Pembroke

Ontario Ministry of Natural Resources & Forestry, Peterborough

Ottawa Art Gallery, Ottawa

Ottawa Carleton District School Board Eco Schools

Ottawa Catholic School Board, Ottawa

Ottawa Field Naturalists' Club, Ottawa

Ottawa Guild of Potters, Ottawa

Ottawa Public Health, Ottawa

Ottawa Riverkeeper, Ottawa

Parks Canada, Ottawa

Past Recovery Archaeological Services Inc., Maberly

Peel Art Gallery, Brampton

Peterborough Centennial Museum and Archives, Peterborough

Polar Continental Shelf Program, Ottawa

Polar Knowledge Canada, Ottawa

Public Health Agency of Canada, Ottawa

Queen's University, Kingston

Red Lake Regional Heritage Centre, Red Lake

Rideau Canal National Historic Site, Smith Falls

Royal Botanical Gardens, Hamilton

Royal Danish Embassy, Ottawa

Royal Norwegian Embassy, Ottawa

Royal Ontario Museum, Toronto

Science North, Sudbury

Scugog Shore Museums, Port Perry

St. Lawrence Islands National Park, Mallorytown

Story Centre Canada, Toronto

The Wild Garden

Toronto Public Library System, Toronto

Toronto Zoo, Scarborough

Tree Canada, Ottawa

Trent University, Peterborough

University of Guelph, Guelph

University of Ottawa, Ottawa

University of Toronto, Toronto

University of Western Ontario, London

Wilderness Rhythms

Québec

Agence de bassins versants des 7, Gatineau

Arctic Net

Axné07, Gatineau

Bibliothèque Françoise Bedard, Rivière-du-Loup

Bibliothèque Gaby-Farmer-Denis, les Cedres

Bibliothèque Gabrielle-Bernard Dubé, Carleton-sur-Mer

Bibliothèque de la Macaza, La Macaza

Bibliothèque Saint-Zotique, Saint-Zotique

Biophare, Sorel-Tracy

Bombardier Inc., Montreal

CHSLD Vigi de l'Outaouais, Gatineau

Canadian Heritage Information Network, Gatineau

Canadian Museum of History, Gatineau

Centre de la Biodiversité, Becancour

Commission géologique du Canada, Quebec

Commission de la capitale nationale (Parc de la Gatineau), Chelsea

Concordia University, Montreal

Conseil du loisir scientifique de l'Outaouais, Gatineau

Coordination Mechanism of the Global Taxonomy Initiative, Montreal

École Alphonse-Pesant, St-Leonard

Education and Water Monitoring Action Group

Environment Canada, Gatineau

Expographiq, Gatineau

Fednav, Montreal

Indigenous and Northern Affairs, Gatineau

Institut Maurice Lamontagne, Mont Joli

La Branche culturelle, Brownsburg-Chatham

Luke Mettaweskum School, Nemaska

Maison Lenoblet-du-Plessis, Contrecoeur

McCord Museum, Montreal

McGill University, Montréal

Mineralogical Association of Canada, Quebec

Ministère des forêts, de la faune et des parcs, Québec

Ministère des ressources naturelles et de la faune du Québec, Québec

Montreal Biodome, Montreal

Montreal Insectarium, Montreal

Montreal Space for Life

Musée de la nature et des sciences de Sherbrooke, Sherbrooke

Musée d'histoire naturelle de Miguasha, Nouvelle

Musée du Fjord, Saguenay

Musée minéralogique et minier de Thetford Mines, Thetford Mines

Musée régional de la Côte-Nord, Sept-Îles

Musée régional de Rimouski, Rimouski

National Film Board, Montreal

Parc Découverte nature, Coaticook

Parc national de Plaisance, Plaisance

Parc national de la Gaspésie, Sainte-Anne-des-Monts

Parks Canada, Gatineau

Pointe-à-Callière Museum, Montreal

Quality Engineering Test Establish, Gatineau

Redpath Museum, Montreal

Société d'art et d'histoire de Beauport, Bibliothèque Etienne-Parent, Quebec

Société Québécoise de bryologie, Saint-Valérien-de-Rimouski

Students on Ice, Gatineau

Université Laval, Québec

Université de Montréal (Canadensys), Montréal

Université du Québec à Rimouski, Rimouski

Université du Québec à Chicoutimi, Saguenay

Université de Québec en Abitibi-Témiscamingue, Rouyn-Noranda

Ville de Levis, Levis

Saskatchewan

International Centre for Northern Governance and Development, University of Saskatchewan, Saskatoon

Kleanpals Cleaning Ltd, Estevan

Royal Saskatchewan Museum, Regina

Strasbourg and District Museum, Strasbourg

T. Rex Discovery Centre, Eastend

Yukon

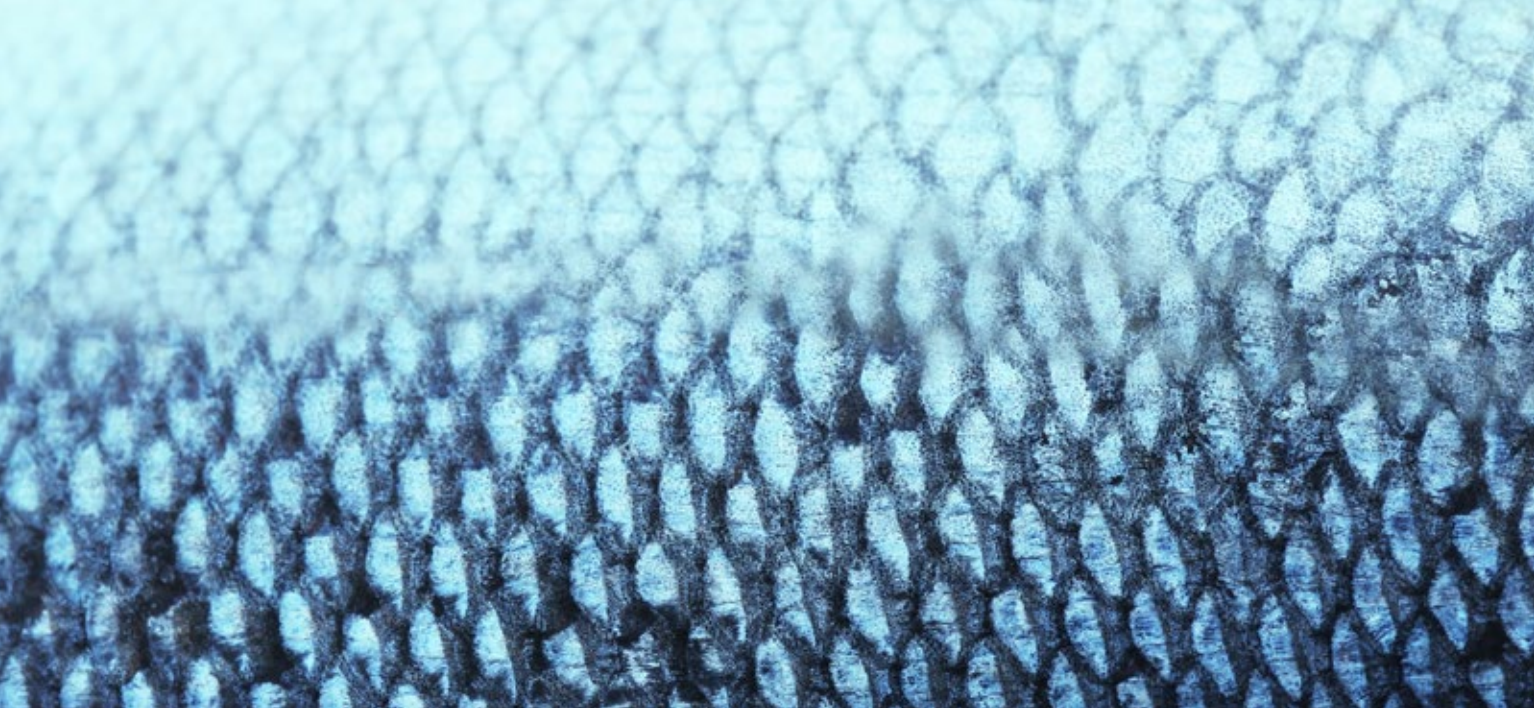
NatureServe Yukon, Yukon Department of the Environment, Whitehorse

Yukon Arts Centre, Whitehorse

Yukon Beringia Interpretive Centre, Whitehorse

Yukon Research Centre

Yukon Territory Conservation Date Centre, Whitehorse



MANAGING OUR FINANCIAL RESOURCES

The Canadian Museum of Nature's (the "Museum") primary objective is to fulfill its national mandate as described in the *Museums Act*, within the context of the governance and accountability regime established in that *Act* and Part X of the *Financial Administration Act*. To this end, the Museum's Board of Trustees and Management are committed to managing the public and private funds invested in the Museum in a transparent, accountable manner and to optimizing the value of the contribution the Museum makes to Canadians and to Canadian society.

MANAGEMENT DISCUSSION AND ANALYSIS

Financial overview

The Museum has made significant progress towards achieving financial sustainability through a combination of revenue generation and expenditure reduction measures implemented over the past six years. In order to maintain financial sustainability, the Museum will strive to increase self-generated revenues by 5% annually while limiting increases in expenditures to 1% annually. To enable that outcome, the Museum is shifting from an appropriation based operating model to a sustainable museum enterprise operating model. This shift is meant to foster innovation and calls for new skills and accountabilities for staff and volunteers. The challenge for the Museum is ensuring this shift happens at the required pace through recruitment, training and performance management.

An example of this shift to a sustainable museum enterprise operating model is the success of the *Ultimate Dinosaurs* temporary exhibition which was presented at the Museum from June 2016 to September 2016, and the *Reptiles: The Beautiful and the Deadly* exhibition which was presented at the Museum from October 2016 to April 2017. A strong special temporary exhibition program along with an effective marketing and media relations campaign explains in part the significant year over year increase in attendance and revenues. Again this year, programs such as *Nature Nocturne* evenings have also contributed to the increase in attendance and the revenues – these adult only evenings continue to be a successful program and a new perspective on the Museum as a place for young adults. The aforementioned revenue generation measures are in addition to those initiated in previous years such as the introduction of a new pricing structure for admissions, surcharges for major temporary exhibitions, value based pricing for education programs, new programming such as the 3D Theatre, aggressive membership marketing and automated parking. Other important initiatives were the revenues generated from collections storage and management service fees and facility leasing fees to fund strategic investments in the *Centre for Arctic Knowledge & Exploration* and the *Centre for Species Discovery & Change*. In 2016-2017, the Museum generated revenue excluding specimen donations and in-kind sponsorships equivalent to 29% of base operating costs, compared to 30% in the previous year, well above its target of 20%.

An important element of a current and relevant visitor experience will be an ongoing improvement and enhancement of the west wing of the Museum including support for the new



fossil acquisition 'Judith'. For the permanent display of Judith, a second new exhibit featuring a Judith replica with digital enhancements will be positioned in the Fossil Hall.

The Museum continuously reviews its programs, its means of delivery and its supporting activities to ensure they remain relevant to Canadians. In 2015, the Museum developed an outdoor exhibit area featuring the "Regions of Canada Garden" on its grounds. The first phase of the gardens was completed in the fall of 2015, which included plantings and installation of the Arctic sculpture in the tundra section. The public unveiling was held in June 2016 along with associated public programming delivered in collaboration with the garden sponsor. This collaboration model reflects a direction the Museum will continue to pursue to leverage scarce resources to best effect.

The Museum continues to identify and act on opportunities for collaboration with the other national museums that improve effectiveness and efficiency. The museums now have a systematic approach for identifying and advancing co-procurement projects, cooperative exhibit scheduling and cooperative marketing projects. Over the last three years, the Museum collaborated with other national museums on two requests for proposals that resulted in combined annual savings to the Museum of approximately \$159,000.

Building a high performance advancement operation focused on developing a pipeline of annual, sponsorship and major gifts prospects and donors is an important element of the sustainable museum enterprise operating model and to the success of the Museum in the future. The advancement strategy implemented in 2013-2014 continues to focus on building support from individual, corporate and foundation donors that includes a Patron Circle fundraising program and a National Nature Council to raise the Museum's profile and raise funds in support of the Museum's position as a leader in Arctic research and discovery. Advancement programs fund both operations and special projects such as galleries, field work, scientific equipment and landscaping.

The Museum was successful in significantly expanding its pipeline of potential donors, while acknowledging that much more work needs to be done to achieve a robust group of prospective supporters to achieve the \$25 million overall fundraising goal. On February 23, 2017, the Museum received a large philanthropic gift of \$4 million from the Ross Beaty family in Vancouver, which will enhance the Museum's national research and collections efforts focused on species discovery.

Two million dollars from the \$4 million gift will fund the creation of a national cryogenic facility, which will include an examination room, and large, super-cooled vats filled with liquid nitrogen to house tissue samples and genetic material. The material to be stored will come from the Museum's research activities, and from donations by other government and university institutions across Canada and abroad.

Another \$1 million will support the digitization and high-resolution imaging of the Museum's collections of about 350,000 Arctic specimens. These include some of the best examples in the world of plants, animals, fossils and minerals from this region. The free digital data will ensure this evidence of the Arctic's natural history is available globally to researchers, students, historians, policy makers and educators.

A further \$1 million will create the Beaty Post-Doctoral Fellowship for Species Discovery. Endowed through the Community Foundation of Ottawa, the fellowship will fund a post-doctoral scientist every two years to investigate species at risk. The scientist's role will also include public outreach about species loss, species at risk and the importance of conservation to species preservation. The fellowship is slated to begin in spring 2018.

In 2016-2017, total support received from individual and corporate donations, sponsorships, memberships, collaborations, and in-kind support for research and collections and from the media amounts to \$10.6 million, exceeding the annual goal of \$5.8 million. These cash and in-kind commitments secured through the Museum's fundraising activities are broader in scope than the Contributions recognized on the Museum's Statement of Operations.

In spite of the progress towards achieving financial sustainability, addressing the financial pressures related to operating the two facilities under its stewardship remains as the most critical issue facing the Museum as it is still vulnerable to the impact of inflation on key inputs such as utilities and property taxes.

Budget 2016 provided funding to help Canada's national museums address immediate operational and capital pressures including the gap between established appropriations provided for payment in lieu of taxes (PILT) purposes and the actual amount of PILT being paid, and deferred recapitalization projects, primarily those related to immediate health and safety issues.

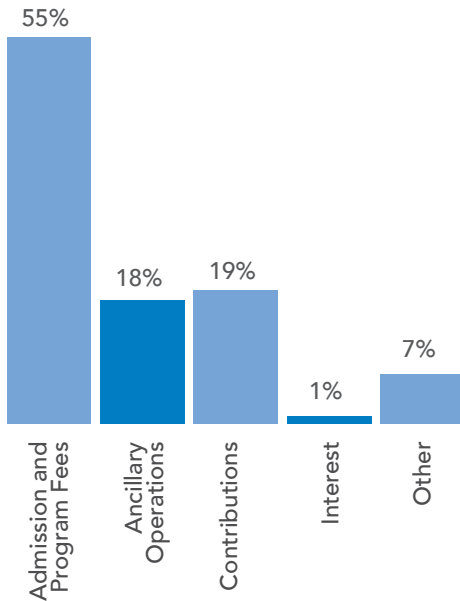
Through Budget 2016, the Museum received \$3.3 million in 2016-v 2017. Of this amount, \$2,998,000 was to address the backlog of health and safety and other recapitalization needs, and \$314,000 was to address the gap between the level of funding it currently receives in appropriations and the PILT level that is due to PSPC each year, based on estimates for 2016 provided by PSPC. This, however, does not offset the \$1 million in property taxes paid on the Gatineau site. The costs of managing the Museum's two buildings have increased since the completion of the renovated Victoria Memorial Museum Building (VMMB). The Museum has in place a number of strategies designed to manage both known and anticipated pressures. An enterprise risk management approach is being used to manage these strategies and pressures in support of the vision to inspire understanding and respect for nature.

FINANCIAL PERFORMANCE

Revenue and parliamentary appropriations

Revenue and parliamentary appropriations increased to \$41.6 million in 2016-2017 from \$39.9 million in 2015-2016 with appropriations representing 76% of the total in 2016-2017 compared to 78% in 2015-2016.

Revenue
(Excluding parliamentary appropriations)



The Museum had established a target of generating revenue excluding specimen donations and in-kind sponsorships equivalent to 20% of base operating costs. In 2016-2017, with attendance reaching 525,938 (485,154 in 2015-2016), the Museum surpassed its target with revenue excluding specimen donations and in-kind sponsorships equivalent to 29% of base operating costs (30% in 2015-2016).

Parliamentary Appropriations

On an accrual basis, parliamentary appropriations increased by \$0.7 million to \$31.7 million in 2016-2017 from \$31.0 million in 2015-2016, mainly due to the first installment of a 4 year investment by the federal government through Budget 2016 to address the backlog of health and safety and other recapitalization needs and to address the gap between the level of funding it currently receives in appropriations and the PILT level that is due to PSPC each year, based on estimates for 2016 provided by PSPC.

Admission and Program Fees

Revenue associated with admission and program fees increased by \$0.5 million to \$5.4 million in 2016-2017 from \$4.9 million in 2015-2016 and is consistent with the attendance levels of 525,938 in 2016-2017 and 485,154 in 2015-2016 substantially due to memberships and admission fees, including surcharges related to the Museum's major temporary exhibitions which in 2016-2017 included *Ultimate Dinosaurs* and *Reptiles: The Beautiful and the Deadly*.

Fees from programs delivered at the Museum have totaled \$0.6 in 2016-2017, the same as 2015-2016 as a result of the continuous success of *Nature Nocturne* evenings.

Ancillary Operations

Revenue associated with ancillary operations includes rentals of facilities, boutique and cafeteria leases, and parking. Revenue from ancillary operations increased by \$0.1 million to \$1.8 million in 2016-2017 from \$1.7 million in 2015-2016. The \$0.1 million increase is due to parking revenue and the success of the Escape Manor experience piloted during 2016-2017.

Contributions

Contributions recognized as revenues vary from year to year based upon the resources required to fund research, collections and public education programs including installing new permanent galleries. Contributions including cash contributions and sponsorships, in-kind sponsorships and specimen donations increased by \$0.2 million to \$1.9 million in 2016-2017 from \$1.7 million in 2015-2016. The increase is mainly due to higher in-kind sponsorships and specimen donations.

The Museum has been building its fundraising capacity since 2012 by hiring new professionals, cultivating a pipeline of prospective supporters and packaging attractive projects to support. On February 23, 2017 the Museum received a large philanthropic gift of \$4 million from the Ross Beaty family in Vancouver, which will enhance the Museum's national research and collections efforts focused on species discovery. One million dollars from the \$4 million gift was endowed through the

Community Foundation of Ottawa (CFO). The remaining \$3 million included in the deferred revenues will support the creation of a national cryogenic facility and the digitization of the Museum’s collections.

Interest

Interest revenue on cash and restricted cash held in the Museum’s bank account totaled \$0.1 million in 2016-2017, the same as 2015-2016.

Other

Other revenue increased by \$0.1 million to \$0.7 million in 2016-2017 from \$0.6 million in 2015-2016 mainly due to higher revenues generated from collections storage and management service fees, publishing and facility leasing fees at the Natural Heritage Campus.

Expenses

Expenses increased by \$1.0 million to \$40.0 million in 2016-2017 from \$39.0 million in 2015-2016.

Inspiration and Engagement

Inspiration and engagement decreased to \$9.4 million in 2016-2017 from \$9.5 million in 2015-2016. The decrease of \$0.1 million is due to \$0.4 increase attributable to exhibitions expenses related to the major temporary exhibitions *Ultimate Dinosaurs* and *Reptiles: The Beautiful and the Deadly*. Offset by \$0.5 million capitalization of personnel costs related to the Canada Goose Arctic Gallery permanent exhibition.

Collections Care and Access

Collections care and access totaled \$2.7 million, the same as 2015-2016. Included in collections care and access was \$0.7 million in-kind sponsorships and specimen donations.

Research and Discovery

Research and discovery increased to \$4.3 million in 2016-2017 from \$4.0 million in 2015-2016. The \$0.3 increase is attributable to professional and special services which increased by \$0.2 million and personnel costs expenses related to research and discovery which increased by \$0.1 million due to replacement of vacant positions.

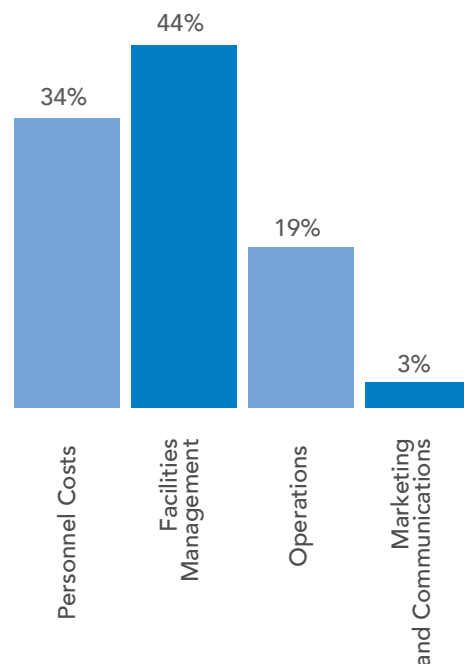
Internal Support Services.

Internal support services increased to \$5.0 million in 2016-2017 from \$4.8 million in 2015-2016. The \$0.2 increase is mainly attributable to professional and special services.

Buildings and Grounds

Expenses related to the Museum’s buildings and grounds increased to \$18.5 million in 2016-2017 from \$17.8 million in 2015-2016. The \$0.7 increase is mainly attributable to real property taxes expenses which increased by \$0.4 million due to the change in the accounting treatment related to property taxes for the VMMB in 2015-2016. The remaining \$0.3 million increase is attributable to operation and maintenance of buildings due to higher building systems maintenance and electricity costs. The museum-standard environmental control systems and additional space that must now be maintained at the renovated VMMB have placed an additional pressure on the Museum’s operating budget. The Museum continues to explore additional facilities cost reduction and control measures in order to minimize the financial impact on its programs.

Expenses



Net results of operations

The net results of operations resulted in a surplus of \$1.5 million in 2016-2017 which can be attributed to the following:

- Excluding in-kind sponsorships and specimen donations, the Museum recorded \$1.2 million in revenues in excess of plan, as contributions excluding gift in kind and specimen donations, admission and program fees, and ancillary operations and other revenues were respectively \$0.8 million, \$0.3 million, and \$0.1 million higher than planned, while contributions on accrual basis excluding gift in kind and specimen donations were same as planned.
- The Museum recorded \$0.3 million in supplementary appropriations received or receivable for severance benefits paid during the year. The payments were the result of collective bargaining and consistent with the Government of Canada's approach, whereby effective April 1, 2012, employees no longer accumulate severance pay upon resignation or retirement. The accumulated severance recorded as an accrued benefit obligation was recognized in prior years and in part paid during the year as per the terms of the collective agreement. Therefore, this resulted in a timing difference between the accrued benefit obligation recognized in prior years and the supplementary appropriations recognized during the year.
- Through Budget 2016, the Museum recorded \$0.3 million in supplementary appropriations received to address the gap between the level of funding it currently receives in appropriations and the PILT level that is due to PSPC each year, based on estimates for 2016 provided by PSPC.
- The Museum recorded \$0.2 million in revenues attributable to a timing difference between the recognition of parliamentary appropriations for operating expenditures that are recognized in the fiscal year that they are approved and expenses that are recognized in the fiscal year they are incurred.
- Partially offsetting the surplus is \$0.2 million in expenses due to the accounting treatment related to the Museum's Natural Heritage Campus located in Gatineau, Quebec, which is recorded on the Statement of Financial Position as an obligation under capital lease. This accounting treatment will keep the Museum's accumulated deficit in a deficit position for many years due to the interest expense on the capital lease obligation being higher in the earlier years than in the years closer to the end of the lease term. Accordingly, the accumulated deficit related to this accounting treatment will begin to reverse in 2019-2020 until it is fully eliminated by the end of the lease term in 2031. This does not impact the Museum's cash flow or financial stability in any way.
- The Museum recorded \$0.3 million in operation and maintenance of building expenses as a result of increased operating costs related to utilities, maintenance and general inflation.

Financial situation

Assets

Cash increased by \$5.8 million to \$14.2 million in 2016-2017 from \$8.4 million in 2015-2016. This increase is attributable to the \$2.2 million in capital parliamentary appropriation received in current year through Budget 2016 deferred for next fiscal year capital expenditures, \$0.8 million in higher admissions fees and membership revenues and a timing difference in the \$2.8 million payment of invoices.

Prepaid expenses of \$0.9 million remained stable year over year. The current year balance includes \$0.2 million for prepaid real property taxes and \$0.3 million for prepaid lease obligation payment.

Capital assets decreased by \$4.8 million to \$184.3 million in 2016-2017 from \$189.1 million in 2015-2016 due to amortization expense of \$7.9 million offset by acquisition of capital assets of \$3.1 million.

Liabilities

Deferred revenues, contributions and parliamentary appropriations increased by \$4.8 million to \$5.8 million in 2016-2017 from \$1.0 million in 2015-2016. This increase is mainly attributable to \$2.3 million in capital parliamentary appropriation received in current year through Budget 2016 deferred for next fiscal year capital expenditures, \$3.0 million gift received from the Ross Beaty family held in the restricted cash account and included in the deferred revenues and \$0.5 million in restricted parliamentary appropriation and restricted contributions spent to acquire capital assets and restricted contributions spent for public education programming.

Deferred capital funding decreased by \$3.9 million to \$169.3 million in 2016-2017 from \$173.2 million in 2015-2016 as deferred capital funding is recognized as revenue at the same pace as the amortization of the corresponding capital assets.

Accumulated Deficit

The accumulated deficit of \$6.4 million as at March 31, 2017, is mainly due to the accounting treatment related to the Museum's Natural Heritage Campus located in Gatineau, Quebec, as explained previously under Net Results of Operations. This does not impact the Museum's cash flow or financial stability in any way.

Objectives for 2017-2018 and beyond

In 2017-2018, the Museum will advance year four of its current strategic plan that leverages its research and collections strengths in Arctic Knowledge and Species Discovery. New approaches to the design and delivery of visitor experiences will enable the Museum to attract and inspire new audiences. These new engaging experiences will lead to higher memberships, higher membership renewals and will provide a foundation for enhanced fundraising. Overall higher levels of engagement will lead to a better understanding of and connection with Canada's natural world.

The Corporation has five strategic objectives for 2017-2018 to 2021-2022:

- To Create a Centre for Arctic Knowledge and Exploration that transforms people's understanding of Canada's Arctic and its relationship with Canada as a country in a 21st century global context.
- To Create a Centre for Species Discovery and Change that transforms people's understanding of the relevance of species diversity to their lives now and in the future.
- To Create a Centre for Nature Inspiration and Engagement that transforms people's expectations of the Canadian Museum of Nature as a destination for discussion, connection and exploration with nature's past, present and future that advances understanding and respect for Canada's natural world.
- To position the Natural Heritage Campus as a centre of excellence in collections management and knowledge creation, advancement and sharing by becoming a collections collaborator with institutions around the world seeking to collect, preserve, digitize and disseminate specimens that document the nature of Canada.
- To create a sustainable museum enterprise model of operation that leverages the Museum's strategic imperatives: knowledge and discovery, inspiration and engagement, presence, performance and advancement.

The strategic directions for the Museum acknowledge the intent to be a leading source of natural history knowledge and scientific inquiry for scientists and the public, thus contributing a distinctly Canadian perspective to the global body of knowledge. The Museum will disseminate the results of this scientific inquiry, thus helping inspire Canadians to act conscientiously about the natural environment. As a public institution, the Museum also wishes to continue to demonstrate accountability, value and fiscal effectiveness through achieving measurable, meaningful results.

These measures, combined with the continuing support of the Government of Canada and a highly motivated and skilled team, will allow the Museum to continue to fulfill its mandate to *"...increase throughout Canada and internationally, interest in, knowledge of and appreciation and respect for the natural world..."*

Risk analysis

The Museum has in place an enterprise risk management framework designed to effectively and proactively manage the risks that could prevent the Museum from achieving its objectives. The Museum Corporate Plan identifies five risks and their related mitigation strategies. The risk mitigation step involves development of mitigation strategies designed to manage, eliminate, or reduce risk to an acceptable level. Once a strategy is implemented, it is continually monitored to assess its efficacy with the intent of revising the course of action, if needed.

Summary of key risks and mitigation strategies are as follow:

1. Advancement Risk that a limited donor pipeline may constrain financial resources available to support the investment required for initial implementation of the Museum's strategic objectives. This is mitigated by a comprehensive advancement program that identifies, cultivates, solicits and stewards donors and prospects, led by a team of fundraising professionals and a new group of committed fundraising volunteers and board members.
2. Structural Deficit - Risk that the structural deficit will continue to increase due to expenses increasing at a greater rate than revenues, such as utilities, property taxes and general inflation. This is mitigated by a continuous process of expenditure review and earned revenue growth.
3. Information Technology Risk that information technologies and systems are not available or leveraged to support organizational objectives. This is mitigated by new leadership and skills in Information Technology (IT) and an IT strategy that responds to and enables the strategic objectives of the Museum within the resources available.
4. Succession - Risk that a significant number of employees are eligible for retirement resulting in the loss of corporate memory and key skills. To mitigate this risk the Museum developed and monitors a succession plan that includes skills development.
5. Budget 2016 - Risk that capital projects funded through Budget 2016 and identified in the Museum Corporate plan would not be completed on time and on budget to meet the required scope. This is mitigated by continuous monitoring of project activities, deliverables and spending.



MANAGEMENT'S RESPONSIBILITY FOR FINANCIAL REPORTING

Management is responsible for establishing and maintaining a system of books, records, internal controls and management practices to provide reasonable assurance that: reliable financial information is produced; the assets of the Corporation are safeguarded and controlled; the transactions of the Corporation are in accordance with the relevant legislation, regulations and by-laws of the Corporation; the resources of the Corporation are managed efficiently and economically; and, the operations of the Corporation are carried out effectively.

Management is also responsible for the integrity and objectivity of the financial statements of the Corporation. The accompanying financial statements were prepared in accordance with Public Sector Accounting Standards. The financial information contained elsewhere in this annual report is consistent with that in the financial statements.

The Board of Trustees is responsible for ensuring that Management fulfils its responsibilities for financial reporting and internal control. The Board exercises its responsibilities through the Audit and Finance Committee, which includes a majority of members who are not officers of the Corporation. The Committee meets from time to time with Management, the Corporation's internal auditors and the Office of the Auditor General of Canada to review the manner in which these groups are performing their responsibilities and to discuss auditing, internal controls, and other relevant financial matters. The Board of Trustees has reviewed and approved the financial statements following the audit of the Office of the Auditor General of Canada.

The financial statements have been audited by the Auditor General of Canada. The report offers an independent opinion on the financial statements to the Minister of Canadian Heritage.



Margaret Beckel
President and Chief Executive Officer



Ikram Zouari, CPA, CGA
Chief Financial Officer and Director of Finance

June 22, 2017
Ottawa, Canada



Office of the
Auditor General
of Canada

Bureau du
vérificateur général
du Canada

INDEPENDENT AUDITOR'S REPORT

To the Minister of Canadian Heritage

Report on the Financial Statements

I have audited the accompanying financial statements of the Canadian Museum of Nature, which comprise the statement of financial position as at 31 March 2017, and the statement of operations, statement of changes in accumulated deficit and statement of cash flows for the year then ended, and a summary of significant accounting policies and other explanatory information.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with Canadian public sector accounting standards, and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditor's Responsibility

My responsibility is to express an opinion on these financial statements based on my audit. I conducted my audit in accordance with Canadian generally accepted auditing standards. Those standards require that I comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

I believe that the audit evidence I have obtained is sufficient and appropriate to provide a basis for my audit opinion.

Opinion

In my opinion, the financial statements present fairly, in all material respects, the financial position of the Canadian Museum of Nature as at 31 March 2017, and the results of its operations and its cash flows for the year then ended in accordance with Canadian public sector accounting standards.

Report on Other Legal and Regulatory Requirements

As required by the *Financial Administration Act*, I report that, in my opinion, the accounting principles in Canadian public sector accounting standards have been applied on a basis consistent with that of the preceding year.

Further, in my opinion, the transactions of the Canadian Museum of Nature that have come to my notice during my audit of the financial statements have, in all significant respects, been in accordance with Part X of the *Financial Administration Act* and regulations, the *Museums Act* and regulations, the by-laws of the Canadian Museum of Nature, and the directive issued pursuant to section 89 of the *Financial Administration Act*.



Etienne Matte, CPA, CA
Principal
for the Auditor General of Canada

22 June 2017
Ottawa, Canada

Statement of Financial Position as at March 31

<i>(in thousands of dollars)</i>	2017	2016
Assets		
Current		
Cash and cash equivalents (Note 3)	14,190	8,444
Restricted cash (Note 3)	3,450	775
Accounts receivable		
Trade	466	519
Government departments and agencies (Note 16)	519	527
Prepaid expenses	910	770
	19,535	11,035
Collections (Note 4)	1	1
Capital assets (Note 5)	184,306	189,136
	203,842	200,172
Liabilities		
Current		
Accounts payable and accrued liabilities		
Trade	4,205	2,573
Government departments and agencies (Note 16)	949	449
Obligation under capital lease (Note 6)	873	791
Deferred revenues, contributions and parliamentary appropriations (Note 7)	5,793	950
Employee future benefits (Note 8)	262	319
	12,082	5,082
Obligation under capital lease (Note 6)	25,972	26,845
Deferred capital funding (Note 9)	169,324	173,154
Employee future benefits (Note 8)	2,820	2,980
	210,198	208,061
Accumulated Deficit		
Unrestricted	5,507	3,765
Investment in capital assets (Note 11)	(11,863)	(11,654)
	(6,356)	(7,889)
	203,842	200,172

Contractual Obligations and Contingencies (Note 18 and 19).
The accompanying notes form an integral part of the financial statements.

Approved by the Board of Trustees:



Stephen Henley
Chair of the Board of Trustees



Ron Calderoni, CPA, CA
Chair of the Audit
and Finance Committee

Recommended by Management:



Meg Beckel
President and Chief
Executive Officer



Ikram Zouari, CPA, CGA
CFO and Director of Finance

Statement of Operations for the year ended March 31

<i>(in thousands of dollars)</i>	2017	2016
Revenue		
Admission and program fees (Note 13)	5,359	4,902
Ancillary operations (Note 14)	1,776	1,667
Contributions (Note 15)	1,899	1,649
Interest	126	112
Other	719	628
	9,879	8,958
Expenses (Note 21)		
Inspiration and engagement	9,442	9,543
Collections care and access	2,729	2,806
Research and discovery	4,316	4,037
Internal support services	5,018	4,817
Buildings and grounds	18,540	17,823
	40,045	39,026
Net result of operations before government funding	(30,166)	(30,068)
Parliamentary appropriations (Note 12)	31,699	30,971
Net result of operations	1,533	903

The accompanying notes form an integral part of the financial statements.

Statement of Changes in Accumulated Deficit for the year ended March 31

<i>(in thousands of dollars)</i>	Unrestricted	Endowment	Invested in Capital Assets	2017	2016
Accumulated deficit, beginning of year	3,765	-	(11,654)	(7,889)	(8,792)
Net result of operations	1,533	-	-	1,533	903
Endowment funds received	-	1,000	-	1,000	-
Transfer of endowment (Note 10)	-	(1,000)	-	(1,000)	-
Net change in investment in capital assets (Note 11)	209	-	(209)	-	-
Accumulated deficit, end of year	5,507		(11,863)	(6,356)	(7,889)

The accompanying notes form an integral part of the financial statements.

A statement of remeasurement gains and losses has been excluded as there have been no remeasurement gains or losses.

Statement of Cash Flows for the year ended March 31

<i>(in thousands of dollars)</i>	2017	2016
Operating activities		
Cash receipts - customers and donors	10,070	8,165
Cash receipts - parliamentary appropriations	26,766	26,143
Cash disbursements - employees	(13,888)	(13,714)
Cash disbursements - suppliers	(13,981)	(13,648)
Interest received	139	111
Interest paid	(2,724)	(2,787)
Cash provided by operating activities	6,382	4,270
Capital activities		
Acquisition of capital assets	(2,168)	(2,641)
Disposition of capital assets	-	12
Cash used in capital activities	(2,168)	(2,629)
Financing activities		
Obligation under capital lease	(791)	(717)
Donations received for purchase of capital assets	2,000	-
Parliamentary appropriations received for purchase of capital assets	2,998	-
Endowment received	1,000	-
Transfer of endowment	(1,000)	-
Cash provided by (used in) financing activities	4,207	(717)
Increase in cash and restricted cash	8,421	924
Cash and cash equivalents, beginning of year	8,444	7,440
Restricted cash, beginning of year	775	855
Cash and cash equivalents and restricted cash, end of year	17,640	9,219
Cash and cash equivalents, end of year	14,190	8,444
Restricted cash, end of year	3,450	775
Cash and cash equivalents and restricted cash, end of year	17,640	9,219

The accompanying notes form an integral part of the financial statements.

NOTES TO THE FINANCIAL STATEMENTS FOR THE YEAR ENDED MARCH 31, 2017

1. Authority and Mission

The Canadian Museum of Nature (the "Corporation") was established by the *Museums Act* on July 1st, 1990. It is an agent Crown corporation named in Part I of Schedule III of the *Financial Administration Act* (FAA) and is not subject to the provisions of the *Income Tax Act*. The Corporation is classified as a government not-for-profit organization (GNPO).

The Corporation's mission is to increase, throughout Canada and internationally, interest in, knowledge of and appreciation and respect for the natural world by establishing, maintaining and developing for research and posterity a collection of natural history objects, with special but not exclusive reference to Canada, and by demonstrating the natural world, the knowledge derived from it and the understanding it represents.

Brief descriptions of the Corporation's activities are as follows:

- **Inspiration and engagement**

The Corporation develops and maintains exhibitions, programs, the **nature.ca** website, electronic and print publications, revenue generating activities and other activities to foster an understanding of, and respect for, nature.

- **Collections care and access**

The Corporation acquires, develops, preserves and makes accessible collections of natural history specimens, objects and information to meet the growing needs of the public and private sectors for research, education and informed decision-making about the natural world.

- **Research and discovery**

The Corporation studies the past and helps Canadians prepare for the future by conducting systematics and applied research, and by developing and maintaining networks and linkages with Canadian and international science communities.

- **Internal support services**

The Corporation develops and implements the policies, processes and an accountability structure to oversee the fulfilment of its mandate, including governance, strategic direction, corporate services, monitoring of corporate performance, and reporting to Parliament.

- **Buildings and grounds**

The Corporation provides secure and functional facilities that meet all safety and building code requirements. Among these facilities is the renovated Victoria Memorial Museum Building that furthers the vision and mandate of the Corporation.

On July 16, 2015, the Corporation was directed by the Governor General in Council (P.C. 2015-1105) pursuant to Section 89 of the FAA to align its travel, hospitality, conference and event expenditure policies, guidelines and practices with Treasury Board policies, directives and related instruments on travel, hospitality, conference and event expenditures in a manner that is consistent with its legal obligations, and to report on the implementation of this directive in the Corporation's next Corporate Plan. To fulfill this reporting requirement, and in order to ensure compliance with the directive, the Corporation reviewed and revised its policies, guidelines and practices to align with Treasury Board instruments. Effective February 1, 2017, the Corporation has complied with this directive and has aligned its policies and practices to the Treasury Board policies, directives and related instruments for travel, hospitality and event expenditures. Reporting on the implementation of this directive is included in the 2017-2018 to 2021-2022 Corporate Plan.

2. Significant Accounting Policies

A) Basis of Presentation

The financial statements have been prepared in accordance with Canadian Public Sector Accounting Standards (PSAS), and reflect the application of the Section 4200 series for GNPOs.

B) Measurement Uncertainty

The preparation of financial statements in accordance with PSAS requires Management to make estimates and assumptions that affect the reported amounts of assets and liabilities at the date of the financial statements and the reported amounts of revenue and expenses for the year. Employee future benefits, the estimated useful lives of capital assets, and the fair market value of specimens donated to the collections are the most significant items for which estimates are used. Actual results could differ significantly from those estimated. These estimates are reviewed annually and as adjustments become necessary, they are recorded in the financial statements in the fiscal year in which they become known.

C) Collections

The Corporation holds and preserves invaluable collections of natural history specimens for the benefit of Canadians, present and future. The collections are shown as an asset on the Statement of Financial Position at a nominal value of \$1,000 due to practical difficulties in determining a meaningful value for these assets. Specimens purchased for the collections are recorded as an expense in the year of acquisition.

D) Capital Assets

- Capital assets are recorded at cost, including material, equipment and other expenses acquired for the purpose of the design and the development of permanent exhibitions.
- Assets recorded as capital leases are initially recorded at the present value of the minimum lease payments at the inception of the lease.
- Land and building owned by the Government of Canada and that are under the control of the Corporation are recorded at their estimated cost.

Amortization is calculated on the straight-line method using rates based on the estimated useful life of the assets, except for leasehold improvements which are amortized on a straight line basis over the shorter of the term of the lease agreement and the asset's useful life. When conditions indicate that an asset no longer contributes to the Corporation's ability to provide its services, the cost of the asset is written down to its residual value, if any.

Asset	Useful life
Victoria Memorial Museum Building	40 years
Property under capital lease Collection cabinets and compactors	35 years
Furnishings and office equipment General equipment Permanent exhibitions Research equipment	10 years
Building improvements	5 to 25 years
Leasehold improvements	5 years to end of lease term
Computer equipment	3 years

E) Employee Future Benefits

i) Pension benefits

Substantially all of the employees of the Corporation are covered by the public service pension plan (the "Plan"), a contributory defined benefit plan established through legislation and sponsored by the Government of Canada. Contributions are required by both the employees and the Corporation to cover current service costs. Pursuant to legislation currently in place, the Corporation has no legal or constructive obligation to pay further contributions with respect to any past service or funding deficiencies of the Plan. Consequently, contributions are recognized as an expense in the year when employees have rendered service and represent the total pension obligation of the Corporation.

ii) Severance benefits

Employees are entitled to severance benefits up to March 31, 2012, as provided for under labor contracts and conditions of employment.

The severance benefit obligation for employees who retire or resign, that accrued up to March 31, 2012 and remains unpaid, is measured using the projected benefit method. The actuarial gains (losses) are recognized on a systematic basis over the expected average remaining service life of the related employee group.

Other event driven termination benefits are recognized in the period when the event that obligates the Corporation occurs.

iii) Sick leave benefits

The Corporation provides sick leave benefits for employees that accumulate but do not vest. The Corporation recognizes a liability and an expense for sick leave in the period in which

employees render services in return for the benefits. The cost of the accrued benefit obligations related to sick leave entitlement earned by employees is actuarially determined using the projected benefit method prorated on service and Management's best estimate of inflation, discount rate, employee demographics and sick leave usage of active employees. Actuarial gains (losses) are recognized on a systematic basis over the remaining service life of active employees covered by these sick leave benefits.

F) Revenue Recognition

i) Admission and program fees, ancillary operations and other revenues

Revenues from admission and program fees, ancillary operations, and other revenues are recognized when persuasive evidence of an arrangement exists between the two parties, goods have been delivered or services have been provided to the customers, price is fixed and determinable and collection is reasonably assured. The Corporation also records deferred revenue when amounts are received in advance of providing goods and services.

ii) Contributions

Contributions are comprised of donations received from individuals, foundations and corporations. The Corporation applies the deferral method to recognize its contributions as applicable for not-for-profit organizations.

Unrestricted contributions are recognized as revenue in the Statement of Operations when received or receivable if the amount to be received can be reasonably estimated and collection is reasonably assured.

Contributions externally restricted for specific projects or expenses are deferred in the Statement of Financial Position and recognized as revenue in the Statement of Operations in the fiscal year in which related obligations are fulfilled and the related expenses are incurred.

Investment income related to restricted contributions is first recorded in the Statement of Financial Position as deferred revenues and then recognized as revenue in the Statement of Operations in the fiscal year in which the related expenses are incurred.

iii) In-kind sponsorships and specimen donations

In-kind sponsorships involve obtaining non-financial support for a project, activity or product in return for substantial public relations benefit. An in-kind sponsorship is recognized if the contributed good or service is used in the normal course of operations and would otherwise have been purchased, and once the exchange has taken place. In-kind sponsorships are recorded at their fair

market value as contributions with an offset to the related expense on the Statement of Operations.

Specimens donated to the collections are recorded as contributions with an offsetting expense to collections care and access at fair market value when the following three criteria are met: i) a fair market value has been established for the specimen; ii) the acquisition has been approved; and, iii) transfer of the specimen's title to the Corporation has taken place.

iv) Parliamentary appropriations

The Government of Canada provides financing to the Corporation through parliamentary appropriations.

- The parliamentary appropriations for operating expenditures are recognized as revenue in the fiscal years for which they are approved.
- The parliamentary appropriations for the purchase of depreciable capital assets are recorded as deferred parliamentary appropriations in the Statement of Financial Position. When the depreciable capital assets are purchased, the portion of the parliamentary appropriations used for acquisition of these capital assets is then reclassified as deferred capital funding on the Statement of Financial Position and recognized as revenue on the Statement of Operations on the same basis as the amortization of the corresponding capital assets.
- Parliamentary appropriations for specific expenses are recorded as deferred parliamentary appropriations in the Statement of Financial Position and recognized as revenue in the Statement of Operations in the fiscal year in which the related expenses are incurred.

The Corporation is required to report on the spending of appropriations in its annual report.

G) Volunteer Services

Volunteers contribute a significant number of hours every year. Due to the difficulty of determining their fair value, those contributed services are not recognized in the financial statements.

H) Financial Instruments

The Corporation's financial assets and financial liabilities are measured at cost. Financial assets include cash and cash equivalents, restricted cash, and accounts receivable while financial liabilities include accounts payable and accrued liabilities.

Financial instruments are tested annually for impairment at the financial statements date, and any permanent impairment is reported in the Statement of Operations.

Transaction costs are added to the carrying value of items in the cost when they are initially recognized.

I) Allocation of Expenses

The Corporation does not apply the method of allocating costs for the purpose of distributing expenses between functions.

3. Cash and Cash equivalents and Restricted Cash

Cash and Cash equivalents and restricted cash consist of balances with banks.

Restricted cash includes deferred contributions. Restricted cash accounts are managed in accordance with the donor's wishes and are invested in accordance with the Investments Policy of the Corporation.

As per the Corporation's Investments Policy, operating funds are invested in short-term money market instruments that are rated AA or better and guaranteed by the Government of Canada, a provincial government or the Canadian Imperial Bank of Commerce (CIBC). The investment vehicles consist of banker's acceptances, promissory notes and term deposits. The Corporation invested \$2 million of its cash in a guaranteed investment certificate (at 1.65% maturing on July 11, 2017) (2016 - nil) and earned interest on investment of \$11,000 (2016 - nil).

On February 23, 2017 the Corporation received a large philanthropic gift of \$4 million from the Ross Beaty family in Vancouver, which will enhance the Museum's national research and collections efforts focused on species discovery. One million dollars from the \$4 million gift was endowed through the Community Foundation of Ottawa (CFO). The remaining \$3 million included in the deferred revenues will support the creation of a national cryogenic facility and the digitization of the Museum's collections. On April 25, 2017, the Museum established a spend-down fund within the CFO in order to maximize earning while meeting the Museum's needs. With a spend-down fund, the capital is invested in the CFO's investment pool, with the intention of paying out the capital in agreed upon intervals, until the fund is fully depleted. In this way, capital is preserved as-is for endowed funds. This option allows the spend-down schedule to be determined by the Museum, while also providing flexibility for its own needs, with similar pay out and approach as for endowed funds. As at March 31, 2017, the \$3 million was held in the restricted cash account and was transferred to the CFO on April 26, 2017.

The Corporation holds in trust funds on behalf of the Alliance of Natural History Museums of Canada. As of March 31, 2017, these funds represented \$49,594 (2016 - \$65,840), however they are not recorded in the financial statements.

4. Collections

The entire Museum's collections including library and archives consist of over 14.6 million specimens and objects. The natural history collections consist of 3.25 million specimen lots, and grew by 34,363 specimen lots this fiscal year (2016 - 11,056). These are exceptional scientific resources that are available nationally and internationally for research, exhibits and education.

The Corporation maintains multiple collection groupings, with the major collections as noted below divided into four discipline-related groups:

- the Earth Sciences collection (minerals, rocks, gems, fossils),
- the Vertebrates collection (mammals, birds, fish, amphibians and reptiles),
- the Invertebrates collection (molluscs, insects, crustaceans, parasites, annelids), and
- the Botany collection (algae, vascular plants, bryophytes, lichens).

The collections are managed and cared for through a collections risk assessment process that seeks to preserve the value of collections and uses a rational process for the establishment of priorities for their care. The Corporation has incurred \$2.2 million in 2017 (2016 - \$2.7 million) for the management, protection and conservation of its collections.

In this fiscal year, the Corporation purchased \$12,772 (2016 - \$475,202), and acquired through donation \$272,715 (2016 - \$65,204), of specimens for the collections.

There were no sales of specimens related to the collections during the year (2016 - nil).

5. Capital Assets

(in thousands of dollars)

	March 31 2017			March 31 2016		
	Cost	Accumulated amortization	Net book value	Cost	Accumulated amortization	Net book value
Land	627	-	627	627	-	627
Victoria Memorial Museum Building	204,727	48,922	155,805	204,727	43,920	160,807
Property under capital lease	35,040	20,823	14,217	35,040	19,833	15,207
Leasehold improvements	9,668	6,275	3,393	9,630	5,932	3,698
Permanent exhibitions	5,227	2,215	3,012	4,024	1,693	2,331
Building improvements	3,842	2,069	1,773	3,747	1,678	2,069
Collection cabinets and compactors	3,840	2,179	1,661	3,840	2,070	1,770
Computer equipment	2,257	1,715	542	1,742	1,312	430
Research equipment	2,543	2,108	435	2,290	2,028	262
Furnishings and office equipment	1,492	1,216	276	1,490	1,135	355
General equipment	374	181	193	357	150	207
Work in progress - Assets	2,372	-	2,372	1,373	-	1,373
	272,009	87,703	184,306	268,887	79,751	189,136

The amortization expense for the year amounts to \$7,952,000 (2016 – \$7,790,000). During the year, the Corporation did not sell or retire assets. During the prior year, the Corporation sold an asset with a recorded cost of \$35,000 in the category of furnishings and office equipment for \$12,000. As the asset was fully amortized, this resulted in a gain of \$12,000. In addition, the Corporation retired an asset in the category of furnishings and office equipment with a recorded cost of \$12,000 and accumulated amortization of \$10,000 resulting in a loss of \$2,000.

6. Obligation Under Capital Lease

The Natural Heritage Campus houses the Corporation's natural history collections and administrative functions on the Corporation's site in Gatineau, Quebec. The Corporation is acquiring the building through a lease purchase agreement with a term of 35 years. It is committed to pay rent under all circumstances and in the event of termination of the lease, at the Corporation's option or otherwise, pay sufficient rent to repay all financing on the building. Management intends to completely discharge its obligation under the lease and obtain free title to the building in 2031, after the Corporation uses its right to purchase the building for ten dollars.

Future minimum lease payments in aggregate, under the financing obligation are as follows:

<i>(in thousands of dollars)</i>		March 31, 2017	March 31, 2016
Total minimum future payments	(1)	50,750	54,250
Deduct: Imputed interest		(23,905)	(26,614)
Present value of financing obligations	(2)	26,845	27,636
Current portion		873	791
Long term portion		25,972	26,845
		26,845	27,636

(1) The amounts payable under the capital lease are based on the fixed interest rate of 9.88%, for a period of 35 years, established at the time of signing the lease.

(2) The present value of the capital lease obligation based on a current market interest rate of 8.75% is estimated at \$29 million.

Future minimum lease payments by year under the financing obligation are as follows:

<i>(in thousands of dollars)</i>	2018	2019	2020	2021	2022	thereafter
Future minimum payments	3,500	3,500	3,500	3,500	3,500	33,250

7. Deferred Revenues, Contributions and Parliamentary Appropriations

Deferred revenues, contributions and parliamentary appropriations during the year were as follows:

<i>(in thousands of dollars)</i>	2017	2016
Deferred contributions from non-government sources	3,230	604
Deferred parliamentary appropriations	2,240	-
Total deferred contributions and parliamentary appropriations	5,470	604
Deferred revenues – goods and services	323	346
	5,793	950

Changes in the deferred revenues, contributions and parliamentary appropriations during the year were as follows:

<i>(in thousands of dollars)</i>	2017	2016
Balance, beginning of year	950	1,593
Add:		
Restricted contributions received	3,403	552
Restricted parliamentary appropriations received	2,998	-
Deferred revenue for the provision of goods and services	730	772
	7,131	1,324
Less:		
Restricted contributions recognized	(777)	(629)
Restricted parliamentary appropriations spent	(758)	(516)
Deferred revenue for the provision of goods and services recognized	(753)	(822)
	(2,288)	(1,967)
Balance, end of year	5,793	950

8. Employee Future Benefits

i) Pension benefits

The Corporation and all eligible employees contribute to the public service pension plan (the "Plan"). This pension plan provides benefits based on years of services and average earnings at retirement. The benefits are fully indexed to the increase in the Consumer Price Index. The Corporation's and employees' contributions to the plan during the year were as follows:

<i>(in thousands of dollars)</i>	2017	2016
Corporation's contributions	1,180	1,244
Employees' contributions	1,036	928

The President of the Treasury Board of Canada sets the required employer contributions based on a multiple of the employees' required contribution. The required employer contribution rate for 2017 was dependent on the employee's employment start date. For employment start dates before January 1, 2013, the Corporation's contribution rate effective at year end was 1.01 times (2016 – 1.15) the employee's contribution; and for employment start dates after December 31, 2012, the Corporation's contribution rate effective at year end was 1.00 times (2016 – 1.11) the employee's contribution.

The Government of Canada holds a statutory obligation for the payment of benefits relating to the Plan. Pension benefits generally accrue up to a maximum period of 35 years at an annual rate of 2 percent of pensionable service times the average of the best five consecutive years of earnings. The benefits are coordinated with Canada/Quebec Pension Plan benefits and they are indexed to inflation.

ii) Severance benefits

Since April 1, 2012, employees no longer accumulate severance benefits payable upon resignation or retirement. Employees were given the option to be paid the full or partial value of benefits earned at that date or to defer this payment until their departure from public service. The severance benefit liability represents the portion that employees chose to defer. This benefit plan is unfunded and thus has no assets, resulting in a plan deficit equal to the accrued benefit obligation. Benefits will be paid from future appropriations. The estimated average remaining service period of the employees is 7.3 years. The actuarial loss of severance benefits is amortized over 7.3 years.

Information about the Plan, evaluated by an actuary at the Statement of Financial Position date, is as follows:

<i>(in thousands of dollars)</i>	2017	2016
Accrued severance benefits obligation, at the beginning of year	1,144	1,441
Interest cost on benefit obligation	13	18
Actuarial loss on obligation	1	5
Severance benefits paid during the year	(327)	(320)
Accrued severance benefits obligation, end of year	831	1,144
Short term portion	122	144
Long term portion	709	1,000
	831	1,144

Assumptions in the actuarial evaluation include a discount rate of 2.40% (2016 – 1.31%), as well as an inflation rate of 1.90% (2016 – 2%). Included in the severance benefits obligation is a non-amortized actuarial loss of \$6,488 (2016 – \$7,084).

iii) Sick leave benefits

The Corporation has recorded an obligation related to sick leave benefits for its employees. The estimated average remaining service period of the employees is 12.1 years. The Corporation amortizes the actuarial gain of sick leave over the 12.1 years.

Information on these benefits, evaluated by an actuary at the date of the Statement of Financial Position consists of the following:

<i>(in thousands of dollars)</i>	2017	2016
Sick leave obligations, at the beginning of year	2,155	2,022
Current service cost	143	158
Interest cost on benefit obligation	27	30
Actuarial gain on obligation	(41)	(7)
Sick leave used during the year	(33)	(48)
Sick leave benefits, end of year	2,251	2,155
Short term portion	140	175
Long term portion	2,111	1,980
	2,251	2,155

Assumptions in the actuarial evaluation include a discount rate of 2.40% (2016 – 1.57%) as well as an inflation rate of 1.90% (2016 – 2%). Included in the sick leave obligation is a non-amortized actuarial gain of \$872,963 (2016 – \$497,595).

9. Deferred Capital Funding

Deferred capital funding represents the portion of the parliamentary appropriations and contributions from non-government sources used to purchase depreciable capital assets.

The deferred capital funding consists of the following:

<i>(in thousands of dollars)</i>	2017	2016
Used for acquisitions:		
Deferred capital contributions from non-government sources	2,406	2,101
Deferred capital funding through parliamentary appropriations	166,918	171,053
	169,324	173,154

Changes in the deferred capital funding balance are as follows:

<i>(in thousands of dollars)</i>	2017	2016
Balance, beginning of year	173,154	177,224
Add: Capital asset acquisitions	3,122	2,718
Less: Capital asset disposals	-	(2)
	3,122	2,716
Less amounts recognized as revenue:		
Contributions	(321)	(326)
Parliamentary appropriations	(6,631)	(6,460)
	(6,952)	(6,786)
Balance, end of year	169,324	173,154

10. Endowment Restrictions

An endowment fund for Systematic Entomology was received from Anne and Henry Howden in the principal amount of \$305,000, as well as a significant entomological collection. The endowment was established to enable professional studies and research of entomological collections for the Corporation. The principal amount was transferred to the CFO in 2014. In the event that the Corporation decides not to maintain entomological collections, the Systematic Entomology Endowment Fund shall be transferred, along with any entomological collections, to the Royal Ontario Museum.

On February 23, 2017 the Corporation received a large philanthropic gift of \$4 million from the Ross Beaty family in Vancouver, which will enhance the Museum's national research and collections efforts focused on species discovery. One million dollars from the \$4 million gift was endowed through the CFO to create the Beaty Post-Doctoral Fellowship for Species Discovery, which will fund post-doctoral scientists to investigate species at risk. As at March 31, 2017, the \$3 million was held in the restricted cash account and was transferred to the CFO on April 26, 2017. Annually, the Corporation will continue to receive the net investment income earned on funds held for endowment. The net investment income earned on resources held for endowment is \$18,544 (2016 – \$12,990). The total accumulated amount of deferred investment income earned on resources held for endowment is \$46,256 (2016 – \$28,300). This amount is available for activities related to systematic entomology. During the year, \$588 (2016 – 4,999) was recognized in the Statement of Operations.

11. Investment in Capital Assets

The investment in capital assets consists of the following:

<i>(in thousands of dollars)</i>	2017	2016
Capital assets	184,306	189,136
Less amounts financed by:		
Capital lease	(26,845)	(27,636)
Deferred capital funding	(169,324)	(173,154)
	(11,863)	(11,654)

The net change in investment in capital assets is calculated as follows:

<i>(in thousands of dollars)</i>	2017	2016
Net capital asset additions	3,122	2,716
Add: repayment of obligation under capital lease	791	717
Less: capital assets financed with deferred capital funding	(3,122)	(2,716)
Capital assets purchased with the Corporation's funds	791	717
Amortization of deferred capital funding	6,952	6,786
Amortization of capital assets	(7,952)	(7,790)
Net change in investment in capital assets	(209)	(287)

12. Parliamentary Appropriations

To achieve its mission, the Corporation relies on government funding. This government funding is comprised as follows:

<i>(in thousands of dollars)</i>	2017	2016
Appropriations received and receivable:		
Operating and capital budgets	29,441	26,129
Supplementary budgets	329	323
	29,770	26,452
Portion of parliamentary appropriations received in current year deferred for future capital projects	(2,240)	-
Previous year's appropriations used in current period to complete specific projects	-	516
Appropriations used to purchase depreciable capital assets	(2,462)	(2,457)
Amortization of deferred capital funding	6,631	6,460
Appropriations recognized during the period	31,699	30,971

13. Admission and Program Fees

Admission and program fees are comprised as follows:

<i>(in thousands of dollars)</i>	2017	2016
Admission fees – general	3,106	2,945
Admission fees – temporary exhibitions	995	816
Memberships	666	550
Programs	592	591
	5,359	4,902

14. Ancillary Operations

Ancillary operations are comprised as follows:

<i>(in thousands of dollars)</i>	2017	2016
Parking	860	802
Rental of facilities	783	741
Boutique and cafeteria leases	133	124
	1,776	1,667

15. Contributions

Contributions are comprised as follows:

<i>(in thousands of dollars)</i>	2017	2016
Cash contributions and sponsorships	1,218	1,281
In-kind sponsorships	408	303
Specimen donations	273	65
	1,899	1,649

16. Related Party Transactions

The Corporation is related to all Government of Canada departments, agencies and Crown corporations. The Corporation conducted transactions with these entities in the normal course of operations, under the same terms and conditions that applied to outside parties and recorded at the exchange amount.

<i>(in thousands of dollars)</i>	2017	2016
Revenues from Government of Canada related parties:		
Admission and program fees	-	2
Ancillary operations	29	-
Other (1)	224	174
	253	176

Includes rental revenue from Bank of Canada for \$170,543 (2016 – \$157,623).

<i>(in thousands of dollars)</i>	2017	2016
Expenses with Government of Canada related parties:		
Real property taxes	1,783	1,333
Personnel costs	1,495	1,583
Professional and special services	44	10
Information management infrastructure and systems	20	11
Marketing and communications	10	21
Freight and cartage	10	4
Operation and maintenance of buildings	7	8
Repairs and maintenance	3	1
	3,372	2,971

The following balances with Government of Canada related parties were outstanding at the end of year:

<i>(in thousands of dollars)</i>	2017	2016
Due from related parties	519	527
Due to related parties	949	449

The Corporation's related parties also include its key management personnel which consist of 4 members of its senior management team and 10 members of its Board of Trustees, and their immediate family members. Transactions with these individuals, excluding compensation arrangements, include contributions of \$67,659 (2016 – \$74,249).

17. Canadian Museum of Nature Foundation

The Canadian Museum of Nature Foundation (the "Foundation") was incorporated under the *Canada Not-for-profit Corporations Act* on November 29, 2016. The purpose of the Foundation is to receive or maintain a fund or funds and to transfer from time to time all or part thereof or the income therefrom to the Corporation. This is a separate and distinct legal entity, non-share capital Corporation. Steps were also taken to secure registered charitable status for the Foundation under the *Income Tax Act*. The Foundation will start its fundraising activities when its charitable status is confirmed. The Foundation's role is to design and implement a strategy and development plan that will raise as much financial support as possible to advance the mandate and vision of the Corporation with a focus on major donations. The Corporation has provided minimal services to the Foundation at no charge in order to establish the Foundation.

18. Contractual Obligations

As of March 31, 2017, the Corporation has contracts for operation and maintenance of building, professional and special services, information management infrastructure and systems, marketing and communications, and exhibitions with a remaining value of \$8,082,000 (2016 – \$5,075,437). Estimated future minimum payments under these contracts for the next 5 years are as follows:

<i>(in thousands of dollars)</i>	2018	2019	2020	2021	2022
Future minimum payments	6,020	1,283	675	54	50

19. Contingencies

In the normal course of its operations, the Corporation becomes involved in various claims or legal actions. Some of these potential liabilities may become actual liabilities when one or more future events occur or fail to occur. To the extent that the future event is likely to occur or fail to occur, and a reasonable estimate of the loss can be made, an estimated liability and an expense are recorded in the Corporation's financial statements.

As of March 31, 2017 and March 31, 2016, there were no claims against the Corporation.

20. Financial Instruments

A) Financial Risk Management

To achieve its mandate, the Corporation uses an enterprise risk management approach to manage risks proactively and prudently. The Corporation's Board of Trustees and Management ensure that an accountability regime, a governance structure, and systems are in place to appropriately manage risks through the systematic consideration of risk at the functional level. Management, in a timely and proactive manner will identify, assess, mitigate and monitor risks that may prevent the Corporation from achieving its objectives and priorities. There has been no change to the level of risk compared to the prior year and no changes in the risk management practices used to manage risks.

All of the following risks have no significant impact on the Corporation's financial statements.

i) Credit risk

The credit risk is one party to a financial instrument that causes a financial loss for the other party by failing to meet its financial commitments.

Accounts receivable

The Corporation is exposed to credit risk, through its normal commercial activities, on its accounts receivable of \$985,268 (2016 – \$1,046,498). Accounts receivables from Government of Canada departments, agencies and Crown corporations comprise 53% (2016- 50%) of the Corporation's accounts receivable, and no allowance has been provided for these amounts. In order to reduce this risk, the Corporation closely monitors the issuance of credit and collection of commercial clients, and the concentration of this risk is also minimized because the Corporation has a large and diverse customer base.

As at March 31, 2017, no accounts receivable were past due and no allowance has been provided for bad debt (2016 – \$1,320). The allowance for doubtful accounts is based on an account by account analysis that considers the aging of the account and the current creditworthiness of the customer. Accounts which have exceeded 120 days are considered past due.

Cash and Cash equivalents (unrestricted and restricted)

The Corporation is exposed to credit risk, through its operations of cash management. In order to reduce this risk, the Corporation has an Investments Policy that limits the Corporation to secure investments. The details of this policy are described in note 3 of these financial statements.

ii) Liquidity risk

Liquidity risk is the potential inability to meet financial obligations as they become due. The Corporation manages this risk by maintaining detailed cash forecasts, as well as long-term operating and strategic plans. The management of liquidity requires a constant monitoring of expected cash inflows and outflows which is achieved through a forecast of the Corporation's liquidity position, to ensure adequacy and efficient use of cash resources. The Corporation's financial liabilities are due within three months of the date of the Statement of Financial Position.

iii) Market risk

Market risk is the risk that the fair value or future cash flows of a financial instrument will fluctuate because of changes in market prices, whether those changes are caused by factors specific to the individual financial instrument of its issuer, or factors affecting all similar financial instruments traded in the market. Market risks comprise three types of risk: Currency risk, Interest rate risk, and Price risk. As the entire amount of cash and cash equivalents (unrestricted and restricted) was held in cash at March 31, 2017 and March 31, 2016, the Corporation is not exposed to market risk.

B) Fair value

All financial instruments are measured at cost. The statement of remeasurement gains and losses has been excluded as there have been no remeasurement gains or losses.

21. Summary of Expenses by Object

(in thousands of dollars)

	2017	2016
Personnel costs	13,597	13,716
Amortization of capital assets	7,952	7,790
Operation and maintenance of buildings	4,227	3,762
Professional and special services	3,008	2,513
Real property taxes	2,888	2,540
Interest on capital lease obligation	2,709	2,783
Information management infrastructure and systems	1,434	1,604
Marketing and communications	1,270	1,219
Exhibitions	1,116	1,198
Repairs and maintenance	838	821
Travel	477	404
Objects for collections	286	540
Freight and cartage	77	61
Other	166	75
	40,045	39,026

22. Comparative Figures

Certain comparative figures have been reclassified to conform to the current year's presentation.

Canadian Museum of Nature

nature.ca

Victoria Memorial Museum Building

240 McLeod Street, Ottawa, Ontario

Natural Heritage Campus

1740 Pink Road, Gatineau, Quebec

Information

613-566-4700 or 1-800-263-4433