Canadian Association for Conservation of Cultural Property

Association canadienne pour la conservation et la restauration des biens culturels

Image: D. Jarvis (Peggy's Cove, Nova Scotia)

45th Annual Conference & Workshops

PROGRAM | ABSTRACTS

Halifax, Nova Scotia
May 28-June 1, 2019

TO OBTAIN ADDITIONAL COPIES OF THIS PUBLICATION, PLEASE CONTACT:
THE CANADIAN ASSOCIATION FOR CONSERVATION OF CULTURAL PROPERTY
1554 CARLING AVENUE, UNIT 268, OTTAWA ON K1Z 7M4
TELEPHONE: 613.231.3977
E-MAIL: ADMINISTRATOR@CAC-ACCR.COM
WEB SITE: WWW.CAC-ACCR.CA

DALHOUSIE UNIVERSITY (HALIFAX, NOVA SCOTIA)

WE WOULD LIKE TO BEGIN BY ACKNOWLEDGING THAT THIS CONFERENCE TAKES PLACE IN MI'KMA'KI, THE ANCESTRAL AND UNCEDED TERRITORY OF THE MI'KMAQ PEOPLE.

THIS TERRITORY IS COVERED BY THE "TREATIES OF PEACE AND FRIENDSHIP" WHICH MI'KMAQ AND WOLASTOQIYIK (MALISEET) PEOPLE FIRST SIGNED WITH THE BRITISH CROWN IN 1725. THE TREATIES DID NOT DEAL WITH SURRENDER OF LANDS AND RESOURCES BUT IN FACT RECOGNIZED MI'KMAQ AND WOLASTOQIYIK (MALISEET) TITLE AND ESTABLISHED THE RULES FOR WHAT WAS TO BE AN ONGOING RELATIONSHIP BETWEEN NATIONS.

TABLE OF CONTENTS

2019 CONFERENCE ORGANIZING COMMITTEE

National Conference Committee

Alison Freake (Registration, Finances, Sponsorship)
Lisa May (Conference Venue, Social Events, Tours)
Kendrie Richardson (Program, Translation, Workshops, Communications)

Workshops

CAC TRAINING COMMITTEE

Adriane Van Segglen
Elspeth Jordan
Cindy Colford

Workshop Partner - Canadian Conservation Institute

Planning Volunteers

Cindy Colford (Website, Program)
Emilie Demers (Social Events – Silent Auction)
Moya Dumville (Social Events – Banquet)
Tiffany Eng Moore (Communications)
Elizabeth Jablonski (Local volunteer)
Elspeth Jordan (Communications)
Victoria Kablys (Social Events – ECC Trivia Night)
Susannah Kendall (Tours)
Sarah Little (Social Events – Reception)
Ian Loughead (Local volunteer, Tours)
Kellie McIvor (Local volunteer)
Tania Mottus (Communications)
Shannon Parker (Workshop)
Erika Range (Social Events – ECC Trivia Night

ACKNOWLEDGEMENTS

The CAC Halifax 2019 conference organizing committee gratefully acknowledges the generous contributions of the following:

Coffee break supporters:

- Golden Artist Colors
- Assurart

Our thanks to the following businesses that have made generous contributions to the delegate bags:

- Gaylord
- Protect Heritage Corporation

2018-2019 CANADIAN ASSOCIATION FOR CONSERVATION BOARD OF DIRECTORS

BOARD OF DIRECTORS

President
Alison Freake

Vice-President
Lisa May

Secretary
Kathy Bond

Treasurer
Rebecca Latourell

Executive Councillors
Kasey Lee
Tania Mottus
Claire Titus

Strategic Alliance Liaison Councillor
Gyllian Porteous

Eastern Regional Councillor
Rachel Benjamin

Western Regional Councillor
Elisabeth Czerwinski

CAC Administrator
Alexandra Wennberg Parliament

CAC COMMITTEES

Bulletin
Laura Hasimoto, Kendrie Richardson, Katie Fisher, Patrick Gauthier

Communications Committee
Tania Motus

ECC (Emerging Conservators Committee)
Erika Range, Victoria Kablys

Grants and Awards Committee
Alyssa Becker-Burns, Kasey Lee

Journal
Irene Karsten

Membership Committee

Training Committee
Adriane VanSeggelen, Elspeth Jordan

Translation Committee

CAC Ad Hoc Advocacy Committee
Natasa Krsmanovic, Gyllian Porteous, Sophia Zweifel

REGIONAL REPRESENTATIVES

Yukon
Valery Monahan

Northwest Territories
Rosalie Scott

British Columbia
Mauray Toutloff

Alberta
Katie Fisher

Saskatchewan

Manitoba
Stephanie Chipilski

Toronto
Alicia Coutts

Kingston
Fiona Graham

Ottawa
Caitlyn Picard

Montréal
Nathalie Richard

Québec City
Rachel Benjamin

New Brunswick
Dee Stubbs-Lee

Nova Scotia
Elizabeth Jablonski

Newfoundland and Labrador
Donna Teasdale

SPECIAL EVENTS

CAC EMERGING CONSERVATORS COMMITTEE TRIVIA NIGHT

Wednesday, May 29, 2019, 7:00pm – 9:30pm
Lower Deck – Beer Market, 1887 Upper Water Street, Halifax, NS

Put on your thinking caps and join us for an evening of fun, good company, and friendly competition. Participation is free, so come test your knowledge on all things pop culture, history, art, literature, animals, geography, and of course, conservation!
Food and drink are available for individual purchase.

Free live music to follow trivia event.

CONFERENCE POST-DINNER RECEPTION

Thursday May 30, 2019, 7:00 pm – 9:00 pm
Canadian Museum of Immigration at Pier 21, Rudolph P. Bratty Hall, 1055 Marginal Road, Halifax, NS

CAC invites conference delegates to experience the multicultural heritage of our nation through guided tours of the exhibits and interactives in the Rudolph P Bratty Hall. Catch up with longstanding colleagues and meet new ones while taking in the breathtaking views of the Halifax Harbour.

Complementary post-dinner snacks and first beverage
Cash bar

CONFERENCE BANQUET & SILENT AUCTION

Friday May 31, 2019, 6:30 pm – 10:00 pm
Halifax Citadel National Historic Site, 5425 Sackville Street, Halifax, NS

Join other conference delegates for a night of delicious food, good conversation and fierce bidding wars! A Highlands Piper will greet delegates who will enjoy a buffet dinner in the elegant North Magazine Garrison Room, the annual silent auction in the Naval Room, and 30 minute guided tours of the historic site. There is also the opportunity to congratulate the Charles Mervyn Ruggles and Emerging Conservator award winners.

Ticket cost: $95.00 per person
Ticket includes: buffet dinner, first beverage, and guided tour
Cash bar
Delegates provide own transportation

CAC ADVOCACY COMMITTEE BROWN BAG LUNCH SESSION

Saturday June 1, 2019, 11:55 am – 13:25 pm
Dalhousie University, Scotiabank Auditorium, Marion McCain Arts and Social Sciences Building, 6135 University Ave, Halifax, NS

Interested in raising conservation awareness through social media? Want to be more engaged politically? Have an upcoming talk for which you need to explain the importance of conservation? Join the Advocacy Committee for a brown bag lunch session on Saturday, June 1 in Halifax to learn how to utilize the Advocacy Toolkit's resources to your advantage! The Toolkit, a series of resources to encourage and empower Canadian conservators to advocate for conservation, will be discussed in detail, expanding on each resource and offering direction on the potential ways they can be used.

TOURS

ART GALLERY OF NOVA SCOTIA

Thursday May 30, 2019, 3:10pm – 5:30pm

Behind-the-scenes tour of collections and conservation spaces, explaining what staff do, the gallery's focus (preventative/active conservation, current storage, and related projects), and how the gallery utilizes and functions in a renovated historic building continually updated by the province. Tour members will explore vault storage as well as walk through the exhibition spaces.

NOVA SCOTIA MUSEUM OF NATURAL HISTORY

Thursday May 30, 2019, 3:10pm – 5:30pm

Behind-the-scenes tour of collection storage areas, which will include a discussion about the unique issues involved in accessioning, storage, handling and conservation.

THE MARITIME MUSEUM OF THE ATLANTIC

Thursday May 30, 2019, 3:10pm – 5:30pm

Behind-the-scenes tour led by Roger Marsters, Curator of Marine History, and Amber Laurie, Assistant Curator/Registrar of Marine History; both part of the Nova Scotia Museum Collections Unit. Tour members will see multiple artifact storage areas and then be able to walk through the exhibition spaces.

GOVERNMENT HOUSE

Thursday May 30, 2019, 3:10pm – 5:30pm
A tour of Government House will include viewing the Main Foyer, Grand Staircase, Ballroom, Morning Room, Drawing Room, and Dining Room. There will also be a discussion on the treatment and display of four WWI Colours with Ann Shaftel.

PRE-CONFERENCE WORKSHOPS

GELLAN GUM: THEORY AND APPLICATIONS

Tuesday, May 28 and Wednesday, May 29, 2018 – 9:00 am – 4:30 pm (each day)
Location: Art Gallery of Nova Scotia ▪ 1723 Hollis Street ▪ Halifax, NS

In the past several years the use of rigid polysaccharide hydro-gels has increased in paper conservation, and is expanding to other porous materials. Gellum gum is one of the least expensive hydrogels, and was initially tested by paper conservators at the ICPAL in Rome. This workshop will introduce the chemistry, material properties and theory of gel use, augmented by case studies showing various aspects of the gel in action. After providing this theoretical grounding, the majority of the workshop will be spent exploring hands-on applications. Participants will be encouraged to bring didactic samples for experimentation. The two-day workshop will explore:

- Gel preparation:
  - The effects of variations of concentrations and film thicknesses for both the standard low-acyl gellan and the combined low- and high-acyl gellan gum
  - Methods for adding various reagents to the gels (chelators, enzymes, reducing agents and deacidification agents)

- Treatment applications:
  - Overall washing of paper-based objects
  - Local applications for controlled wetting (e.g. paper backing removals, removal of book spine linings, removal of paper labels off paintings or other artifacts)
  - Localized tideline or stain-reducing techniques
  - More complex washing treatments: paper objects with sensitive media, textiles, photographs, three-dimensional artifacts etc.
  - Gel delivery of aqueous reagents

Though taught from the perspective of paper conservators, and building largely on case studies of the treatment of paper artifacts, participants from other conservation disciplines who are interested in controlled aqueous treatments are also welcome to attend.

Instructor Biographies:

Crystal Maitland joined the Canadian Conservation Institute (CCI) in 2015 as their Works of Art on Paper Conservator, having returned to Canada after a seven-year stint as the Paper Conservator for the Johns Hopkins University Sheridan Libraries and Museums in Baltimore, MD. Crystal received both her Masters of Art Conservation (MAC) in paper conservation and her Honour Bachelors of Chemistry from Queen's University. In addition to using gellan gum in treatments, Crystal has experimented with gellan gum applications and is interested in exploring the boundaries of the gel preparation methods for applications both inside and outside the paper lab.

Greg Hill is Senior Conservator of Archival and Photographic Materials at the Canadian Conservation Institute where he conducts treatments, contributes to a range of research projects and presents workshops for the archival and fine art community across Canada.

Prior to CCI, Greg worked at Library and Archives Canada in a variety of capacities including Head of Prints and Drawings Conservation and Photograph Conservation, preservation advisor for the former Portrait Gallery of Canada and technical advisor for the new nitrate film storage vault building project. He has spoken and written on a range of subjects related to the conservation and preservation of archival and photographic materials.

SHIBOIRI + INDIGO DYE WORKSHOP

Wednesday, May 29, 2019 – 9:00 am – 4:00 pm
Location: Centre for Craft Nova Scotia ▪ 1061 Marginal Road ▪ Halifax, NS

Indigo dye is breathtaking – experience the magic as the fabric changes from lime green to indigo blue before your eyes. Shibori is the ancient Japanese form of dyeing that revolves around different ways of binding and folding fabric to create different patterns and is most commonly practiced with indigo. We will make a variety of shibori samples exploring both Nui (stitched) and itajime (bound and resist) designs. The fabric samples are large enough to be used as Furoshiki (Japanese wrapping cloth) which are both beautiful and functional. They can be used for a lunch bag alternative, an eco-wrapping technique, or scarf or garment.

Instructor Biography:

Kate Ward is an interdisciplinary artist and educator whose research driven practice investigates the relationship between art, ritual spaces and cultural meaning. Her practice engages with issues of public space and social engagement in contemporary cultures, drawing references from the geolithic, neolithic, through to modern neuroscience technologies.

2019 CAC CONFERENCE PROGRAM

University of Dalhousie, Scotiabank Auditorium, Marion McCain Arts and Social Sciences Building
6135 University Ave, Halifax, NS B3H 4P9

Thursday, May 30 – Day 1

8:00 – 8:30	REGISTRATION & DELEGATE BAG PICK-UP
8:30 – 9:00	WELCOME &INTRODUCTIONS
9:00 – 9:45	**Per Guldbeck Memorial Lecture** Karin Kierstead, Association of Nova Scotia Museums
9:50 – 10:20	BREAK Sponsored by ASSURART
SESSION 1 – NOVA SCOTIA HIGHLIGHTS Session Chair – Ian Loughead	
10:25 – 10:45	**A Series of Unfortunate Events, Now a Race Against Time – Saving Leduc's Murals** *Michelle Gallinger*
10:50 – 11:10	**Home in Nova Scotia** *Ann Shaftel*
11:15 – 11:35	**The Salzinnes antiphonal project continued: treatment and exhibition of a 16th century liturgical manuscript** *Christine McNair*
11:40 – 11:45	Q & A
11:50 – 13:20	LUNCH **CAC-ACCR REGIONAL REP MEETING** (Scotiabank Auditorium)
SESSION 2 – PAPER CONSERVATION Session Chair – Crystal Maitland	
13:30 – 13:50	**For the Birds: Revisiting Backing Removal with the Audubon Collection at Library and Archives Canada** *Laura Hashimoto*
13:55 – 14:15	**Unconventional Uses of Conventional Treatments: Three Case Studies in Paper Conservation** *Kyla Ubbink*
14:20 – 14:40	**Fragments of Frankliniana: The Conservation of Arctic Exploration-Related Paper** *Amanda Gould & Doris St-Jacques*
14:45 – 14:50	Q & A
14:55 – 15:10	BREAK
15:10 – 17:30	**TOURS** Art Gallery of Nova Scotia Maritime Museum of the Atlantic Nova Scotia Museum of Natural History Government House of Nova Scotia
19:00 – 21:00	**CONFERENCE POST-DINNER RECEPTION** *Canadian Museum of Immigration at Pier 21, Rudolph P. Bratty Hall*

Friday, May 31 – Day 2

8:30 – 8:45	REGISTRATION
8:50 – 8:55	ANNOUNCEMENTS
Session 3 – CARING FOR COLLECTIONS Session Chair – Cindy Colford	
9:00 – 9:20	**Insights from the 2018 Canadian Collections Care Survey** *Gyllian Porteous & Sophia Zweifel*
9:25 – 9:45	**Revisions to the ASHRAE chapter and the CCI web pages on climate control specifications for 2019** *Stefan Michalski*
9:50 – 10:10	**Energy Management of Heritage Facilities** *Eric Hagan*
10:15 – 10:20	Q & A
10:25 – 10:55	BREAK Sponsored by GOLDEN ARTISTS COLOURS
Session 4 – COLLECTIONS CARE IN ACTION Session Chair – Dee Stubbs-Lee	
11:00 – 11:20	**"You Wanna Put What in the Gallery?!": Displaying Live Hide Beetles (D. maculatus) at the Royal Saskatchewan Museum** *Victoria Kablys*
11:25 – 11:45	**Better Safe than Sorry: Creating a Hazardous Materials Manual for Museum of Vancouver** *Fiona Hernandez* & Hayley *Monroe*
11:50 – 12:10	**We Like to Move It, Move It: creating successes in a challenging collections move** *Erika Range*
12:15 –12:20	Q & A
12:25 – 13:55	LUNCH **CAPC General Meeting** (Scotiabank Auditorium)
Session 5 – COLLECTIONS CARE IN ACTION CONTINUED Session Chair – Tania Mottus	
14:00 – 14:20	**Excellent, Good, Fair, or Poor: A discussion on the Use and Development of Effective Rubrics for Heritage Collections** *Mikaela Marchuk*
14:25 – 14:45	**Beyond the Code: Ethics and private practice conservation** *Kyla Ubbink*
14:50 – 14:55	Q&A
15:00 – 15:30	BREAK
15:35 – 17:35	CAC-ACCR ANNUAL GENERAL MEETING
18:00 – 22:00	**BANQUET** *The Garrison Room, Halifax Citadel National Historic Site*

Saturday, June 1 – Day 3

8:30 – 8:45	REGISTRATION
8:50 – 8:55	ANNOUNCEMENTS
Session 6 – SHORT PAPERS (5 MINUTES) Session Chair – Diana Komejan	
9:00 – 9:40	**Unlocking the Potential in La Doll Clay as the New Filler Material for Ceramics** *Sally Gunhee Kim*
	Accumulative Ritual Surfaces on Yaka, Teke and Bidjogo Figures: Ethical Considerations and Material Analysis *Charlotte Parent*
	Securing a Seat for the Prince of Wales: Minimally Intrusive Repairs to the Structural Upholstery of a Bespoke Jacques & Hay Chair *Amanda Salmon*
	Thataway Again, an Evaluation of an Anti-Graffiti Coating for Outdoor Painted Steel Sculpture *Carolyn Savage*
	Mounting the Insurmountable: A Non-adhesive Method for Mounting and Framing Unconventional Books *Laura Fedynyszyn*
9:45 – 9:50	Q & A
9:55 – 10:25	BREAK/POSTER SESSION
Session 7 – OBJECT CONSERVATION Session Chair – Miriam Harris	
10:30 – 10:50	**Modelling Nature: Understanding Conservation Issues in the Blaschka Glass Flowers** *Scott Fulton*
10:55 – 11:15	**No Easy Tusk: Reversal of Preparation Work, and Re-treatment of Unstable Mammoth Tusks at the Royal Alberta Museum** *Gigi Kulis & Susan Green*
11:20 – 11:40	**Industrial Conservation at Parks Canada: Approaches to the preservation of Canada's industrial history** *Antoine Pelletier & Megan O'Connor*
11:45 – 11:50	Q & A
11:55 –13:25	LUNCH **CAC ADVOCACY TOOLKIT BROWN BAG SESSION** (Scotiabank Auditorium)
Session 8 – OBJECT CONSERVATION CONTINUED Session Chair – Carolyn Leckie	
13:30 – 13:50	**The Mysterious M1: Reflections of the Treatment of a Mi'kmaq Basket** *Anne MacKay*
13:55 – 14:15	**Conservation of the Mayo Lodge No 3 Yukon Order of the Pioneers silk banner** *Gail Niinimaa*
14:20 – 14:40	**Preserving the Beauty of the Beasts: Conservation of Taxidermy Ornithology and Mammalogy Specimens at the Royal Alberta Museum** *Gigi Kulis*
14:45 –14:50	Q & A
14:55 – 15:00	CLOSING REMARKS

A SERIES OF UNFORTUNATE EVENTS, NOW A RACE AGAINST TIME – SAVING LEDUC'S MURALS

Michelle Gallinger, The Art Gal (private practice)

Ozias Leduc has long been recognized as the premier historic church painter in Quebec. His paintings hang in the National Gallery, and he has been acknowledged with a Commemorative stamp. He also has over thirty church and chapel interiors to his name. Despite all this recognition, it wasn't until January 2018 that he was finally designated as a Person of National Significance to Canada. St. Ninian's Cathedral in Antigonish, NS holds one of his earlier masterpieces of interior church decoration. It is the only church in Canada, outside the province of Quebec that he painted, and the only one that has not been restored. This paper will explore the history of the cathedral and the significant interior changes that have occurred since Leduc completed the murals in 1903. In the intervening 100 + years, the interior has undergone many significant changes, including repaintings that have completely altered Leduc's original work. With as many as 7 layers of overpaint and plaster, less than 1/3 of the original interior design is visible today. In addition, those areas that have not actually been painted over have still been dramatically modified. Only recently, within the last 20 years, were the Leduc paintings in St. Ninian's actually recognized as historically significant. Feasibility studies were conducted, and a master restoration plan for the interior was developed. Prior to 2008, hopes were high for the eventual recovery of large areas of the original design. Cue the series of unfortunate events. The restoration funding was re-directed to Reparation, and, together with a major change in the diocese officials and the collapse of the restoration committee, brought an indefinite hiatus. Shortly thereafter, a long undetected steam leak in the basement led to raining in the attic and inside the walls. The dramatic increase in humidity caused the heavy layers of overpaint to peel away, literally ripping the murals underneath away from the walls and ceilings. So began a race against time to save the murals, with many thousands of square feet of decorative painted surface requiring intervention. St. Ninian's is a popular sanctuary and regularly used for weddings and funerals which make scaffolding an unwanted eyesore. Many of the parishioners complained about the large expanses of flaking paint and the overall disreputable interior appearance of their otherwise beautiful church. In fact, scraping and repainting of the walls had already been done with no regard for what lay beneath. A few members of the church understood what Leduc represented and wanted to salvage the murals, but the Catholic Church had no funds to contribute. The two factions were at odds. What they needed was a realistic option that would mollify both camps. Enter the fine arts conservator.

AT HOME IN NOVA SCOTIA

Ann Shaftel, Tsondru Conservation (private practice)

I live in Nova Scotia and work internationally most of the year. Thus, I especially value working in my home province on projects of importance to Nova Scotia. This richly illustrated presentation describes three diverse, high profile and challenging hands-on treatment projects in Nova Scotia.

Each project differs in approach and details of treatment technique. This diversity can be seen in many aspects such as legal ownership and current guardians, funding model and financial constraints, time allotment, and location of the work. There is also the collaboration with conservators and allied professionals, and conservation outreach on TV, social media and through international professional conferences.

The Liberator
The Painted Banner, the Liberator, is a large, double-sided heavy silk painted banner from 1875. The Sisters of Charity at St. Patrick's Convent did most of the sewing and Halifax artist C.C. Green painted the portraits of "The Liberator" Daniel O'Connell directly on the heavy green silk – twice The two large pieces of silk were sewn together to form the banner and edged with gold coloured ribbon. The banner was used in outdoor parades in our misty and salty maritime climate. It was then rolled up tightly for storage while still damp.. This painted textile conservation treatment project took place in the Nova Scotia Archives building, with continuous advice from both textile and painting conservation colleagues internationally. The original banner is now on display at Saint Mary's University Library, and a replica banner for use in the yearly Saint Patrick's Day parade, and for Charitable Irish Society functions.

WWI Colours
The Great War King's and Regimental Colours of the 25th and 85th Battalions, Canadian Expeditionary Force were stabilized with Esther Methe, previous to installation on their staffs, in a place of honour at Government House, on Barrington Street in Halifax. The four colours were quite fragile, and the treatment procedures differed for each according to the way it was originally embroidered and sewn, how it had been used, and displayed in its history.

The Painted Room
Sinclair Inn Painted Room Project took place in the Acadian Soullard homestead in the town of Annapolis Royal, one of the oldest wooden buildings in Canada dating from 1710. In the 1990s, a roof leak on the north wall revealed the existence of a large wall mural hidden beneath layers of wallpaper in an upstairs room, including early Masonic iconography. Challenges included the location in an historic building across the street from the ocean, removal of several layers of wallpaper, high lead content paint mixed unevenly by itinerant painters and applied on top of prior paintings on crumbling walls, and spider infestation. The wall paintings conservation project took place with continuous input from many conservation colleagues, especially the Canadian Conservation Institute for scientific investigation and heritage architecture knowledge.

THE SALZINNES ANTIPHONAL PROJECT CONTINUED: TREATMENT AND EXHIBITION OF A 16TH CENTURY LITURGICAL MANUSCRIPT

Christine McNair, Canadian Conservation Institute
Lynn Curry, Library and Archives Canada (retired)

The Salzinnes Antiphonal is a 16th century liturgical manuscript from the collection of the Patrick Power Library, Saint Mary's University, Halifax, Nova Scotia. Originating from the Abbey of Salzinnes in Namur (now part of present day Belgium), the Salzinnes Antiphonal was commissioned by the former cantrix and prioress Dame Julienne de Glymes in 1554-1555. In 2007, the Salzinnes Antiphonal came to the Canadian Conservation Institute (CCI) for technical examination in order to determine its condition and need for conservation treatment. The manuscript consists of two volumes containing 240 parchment folios, which were previously bound together in a contemporary binding with leather and brass over wooden boards with evidence of previous (19th-20th century) binding repairs. The music and text are written in iron gall ink on parchment, with numerous foliated initials, six elaborate historiated initials and six vibrant full page illuminations. The project was undertaken in collaboration with Library and Archives Canada, and in consultation with Judy Dietz, Associate Curator of European Historical Art at the Art Gallery of Nova Scotia. After the extensive examination, CCI agreed to take on the antiphonal's conservation. In order to come up with ethical treatment solutions, the book conservator and the paper conservator at CCI consulted with several conservators in order to develop a treatment methodology for this large scale book. The largest conservation concern was the consolidation of the media and the detached wooden boards. The book would be returning to its owner in a minimally controlled library environment. Although the book was in fair condition overall, the damage to the pigments was extensive and had been aggravated by the detachment of the boards. The goal of our intervention was to consolidate the media and re-attach the boards while minimally interfering with intact portions of the previous 16th century binding. The full treatment was done co-operatively by several book and paper conservators and included assistance from furniture and textile conservators. The collaborative aspect was unique, as it lead to a complex multi-leveled project which relied upon skills from many different disciplines over an extended period of time. Several steps of the treatment were done with two or more conservators simply due to the size of the book. After treatment, a pressure wrap was further designed at CCI to apply gentle overall pressure to the manuscript now that its boards were attached. This paper provides background on the treatment of the antiphonal as well as the ethical quandary of developing a sound methodology for the treatment of the uncommon artefact in a Canadian context. Aspects of exhibition decision-making will also be addressed as the project culminated in the return of the artefact with to coincide with a large six month exhibition at the Art Gallery of Nova Scotia. Curated by Judy Dietz, the exhibition focused on the manuscript, its conservation, and the Antiphonal's historic and spiritual meaning within Canada.

FOR THE BIRDS: REVISITING BACKING REMOVAL WITH THE AUDUBON COLLECTION AT LIBRARY AND ARCHIVES CANADA

Susannah Kendall, Marie-Ève Gaudreau-Lamarre, and Laura Hashimoto*, Library and Archives Canada

In 2010, the Prints and Drawings conservation lab at Library and Archives Canada (LAC) embarked on a long-term project to treat over 360 John James Audubon Birds of America (1827-1839) and Viviparous Quadrupeds of North America (1845-1848) prints. LAC acquired these individual prints in 1970 as part of the W.H. Coverdale collection of Canadiana. They were formerly displayed in the Manoir Richelieu hotel (La Malbaie, Quebec) since their acquisition by Canada Steamship Lines in the early 1930s. It is important to note that little is known about the prints prior to their acquisition by Coverdale. The Audubon prints were received in varying condition, most visible in the discolouration caused by up to 40 years of display in the hotel's taverns and dining rooms. Contact with acidic materials, exposure to light, and fluctuations in relative humidity and temperature all contributed to the degradation of the artworks. The prints' candidacy and need for interventive conservation treatment was readily apparent. After an initial survey, it was found that approximately 95% of all prints had been fully pasted onto a thick, pressed, and acidic cardboard backing presumably in the early 1930s as part of the mounting process. It was evident that backing removal would be the most time consuming and challenging step in their conservation; being able to remove this backing as efficiently and safely as possible became the main focus. Several backing removal techniques were tested over the years. Due to the extreme thickness of the backing and its' cohesive and non-laminate structure, various extents of dry mechanical removal were tested to determine the optimal backing thickness to facilitate removal by humidification. Additionally, humidification techniques tested included the use of Gore-Tex, methylcellulose, gellan gum, brushed warm water, steam, warm wet blotters, and enzymes. Mechanically thinning down the backing to the last or second to last layer followed by a warm wet blotter humidification treatment was found to be the safest and most time efficient technique. There are a number of additional attenuating factors in backing removal efficacy, including the interactions between watercolour and printing ink media with the paper substrate, the often liberally-applied adhesive, and prolonged exposure in an uncontrolled environment. These factors may or may not play a role in the difficulties LAC conservators have encountered during the course of ongoing treatment. This presentation discusses data collected from a survey of previously treated Audubon prints, and the results of investigations into these contributing factors. These efforts have allowed the conservators to better place LAC's artworks in the context of previously disseminated knowledge and research of Audubon's prints, and will further contribute to the study of these seminal works. It is our hope that these techniques and approaches to backing removal prove useful to conservators who may face similar challenges.

**denotes presenter*

UNCONVENTIONAL USES OF CONVENTIONAL TREATMENTS: THREE CASE STUDIES IN PAPER CONSERVATION

Kyla Ubbink, Ubbink Book and Paper Conservation

The challenges faced by conservators frequently call upon us to devise and execute new treatment strategies. These are the projects that conservators love the most. The excitement of bringing together all of our previous training, the opportunity to collaborate with colleagues, and the chance to discover something new stimulates creativity. Three case studies, where collaboration and adaptation resulted in applying standard treatment techniques in unconventional ways, will illustrate how drawing upon a wide variety of knowledge and skills results in successful and satisfying treatments for difficult projects. The first example is a set of manuscript pages exposed to tuberculosis. Browned to the point where the text was illegible, and too embrittled for digital enhancement, this work by renowned Indian poet, scientist and revolutionary, Professor Puran Singh, had been deemed lost. Collaboration with Queen's University for analytical testing coupled with research into historical disease control indicated that Camphor Oil had been used as a disinfectant and was the likely culprit of deterioration. Drawing upon past experiences with pushing heating oil out of paper, a treatment using acetone was devised and applied. The result was a brightened paper with greater contrast enabling legibility, and the ability to proceed with standard washing and lining to strengthen to paper. A seventeenth century Qur'an blocked together due to water and mould damage inspired research into middle-eastern paper, inks and bindings. It also required calling upon the knowledge of book and paper conservators at the Canadian Conservation Institute and the Library of Alexandria. The first attempts to separate the heavily sized paper proved slow and detrimental. Wetting and steaming the pages layer by layer caused uneven saturation of underlying pages and incubation of the mold. Instead, drawing from techniques used for removing prints from backing boards presented a solution that sped up the process, prevented further mould growth, and resulted in successful separation of the pages. When a nineteenth century, shellac coated, intaglio print is encrusted in dirt that cannot be removed through surface cleaning, a new approach to treatment is indispensable. The shellac coating prevented direct submersion for dirt removal, and surface cleaning caused the grime to chip taking surface layers with it. Various alcohols alone and in combination with water, which were hoped to remove the shellac and dirt together, did not dissolve, nor permeate through, the encrusted layer of grime. The only method that proved viable was spot washing with cotton pads in a way more typically employed by painting conservators. Once the layer of dirt was cleaned away, shellac removal and aqueous treatment could proceed as usual returning life to a community treasure. Finding new approaches and tactics to conservation challenges ensures that the opportunities for creativity in our field never cease. Each of these cases employed standard solvents used in unique ways to treat paper artifacts. Designed using a culmination of experience, testing, historical research, collaboration and consultation, these cases illustrate how we use creativity to adapt standard treatments to successfully tackle conservation challenges.

FRAGMENTS OF FRANKLINIANA: THE CONSERVATION OF ARCTIC EXPLORATION-RELATED PAPER

Amanda Gould, Canadian Museum of History
Doris St-Jacques, Library and Archives Canada

Most of the paper retrieved from the Arctic has been from sites where cairns were erected or where caches of stores were deposited by 19th and early 20th century explorers. This presentation details the ongoing investigation and conservation treatment of the contents of an artifact left in the Canadian Arctic in 1850 by parties in search of the missing Franklin Expedition.

Retrieved from a barren Arctic beach 100 years later, it was deposited with not one, but two national collecting institutions in Ottawa. There it rested mostly unexamined for another fifty years until preparations for the exhibition *Death in the Ice, The Mystery of the Franklin Expedition*,* renewed interest in the artifact and its contents. In late 2015, a peek at small fragments of paper located at the bottom of a rusted, hole-ridden metal canister in a collections storeroom at the Canadian Museum of History in Gatineau, Quebec revealed the printed words 'Lady Franklin.'

This triggered an investigation that showed that those fragments had long ago been detached and separated from larger pieces of paper. It was then discovered that those larger pieces reside just down the Ottawa river in a collections storeroom at the Library and Archives Canada Gatineau Preservation Centre. Now, a partnership between conservators at both institutions is reuniting these fragments in a way not possible in 1950, and revealing the messages left behind on an Arctic beach a full century before that.

** Developed by the Canadian Museum of History, in partnership with Parks Canada Agency and with the National Maritime Museum (UK), and in collaboration with the Government of Nunavut and the Inuit Heritage*

INSIGHTS FROM THE 2018 CANADIAN COLLECTIONS CARE SURVEY

Gyllian Porteous, Warren Lasch Conservation Center
Sophia Zweifel, City of Calgary Public Art

In May 2018, the Canadian Association for Conservation of Cultural Property (CAC-ACCR), in special partnership with the Canadian Association of Professional Conservators (CAPC-ACRP), launched the Canadian Collections Care (CCC) Survey. With a total of 389 responses over a period of 2 months, the CCC survey collected information relating to: human, financial and material resources available to support collections care; collection policies and procedures; threats to collections; collection access and use; and issues related to indigenous cultural heritage collections.

The survey results are compared by region and institution size, and changes over the last 20 years to collection size and staff resources are captured. The survey identifies the most prevalent risks to collections faced by Canadian institutions, and elucidates the capacity of those institutions to address these risks. The implementation of key collections management policies and plans, such as de-accessioning policies, re-patriation policies, emergency plans, and digital collection preservation plans, are also reviewed.

This paper will discuss the approach taken in the development and implementation of the CCC survey, as well as the successes, difficulties, and lessons learned throughout the process. Key findings from the CCC survey report will be highlighted and strategies to address these issues will be discussed. The full CCC survey report is available to CAC members on the CAC-ACCR website.

REVISIONS TO THE ASHRAE CHAPTER AND THE CCI WEB PAGES ON CLIMATE CONTROL SPECIFICATIONS FOR 2019

Stefan Michalski, Canadian Conservation Institute

Twenty years ago, the Canadian Conservation Institute (CCI) decided to forego an update of its Technical Bulletin on climate guidelines and to accept an invitation to contribute to a new chapter on museums, galleries, archives and libraries in the HVAC engineers' bible – the ASHRAE handbook. The goal was a single reference point trusted by both conservators and engineers. The first chapter appeared in 1999, and although the handbook is revised every four years, the section on climate control specifications (led by the author) remained unchanged. CCI adopted the ASHRAE chapter as the basis of its advice on the subject, and created a web page in 2009 to further explain its application. For the 2019 edition, the chapter committee undertook a complete rewrite. Members came from CCI, Getty Conservation Institute, Yale Institute of the Preservation of Cultural Heritage, Image Permanence Institute, and the private sector. The author led the section on climate control specifications. He is also revising CCI's web page on the topic, initially to address complaints that the existing pages were unclear, and now to keep it consistent with the revised chapter. The AA, A, B, C, and D schema has been maintained. Definitions of the risks and benefits of each category have been clarified but not changed. The specifications for each category have changed slightly, based on the committee's understanding of the best available literature and experience. Part of the change has been in "the numbers," especially for temperature, but a more important change has been a restructuring of how one arrives at the decision. The new chapter section provides a decision process that emphasizes sustainability. Information on the influence of local climate and the building envelope has expanded. Only then does one select an annual average for temperature and RH. The 1999 edition did note that these annual averages could be the local historic average, but it is now emphasized as a logical option in an era of sustainability pressures. The target of 50% RH and 21°C annual average has been relegated to special loan agreements. The wide choices in annual averages, however, created a new problem: in combination with tolerable fluctuations, the final result may go beyond absolute boundaries that the committee agreed were problematic, e.g., temperatures climbing too high for general levels of chemical deterioration, or RH levels dropping to levels where shrinkage and stiffness became problematic. The solution was to define "outer limits" for each category of control. In summary, there are now three components to a climate control specification, not just two: the annual averages, the fluctuations around those averages, and the outer limits ("the box") within which one can select any combination of average plus fluctuation. The author also provided new equations, graphs and tables for temperature selection and seasonal adjustments for cool and cold storage. Jean Tetreault (CCI) led a complete revision of the pollutants text and tables. The new CCI web pages will be more succinct and yet more detailed, achieved by use of a look- up field for objects or collections. A tailored explanation of vulnerabilities, risks, and appropriate ASHRAE target then appears.

ENERGY MANAGEMENT OF HERITAGE FACILITIES

Eric Hagan* and Tom Strang, Canadian Conservation Institute

Managing the energy consumption of our buildings is an increasing priority due to rising energy costs, and awareness about the influence of CO2 emissions on climate change. In an effort to curb consumption, many regions are moving toward mandatory reporting of utilities data for commercial facilities using software tools for benchmarking and performance analysis. Even if we are not currently implicated in this trend, museums, galleries, and archives can play an important role by working to address a variety of inefficiencies. At a macro level, it is apparent that improved knowledge in several areas would broadly help in this effort: 1. the current state of energy use for different types of heritage facilities; 2. efforts being taken to reduce energy within the heritage sector and the related needs, and 3. the energy impact of different classes of environmental control within the framework of revised ASHRAE guidelines.

To better understand the state of energy management for heritage facilities, a survey was released to institutions across Canada asking for a full year of utilities data and related information. Approximately 60 institutions of diverse size, climate location, and functionality replied with sufficient data to calculate annual energy consumed per unit floor area and volume (energy intensity). For meaningful comparison, the results were subdivided by seasonal and year-round operation, and then by type of indoor climate control for the latter group. The availability of location and weather data for each facility allowed an additional separation of local climate effects, by plotting energy intensity versus heating degree days (HDD). A clear difference was evident between institutions with a high level of environmental control for their collection, and those operating around typical human comfort requirements (e.g. winter heating with little or no humidity control).

A complementary effort was then taken to estimate the impact of indoor environment set-points on the energy intensity of buildings within different climate zones, using NASA satellite weather data for psychrometric calculations. Average annual energy was determined for approximately 300 locations across North America using ten years of daily weather data, and presented in units of gigajoules per cubic meter of building space (GJ/m3/y) at a constant air change rate (ACR) of 1h-1. For comparison, several indoor set-point scenarios were considered using the ASHRAE guidelines for museums, galleries, archives and libraries as a point of reference. Tabulated data were then contour mapped with geographic information system (GIS) software to provide a visual summary of how indoor and outdoor environments affect energy consumption. This combined overview of survey data and theoretical energy calculations provides a broad framework for discussing energy management strategies within the Canadian heritage community, and potential for optimising the balance between collection preservation and energy use.

**denotes presenter*

''YOU WANNA PUT WHAT IN THE GALLERY?!'': DISPLAYING LIVE HIDE BEETLES (D. MACULATUS) AT THE ROYAL SASKATCHEWAN MUSEUM

Victoria Kablys, Royal Saskatchewan Museum

When someone suggests the idea of displaying live hide beetles (Dermestes maculatus) in a museum setting, the typical response of most heritage professionals is to cringe—maybe even shed a tear, and then run. Hide beetles are a member of the Dermestidae family of beetles, and are well-known for their ability to wreak havoc on museum collections. They have a voracious appetite, with a particular attraction to collagenous and keratinous materials. This attraction is further supported by unique digestive enzymes designed to assist in the breakdown of keratin. As a part of the 2018-19 exhibit, "ZOOM. Nature. Up Close.", the Royal Saskatchewan Museum (RSM) team put all fears aside and decided to display live hide beetles. The exhibit was centered around the idea of allowing the viewer to engage with aspects of nature that are often overlooked through the lens of a scientist. By employing the use of 3-D scanners, macro-photography, stereomicroscopy, and a live display of hide beetles in action, "ZOOM." encouraged visitors to experience species common to the province in a more intimate fashion, and to learn about current research and work undertaken by museum scientists. A worker colony of hide beetles is regularly employed for the preparation of skeletal material of the Invertebrate Zoology Collection at the RSM's offsite Research, Exhibits and Collection (REC) Building. Meticulous housing, handling, and specimen transportation procedures of the worker colony are observed to prevent infestation. Although the REC's dermestarium has been in use for over a decade, the colony had never been introduced to the RSM's Main Building or Gallery spaces. Given that the skeletal material in the live-action terrarium required periodic rotation, careful working procedures were implemented in order to keep the displayed hide beetles isolated from all other collection materials and museum objects.

The risks associated with displaying hide beetles were sizeable, given that the permanent gallery space incorporates numerous open-air dioramas —in addition to our First Nations and Paleontology Galleries. With the closing of "ZOOM." in October 2018, the exhibit was considered a success. This presentation will share the RSM's strategy for developing a double-enclosure system that would allow for the critters' safe display, and the procedures employed to balance keeping the hide beetles active enough to maintain visitor interest, while still mitigating potential outbreaks and infestation.

BETTER SAFE THAN SORRY: CREATING A HAZARDOUS MATERIALS MANUAL FOR MUSEUM OF VANCOUVER

Fiona Hernandez and Hayley Monroe, Museum of Vancouver

The Museum of Vancouver, like many others, has a varied collection: objects with powdering cinnabar and arsenic green pigments, scientific instruments with liquid mercury, animal pelts treated with arsenic and mercury salts, industrial equipment with asbestos covered cables, darts with ethnobotanical toxins, WWII consoles with radioactive dials, blankets sprayed with DDT, coupled with diary entries from conservators from times past alluding to monthly "fumigations". How do we identify, quantify, assess the risk, and decide on procedures to safely handle all these hazards? In 2018, the Museum of Vancouver received a grant to spend 3 months assessing hazards. In this time, conservators created a hazardous materials manual for all collections staff, with the objective of helping staff identify, respond and safely handle hazardous collections. We collected scientific data, literature, and Worksafe BC best practices, focusing on 3 major elements of hazards management:

- Hazard vs risk. Having a varied collection accentuated the need to look beyond only hazards, that is, the toxicity of a material, and consider the holistic risk the hazards pose to people who encounter them. We developed a system that quantified risk, in order to respond to each hazard in context.
- Identification of hazards: The project focused on building from information we already had: We expanded on previous XRF testing to address larger portions of the collection, using a standardized approach to collect semiquantitative results, and tested adjacent surfaces to identify transferability of materials. MOV also expanded the testing to GCMS for organic pesticides to survey collections more systematically. We gained a clearer picture of the collection, and encountered the limitations of our analytical techniques. The process included a few surprises, challenging our preconceptions of safe objects. Limits of our current techniques weighed on the manual as we balanced the gaps in our empirical evidence with 'rules of thumb'.
- Using our resources: In addition to scientific data, we surveyed the current literature within the museum discipline, and collaborated with City of Vancouver Hazardous Materials Team to ensure our procedures comply with Worksafe BC standards. This interdisciplinary approach helped to bridge the gap between museum standards and our larger governing bodies, and pushed us to create a system that is simple enough to keep all levels of staff safe, but complex enough to address the broad ranges of risk within the collection.

WE LIKE TO MOVE IT, MOVE IT: CREATING SUCCESSES IN A CHALLENGING COLLECTIONS MOVE

Erin Secord, Ingenium Canada Museum of Science and Technology
Erika Range*, Ingenium Canada Aviation and Space Museum

Ingenium Canada is currently undertaking a complete collection relocation project at their Canada Science and Technology Museum site. The collection is currently spread across three storage facilities, but will be consolidated into one new collection and conservation centre beside the newly renovated museum. The mixed collection is composed of more than 80,000 objects representing highlights of Canada's technological and scientific history. This encompasses a very broad range of object types including agricultural, scientific, transportation, and industrial artifacts. These artifacts vary widely in material composition, size, condition issues, and hazards. This move has been desired for many years and is necessary for the long term preservation of the collection as the current storage facilities have not met the needs of the collections or desired museum standards for some time. Ideally, a collections move would follow a collection rationalization project, inventory, and commence after the completion of a database update. However, as many in the cultural sector will understand the project start date was determined by the granting body, the Treasury Board. This happened to coincide with the renewal of the museum. While adhering to this stipulation did ensure the project went forward, it has created planning and execution challenges due to competing staffing priorities and resources. Bringing a multidisciplinary team together within the museum following on the heels of a large and exhausting project like the museum renewal, and tight leasing deadlines on our current storage facilities have added extra layers of difficulty to this project. Staff in the Collections and Research Division are working through these challenges, learning and improving every step of the way to ensure the collection move is as efficient, safe, and beneficial to the long term preservation of the collection as possible. This presentation will share the Ingenium conservation and collections team's progress to date highlighting some lessons learned along the way.

**denotes presenter*

EXCELLENT, GOOD, FAIR, OR POOR: A DISCUSSION ON THE USE AND DEVELOPMENT OF EFFECTIVE RUBRICS FOR HERITAGE COLLECTIONS

Mikaela Marchuk, Canadian Conservation Institute

The rubric is a written and maintained guide that aligns a comprehensive rating or grading system with criteria. It is a system that is often used to qualify data in collections surveys and to assign treatment priorities. This is typically accomplished by associating a rating scale (often ranging from "excellent" to "poor") with criteria related to the condition of collections items. Rubrics have known usage in small and large institutions throughout the Canadian heritage community. However, few resources currently exist on the subject of designing and implementing effective rubrics for the examination and/or triage of heritage materials. Substantial academic efforts have been made in other professional fields to clearly define and examine the many types and integral parts of rubrics with the purpose of optimizing their use and development. Similar progress has not been seen in the conservation field. In conservation, rubrics are frequently criticized for their tendency to include criteria that are too vague and subjective. In addition, concerns have been identified about their tendency to narrow the heritage professional's understanding of how to prioritize collection items. However, there are several situations where a condition rubric is an appropriate method of establishing collection priorities. This system is ideal to the management and survey of objects related to large and interdisciplinary heritage projects with significant time constraints for its ability to easily integrate expertise and increase work efficiency. Drawing on established terminology from the teaching and medical professions, this presentation seeks to provide a language through which conservation professionals can discuss rubrics, their essential components, and common design elements. Holistic, analytical, generic, and task-specific rubrics, alongside the application of these assessment tools to heritage projects will be explored. The presentation will provide conservators with food for thought regarding the design and implementation of effective rubrics based on best practice principles. Incorporated throughout will be a series of lessons learned from the development and use of these assessment tools in the ongoing, large-scale, and interdisciplinary heritage project encompassing the rehabilitation of the Parliament Buildings in Ottawa, Canada.

BEYOND THE CODE: ETHICS AND PRIVATE PRACTICE CONSERVATION

Kyla Ubbink, Ubbink Book and Paper Conservation

As we move into the future, a greater number of conservators are building private practices. Now is the time to define how our field will be perceived by the clients that support these businesses; institutions, antiquarian dealers, galleries, collectors and the person with grandma's long loved treasures included. Currently, the field is faced with a varied knowledge base amongst customers. From terminology, to pricing, to expectations, a private conservator will be confronted with questions from the very simple "what is conservation?" to the more complex "how will that affect the value of my artifact?". The CAC/CAPC code of ethics guides us in how to carry out treatments and act professionally. When it comes to establishing daily practices that will up hold this code, meet consumer's desires, be agreeable with colleagues, and are comfortable to work with, private practice conservators are faced with a plethora of questions and situations that go beyond these very well laid out ethical standards. Establishing contract terms and conditions, setting fair prices, dealing with insurance issues and creating reasonable time frames alone is enough to consume a business owner's thoughts and responsibilities. Then competing on tenders against colleagues and friends, re-treating/fixing work carried out by others, sub-contracting and partnering, and giving recommendations, adds more issues to the ethical dilemmas. If that was not enough, one must also manage expectations created by reality TV shows movies and social media, clients who disappear, and providing the right amount of treatment documentation for that particular client. This talk is aimed at opening the conversation and does not purport to establish any sort of standards, nor provide any solid answers. Seasoned private practice conservators will already be well aware of these situations and ethical issues, the goal is to explore the issues and spark discussion. Each business owner must answer ethical considerations for themselves, and the answers must ensure that both parties are protected and being treated fairly. The actions taken will reflect on that particular business, but also have an impact on the field of conservation as a whole. Private practice conservators work with the general public as well as the heritage sector, and play an important role for the reputation and accountability of the field. The client's choice to have something conserved, their expectations, and who they will trust with conservation treatment work, rests on their experiences and the experiences of their colleagues, friends and family.

UNLOCKING THE POTENTIAL IN LA DOLL CLAY AS THE NEW FILLER MATERIAL FOR CERAMICS

Sally Gunhee Kim, Queen's University student

The purpose of this study is to test the potential of a commercial product, La Doll Clay, as a fill material for ceramics. It is an air-dry clay manufactured by Padico Co., Ltd, and is distributed in North America by Activa Products Inc. La Doll clay has been widely used in the global community of professional doll artists, but not in the field of art conservation, at least within English-speaking countries. La Doll Clay has unique working properties that make it a prospective substitute for plaster as a fill material for ceramics. It has certain strengths that apply to the lists of desired characteristics of a fill material previously outlined in papers by Susan Buys and Victoria Oakley (2000), and Jonathan Kemp (2009). This commercial clay air-dries with minimal shrinkage, is very pliable, miscible with water, adheres to various substrates (e.g. wire, paper, glass, plastic, wood, Styrofoam), and readily accepts acrylic, oil paints, water-based paints, and dry finishing powders. Even when dry, additional clay can be further added with a few drops of water. Furthermore, when dry, La Doll clay can be carved, drilled, or sanded into a smooth finish. Unfortunately, the chemical components and mechanical properties of La Doll Clay are not publicly released nor have they been investigated specifically for the treatment of ceramics. The results of this analysis can be used to investigate whether or not La Doll Clay is practical as a fill material for ceramics and to determine if it is a good substitute for plaster. The anticipated outcomes of this project are: the identification of the chemical components in the clay that are inert and compatible with the substrate with XRF and FTIR and the confirmation of its similarity in physical parameters of the substrate through a series of mechanical testing frames (e.g. three-point bending andpendulum-style impact test). The findings will then be compared with plaster for efficiency in treating areas of losses of ceramics.

ACCUMULATIVE RITUAL SURFACES ON YAKA, TEKE AND BIDJOGO FIGURES: ETHICAL CONSIDERATIONS AND MATERIAL ANALYSIS

Charlotte Parent, Queen's University student

The historic arts of Africa take on many critical roles in their communities of origin: they are instruments of knowledge, bridges between the living and the ancestral or spiritual, agents of memory, implements of private and social well-being, actors in the political life of a community. Their meaning and spiritual value is rooted in their use, which is often visible in the form of ritual materials accumulated on their surfaces, sometimes called patinas. Those materials are often applied in a context of secrecy by keepers of restricted knowledge. When those African objects entered Western collections, they often did so without proper documentation or provenance information. Concerns about the degradation of patinas and about their potential harmful effects on other objects within collections are hard to address without adequate knowledge of their composition. This project focuses on three wooden figures from the Justin and Elisabeth Lang Collection of African Art of the Agnes Etherington Art Centre: a Phuungu figure (Yaka people, Democratic Republic of the Congo - M84-330), a Butti power figure (Teke people, Democratic Republic of the Congo - M84-408) and an Iran figure (Bidjogo people, Guinea-Bissau - M84-369). These ritual objects have accumulative surfaces on which different patinas (smooth and shiny, crusty, pigmented) can be observed. This project looks at those patinas: their material composition and the ethical implications of identifying their components. Much effort was put into conducting a project which is culturally appropriate and which seeks to preserve both the tangible and intangible aspects of the objects. Art historical and ethnographical research informed decisions as to how far conservation research can reasonably go in its quest for knowledge in the case of those sensitive objects covered in ritual materials. In order to perform scientific analysis of the objects, X-radiography, Fourier-transform infrared spectroscopy (FTIR), X-ray fluorescence (XRF), chemical spot tests and polarized light and stereo microscopy will be used. It is expected that combining those analytical techniques will provide information about the types of materials present as well as their locations within the patinas. It is hoped that the information gained in this manner will facilitate the preventive care of the three figures, allow for a better understanding of under-studied objects within the collection of the Agnes Etherington Art Centre, add to the conservation literature regarding the nature of accumulated materials on African objects and contribute to the development of culturally-appropriate research methods in conservation.

SECURING A SEAT FOR THE PRINCE OF WALES: MINIMALLY INTRUSIVE REPAIRS TO THE STRUCTURAL UPHOLSTERY OF A BESPOKE JACQUES & HAY CHAIR

Amanda Salmon, Canadian Conservation Institute

Two novel techniques, originally developed by the Metropolitan Museum of Art for repairing deteriorated structural upholstery, were recently employed in the Furniture Laboratory at the Canadian Conservation Institute. The techniques were adapted to stabilize the collapsed, sprung seat of a gilded armchair commissioned for the Prince of Wales' visit to Canada in 1860. Before treatment, the chair's horsehair stuffing spilled out through a large tear in the seat's original burlap spring cover cloth, resulting in active loss of material and dramatic deformation of the seat's original profile. While the chair's coiled spring assembly was relatively intact, its webbing was partially detached and no longer provided structural support for the sprung seat. The fragile condition of the armchair's showcovers prevented their removal from the frame to access the damaged area from above the seat. The presence of the spring assembly below the seat frame further obstructed access to the spring cover cloth for treatment. To complicate matters, the deteriorated state of the burlap cloth prohibited a traditional stitched or lined repair. After reinserting the horsehair stuffing into the seat through the spring cover cloth's tears, a thick, polyester felt support was pushed through the coiled spring assembly and wedged in place above the seat rails to reinforce the spring cover cloth. Conservators then compressed the springs using nylon cable ties and used carbon fiber rods and custom-made brass seat rail 'hangers' to bear the downward pressure of the spring assembly, resulting in the application of the upwards pressure necessary to support the seat and restore its loft. The treatment methods, while relatively simple to execute, resulted in an elegant solution to a challenging structural condition issue characterized by minimal intervention and maximum retention of original heritage elements.

THATAWAY AGAIN, AN EVALUATION OF AN ANTI-GRAFFITI COATING FOR OUTDOOR PAINTED STEEL SCULPTURE

Carolyn Savage, Private Practice

As sculptures in urban areas begin to deteriorate they can attract vandalism. Graffiti vandalism is an extensive and pervasive issue impacting outdoor public art. Regular maintenance and quick removal of graffiti are recommendations for limiting further graffiti applications. This research stemmed from the observations of the environmental impact over the course of a year on Thataway Again, an outdoor painted steel sculpture by Canadian artist Henry Saxe. The sculpture exhibits slow cumulative deterioration of the paint layer and promotion of biological activity. This sculpture is a cultural embodiment of Queen's University support for Canadian artists. Produced not far from the Kingston area, this piece of contemporary Canadian cultural heritage is enjoyed by many students, faculty and residents on a regular basis, as it is located in a high traffic area. This sculpture last received maintenance in 1992. To assist with maintaining the sculpture in optimal condition, the application of an anti-graffiti, anti-soiling coating would extend intervals between regular maintenance by adding a layer of protection from soiling, biological activity and airborne pollutants, as well as possible vandalism. A comprehensive treatment proposal for Thataway Again has been compiled considering the use of a sacrificial polysaccharide anti-graffiti coating, PSS 20. Testing was conducted to determine if PSS 20's properties were suitable for a painted steel substrate. PSS 20 responded very well to all testing, exhibiting good adhesion to the primed metal substrate. Graffiti removal was significantly improved. Colour change and gloss level changes in the substrate were minimal, with no variation of the paint layer after accelerated aging of the substrate. Even after the accelerated light aging simulating a ten year interval, past the manufacturer's recommendations, the PSS 20 was easily removed along with any surface graffiti or soiling. The PSS 20 could improve the efficacy of regular maintenance in maintaining the original visual integrity of the sculpture.

MOUNTING THE INSURMOUNTABLE: A NON-ADHESIVE METHOD FOR MOUNTING AND FRAMING UNCONVENTIONAL BOOKS

Laura Fedynyszyn* and Duvy Argandoña, University of Miami

The University of Miami (UM) is home to the largest institutional collection of artist books from the Cuban Publishing house Ediciones Vigia. Published in editions of up to 200 copies, each book is handmade using materials often differing from one copy to another. Due to limited resources in Cuba, the materials used in the publishing process are often poor quality. This, coupled with the fact that many of the artist books are very sculptural, make them a unique challenge to preserve and exhibit. In 2018 The Cuban Heritage Collection at UM mounted its first exhibit of Vigia artist books. Twenty-nine books were chosen for display in table cases and an additional nine were selected to be hung. Vigia had originally intended these nine books to hang as they all contained hanging apparatus in the way of twigs looped though the paper with yarn attached to the ends. The hanging books, some measuring up to 120 cm long, were created in a fold out accordion style and meant to hang vertically. Due to fluctuating environmental conditions, slightly elevated light levels, and the fragility of the works, we opted to frame these nine books as opposed to hanging them on the wall by their original hardware. The challenge then became how to hinge the artist books, as not only were the materials poor quality, all books were also double-sided. For these reasons the decision was made not to attach traditional adhesive and Japanese paper hinges. Adding to the complexity of the project, we were not able to accompany the artist books to the framers. These long, fragile books had to be sent already mounted on rag mat board and ready to go in to their shadow box frames. This presentation will discuss our decision making process in choosing an appropriate method to mount the books, and will detail a method we developed that uses polyethylene book straps to secure the hanging books to their rag mat backing. A mounting method that is reversible, secure, and does not detract from the overall aesthetics of the artist books.

**denotes presenter*

MODELLING NATURE: UNDERSTANDING CONSERVATION ISSUES IN THE BLASCHKA GLASS FLOWERS

Scott Edward Fulton, Harvard University Herbaria

From basic tools and raw materials typical of nineteenth-century lampworking in Bohemia emerged a wonderful art form that resonated with the natural sciences community worldwide. Leopold and Rudolf Blaschka, a father/son lampworking team, capitalized on a Victorian-era obsession with understanding and teaching about the natural world by creating astonishingly realistic glass models of invertebrate animals and plants. Commissioned by Harvard University in 1886 as pedagogical tools for teaching botany, the Ware Collection of Blaschka Glass Models of Plants (aka. The Glass Flowers), continues to capture the imagination of more than 300,000 curious visitors to the Harvard University Museum of Natural History each year. From the humblest native field flowers and grasses of North America to wonderfully detailed models of diseased fruit (apples, strawberries, etc.), Leopold and Rudolf Blaschka expressed their genius by emulating nature in the most fragile of materials.

The Blaschkas' work evolved over 50 years of production ending with Rudolf's death in 1939. Their raw materials shifted from using only readily available commercial glass to combining this with colored glass enamels made by Rudolf. The earliest plant models were roughly fashioned from colorless glass tubing over copper wires, fused at the joins, and cold-painted with mineral pigments. This proved to be unstable over time and resulted in delamination of paint and glass on several models. Rudolf Blaschka may have recognized a recurrent problem and developed new methods in response. Some of his innovations, while more stable initially, later presented their own unique condition issues in the form of unintended efflorescence on the glass parts. This paper explores the evolution of the artists' working methods and materials in tandem with the conservator's need to respond to and modify strategies in the conservation treatments of the Ware Collection of Blaschka Glass Models of Plants.

NO EASY TUSK: REVERSAL OF PREPARATION WORK, AND RE-TREATMENT OF UNSTABLE MAMMOTH TUSKS AT THE ROYAL ALBERTA MUSEUM

Gigi Kulis and Susan Green, Royal Alberta Museum

Reversal of previous treatment to an object can be a daunting undertaking for a conservator. This is particularly true when an object has become unstable due to the previous treatment or when no record of materials or methods used during this process are available. Such a situation was confronted at the Royal Alberta Museum, where members of the conservation department undertook a treatment/preparation reversal of a pair of mammoth tusks and partial skull. The specimen had been uncovered in the Edmonton area in the late 1980s and had undergone preparation and stabilization around the same time. The tusks had previously not been on display; however, with the opening of the Royal Alberta Museum's new downtown Edmonton facility, they were selected to be a part of the new exhibits in the Natural History Gallery. The tusks displayed several areas of deep and active cracking. Preliminary inspection of the specimen revealed large areas of the tusks had been infilled with epoxy. These areas were the primary sites of where the cracking and splitting of the tusks were occurring. This inspection also revealed that the specimen had been covered with several different coatings and paints, which were masking the extent to which the specimen had been infilled. It quickly became apparent that the materials and methods used previously on the specimen were largely responsible for its deterioration and instability. A remedial treatment to remove and reverse as much of the previous work as possible was carried out. This paper will discuss the process undertaken, challenges, and findings revealed during this treatment. It will also touch upon the ethical considerations of preparation and conservation work related to their impact on the interpretive value of specimens. It will further relate this issue to the decisions made during the recent treatment and display of the specimen.

INDUSTRIAL CONSERVATION AT PARKS CANADA: APPROACHES TO THE PRESERVATION OF CANADA'S INDUSTRIAL HISTORY

Antoine Pelletier and Megan O'Connor, Parks Canada

Canada's industrial heritage within the Parks Canada Agency network of over 171 National Historic Sites, 47 National Parks and 4 National Marine Conservation Areas varies from the smallest cog to large scale industrial sites. Using examples from recent industrial conservation work at Parks Canada this paper aims to explore how legacy of treatment within the agency, current skill base, and the importance of context informs Parks Canada's hands on approach to industrial conservation.

The main challenge in industrial conservation has always been to reach a balance between a state of abandon and complete restoration. In the earliest days of conservation at Parks Canada the majority of industrial conservation knowledge and techniques were brought over from the United Kingdom, where several of the conservation staff were trained. As conservation training developed in North America different techniques and knowledge were added to the Parks Canada industrial conservation toolbox. This legacy of treatment style, and the nature of the Parks Canada industrial collection, has informed the current approach focusing on maintaining traces of use and original coatings when possible, the use of protective coatings that do not obscure original surfaces, and where repainting and replacement of components is considered only under special circumstances.

The risk of dissociation is high within a network of sites and storage facilities spanning the country. Parks Canada has maintained an approach to industrial conservation that values the whole context, be that from maintaining the parts of an engine, to maintaining the integrity of a site spread over a vast area. Removing components or parts from their context changes the value of the object. During the conservation process it is easy to look at an object on an individual basis. However, conservators have to keep in mind that industrial objects are often part of a group and that a continuity in treatment is essential in order to preserve the link to its context.

Gaining skills for industrial conservation at Parks Canada takes many forms. Not only are skills gained in formal training programs required, but on the job training, personal interest in related fields such as metal working and welding, and previous experience outside of the Agency are valuable. Working on projects with team composed of conservators with mixed levels of experience has been a key method of gaining skills for industrial conservation work at Parks Canada. Learning the skills of industrial conservation is not strictly tied to treatment methods, knowing how to speak the language of industrial conservation and learning how to engage clients and get them excited about projects while building solid relationships are also key elements.

This paper will explore these topics and how they have come to inform the hands on skills and methods of treatment for industrial conservation at Parks Canada.

THE MYSTERIOUS M1: REFLECTIONS ON THE TREATMENT OF A MI'KMAQ BASKET

Anne MacKay, McCord Museum

This presentation examines the role conservation has played in the on-going story of a beaded Mi'kmaq basket from the McCord Museum collection. It considers the material issues regarding its treatment, and connects them in a fundamental and critical way with questions about the basket's wider historical and cultural narratives, and its meaning for us today. In 2011, a small cloth basket, with beading on horsehair, was chosen for an exhibition at the McCord Museum, mounted to celebrate its 90th anniversary. The exhibition consisted of ninety outstanding objects from the museum's collections, which were selected to represent the breadth, rarity and significance of its holdings. This basket, one of sixteen objects in the exhibition from the Indigenous Peoples collection, was the first object accessioned into the museum's fledging collection, and is identified by (and institutionally known as) its rather noteworthy accession number, M1. The catalogue entry in the museum's database informs us that it is of Mi'kmaq fabrication, created about 1845. These important markers reflect its long-established story, first recorded in the original museum register book, as an object given by members of the Mi'kmaq community to Amelia Fitzclarence Carey, an amateur painter and the wife of the lieutenant governor of Nova Scotia, stationed in Halifax between 1840 and 1846. However, even though it was labelled as such in the exhibition, material examination and research undertaken before and during its treatment gave serious doubt to this belief. The basket underwent a lengthy treatment, which ultimately led to a new iteration of the object, arrived at through the conservation process. This treatment can only be seen as yet another chapter in its complex life, one whose biography reflects changing ideas about colonial British North America, and evolving Indigenous-Settler relationships in Canada. At various moments in the past, M1 has taken on different and contradictory guises – as an emblem of Indigenous fealty to British crown, an inauthentic knick-knack, a damaged and unidentifiable museum artefact, and a classic example of a politically and historically charged transcultural object. Despite the close examination, research and consultation that has been done on the basket, a nagging question still lingers: What, exactly, was preserved in the treatment of M1?

CONSERVATION OF THE MAYO LODGE NO 3 YUKON ORDER OF PIONEERS SILK BANNER

Gail Niinimaa*, Niinimaa Enterprises Inc.
Valery Monahan, Tourism and Culture, Museums Unit
Kelly Caldwell, CSI Conservation Solutions ULC

In 2017, CSI Conservation Solutions ULC (CSI) received a contract from the Government of Yukon to conserve a banner belonging to the Yukon Order of Pioneers, which belongs to Binet House Museum in Mayo, Yukon, a seasonal museum open from mid May to September.

Gail Niinimaa was subcontracted to do the work and this paper will describe the complexities of the treatment and the decision making process. Collaboration for the project occurred between Valery Monahan, Conservator, Yukon Government representing Binet House Museum, and Kelly Caldwell and Carolyn Savage, Conservators with CSI. The Yukon Order of Pioneers, was organized on December 1, 1894 at 40 Mile, YT, Canada, before any law organization existed in the Yukon Valley and as a substitute the first Pioneers adopted this rule which became the Motto of the Order: "Do unto others as you would be done by". It was popular at this time for banners to be made for parades and as a form of regalia for the organization.

This banner had been used first by the Seattle Lodge #2 as early as 1912 and then by the Mayo #3 Lodge in 1921 when the Seattle Lodge closed. It appears to be the only surviving banner of its kind. In the 1980s a new mounting system of black nylon webbing had been machine sewn to the top edge of the banner so that it could be displayed in the new display case in the Whitehorse Elks Hall, but the continued loss of the painted silk and damage from hanging led to the removal from exhibition and the subsequent conservation treatment.

Due to the fragility of the silk banner, which had painted silk, embroidered lettering, appliqued lettering, and gold fringe it was necessary to use Beva film 1.0 to support the top layer of silk, as stitching was not an option. In addition it was not possible to separate the layers of the banner and support them separately as embroidery stitching had been done through all of the layers after the banner had been transferred to the Mayo branch. The treatment of the banner has resulted in the preservation of an important piece of Yukon pioneer history. Following the treatment, the banner was mounted onto a padded, rigid support that can be secured into a new purpose built case. It will be returned to Binet House in Mayo and returned to seasonal exhibition.

*denotes presenter

PRESERVING THE BEAUTY OF THE BEASTS: CONSERVATION OF TAXIDERMY ORNITHOLOGY AND MAMMALOGY SPECIMENS AT THE ROYAL ALBERTA MUSEUM

Gigi Kulis, Royal Alberta Museum

The Royal Alberta Museum (RAM) is nearing the end of a full-scale renewal project, which has included moving collections to new storage facilities and the recent opening of the museum's galleries in downtown Edmonton. As part of this monumental project, the conservation department at the museum has been involved in preparing and treating thousands of objects that are on display in the new galleries. Part of this undertaking entailed working on over 150 specimens from the RAM's ornithology and mammalogy collections. These specimens demonstrated a diverse range of condition issues, such as feather breakages and distortion, fur loss, damage and loss to appendages, lipid leeching, pest damage, and skin splitting. These issues appeared to be brought about by an equally variable array of factors. Among which were damage incurred during the specimen's lifetime, preparation methods, storage and/or display conditions, previous repair attempts, and inherent vice of the specimens. This presentation will discuss some of the remedial treatment methods used to minimize and/or stabilize condition concerns encountered in these collections. Furthermore, it will touch upon the efficacy of these treatments, lessons learned while working on the specimens, as well as avenues for further investigation.

POSTERS

LET THERE BE LIGHT … METERS

Jill Baron, Fleming College student

Light damage is cumulative and irreversible; this makes it imperative that museum professionals monitor the amount of light that collections are exposed to. Light measuring instruments have evolved to include a variety of different features in order to make integrating the practice of light monitoring easier for the museum professional. A survey of light monitoring instruments and practices indicated that recently, there has been a movement to replace traditional light meters with light meter apps on smartphones. This poster aims to review the design and performance of these light meter apps.

Traditional light meters use a cosine correcting lens, photodiode and luminousity function filter to convert and moderate the light waves into data which the meter can read. In comparison, a light meter smartphone app relies on the phone's camera and corresponding software to measure light levels. The lack of a cosine correcting lens, the manner in which the light enters the camera and the size of the built-in camera all affect the quality of the readings from a light meter app. Investigative findings presented in this poster indicate that these new tools will need further study and refinement before conservators and museum professionals will be able to trade in their traditional light meters.

RAISING CANE: THE CONSERVATION TREATMENT OF A FIRST WORLD WAR WHEELCHAIR

Dee Stubbs-Lee, New Brunswick Museum

In November 2018, to commemorate the 100th anniversary of the end of the Great War, the New Brunswick Museum launched a major temporary exhibition, "Legacy of Victory". The exhibition explores the effect the First World War had on daily life in New Brunswick in the years following the end of the war. Among the approximately 100 artifacts included in the exhibition was a wheelchair (NBM 2007.16.1) believed to have been used at a military hospital in Fredericton at the close of the war. Acquired by the NBM in 2007, the wheelchair has previously been in the collections of the museum of the NB Nurses' Association. Prior to the acquisition, the woven cane seat of the wheelchair had been badly damaged, and was torn and distorted, causing nearly the entire seat to cave in. The exhibition presented the opportunity to stabilize the damage improve the visual appearance of the artifact, and pay homage to the WW1 veterans of New Brunswick. The challenge was to get the job done in a very short timeline of only a few weeks and with almost no budget for conservation.

JAPANESE TSUNAMI MARINE DEBRIS COLLECTION AT THE ROYAL BC MUSEUM

Lisa Bengston, Royal BC Museum

On March 11, 2011, a magnitude-9 earthquake occurred off the coast of Japan, which triggered a monumental tsunami. Tsunami debris continues to wash up on the shores of North America and Hawaii, eight years later. The Royal B.C Museum (RBCM) has become the repository and permanent home for the biological material collected from this tsunami debris. There are over three hundred samples of dry tsunami material at the RBCM, comprised of man-made objects (substrates), to which marine life is attached. This sea life is primarily marine invertebrates. The substrate materials consist of wood, metal, and plastics including fibreglass and Styrofoam, from objects such as docks, boats, buoys, household objects and buildings.

The purpose of storing the Japanese tsunami marine debris collection at the RBCM is long term preservation of the marine life. Research on potential North American colonization by invasive species that made their way here from Japan, is ongoing. The stability and longevity of the substrates will influence the long term preservation of the attached sea life. If the substrates degrade, break apart and disintegrate, the attached colonies will become dissociated and the organisms may be damaged.

The dry plastic substrates are weathered and deteriorated. All are discoloured, bleached, embrittled and cracked. There are areas of loss and residual dirt, sea salt, and sand. Samples sent to CCI were identified as polyurethane, polypropylene and polyethylene.

The recommended storage environment for the dry tsunamic debris material is cold temperatures. It will be stored in a chest freezer, at minus 20◦ C. This will slow down the deterioration processes of the plastics. It will also reduce the off gassing of volatile acids from substrate materials such as wood or certain plastics and preclude the development of Byne's disease with the carbonate-based marine life such as shells and coral.

The dry tsunami debris material is now re-housed in storage containers. The irregular-shaped substrates are supported on custom-built mounts preventing physical damage to the attached sea life. All are wrapped and cushioned in unbuffered, acid-free tissue paper and stored in polystyrene Durphy boxes or custom-built Coroplast boxes. As a precaution, unbuffered acid-free tissue paper was added, to serve as a humidity buffer, because the hydrolytic breakdown of plastics is accelerated in the presence of moisture. It will also act as an adsorbent in the event of any off gassing or movement of plasticizers.

RAPID ATP/AMP LUMINOMETER TESTING FOR MOULD IN BOOK CONSERVATION

Tiffany Eng Moore, Canadian Conservation Institute

Rapid adenosine triphosphate and adenosine monophosphate (ATP/AMP) testing with bioluminescent swabs have recently been put into use for cultural heritage as a means to detect and determine acceptable levels of biological and mould residues on artefacts. Currently, testing methods rely on information from other sectors (e.g. hygiene), but with modifications to account for the fragile, porous, often organic substrates being tested on cultural heritage objects. There is beginning to be a small body of research that is conservation specific, but there are still many unknowns. This exploratory research will help develop a reliability calibration for our ATP/AMP readings and assess their utility in determining when an artifact is sufficiently "clean".

This research is comprised of four parts and aims to present an initial examination of the parameters and reliability of the ATP/AMP lumitester for use in conservation, with an emphasis on materials used in book conservation. The first part consists of a literature review on adenylate (ATP, AMP, and ADP(adenosine diphosphate)) bioluminescence testing in order to consolidate information from the hygiene, food production, and conservation sectors. The review describes the advantages and challenges in applying the current technology in conservation settings. The experimental second section identifies background lumitester readings for new organic material (wood, paper, parchment, leather, and animal glue) in order to determine if baseline readings from common book conservation material differ from instrument recommended baselines. The third section asks if residues such as finger oils from handling artefacts, or saliva from speaking over objects influence lumitester results, as the devices are typically designed to assess recently cleaned surfaces. The final section examines if common cleaning processes used in mould remediation affect ATP/AMP readings. After processes such as vacuuming and ethanol treatments, are the lumitester swabs able to consistently and effectively read fungal residues or are they further embedded in the artefact surfaces? In this section, lumitester swab results of mould remediated samples will be compared to non-remediated samples and visually 'mould free' samples to compare and evaluate results.

This poster will describe the summary of the literature review, outcomes of the completed sections of research as well as thoughts for the future work, and aims to provide consolidated and accessible information on the use of Rapid ATP/AMP luminometers in conservation.

LININGS WITH BEVA® 371B FILM AND THE ORIGINAL FORMULATION: COMPARISON OF THE BOND STRENGTH

Élisabeth Forest, Centre de Conservation du Québec

The heat-seal adhesive BEVA® 371 was developed by Gustav Berger in the 1970's. Since its introduction as a solution or a dry film, it has been widely used by painting conservators in North America as a lining adhesive.

In 2010, the original formulation of BEVA® 371 was modified by replacing one of the ingredients, Laropal® K80 (BASF, discontinued in 2008), with an aldehyde ketone resin. According to the manufacturer, Conservator's Products Company, the new BEVA® 371b has the same characteristics as the original formulation and is therefore equivalent.

In 2015, a comparative study of BEVA® 371 used in solution as a consolidant for painted surfaces showed a marked difference in the heat-activation properties between the original and the newly developed formulation: the original BEVA formulation has a larger tack window with a gradual increase in tack, while BEVA® 371b has a very narrow window with a sudden increase in tack (R. Ploeger, C. W. McGlinchey and E. R. de la Rie, Studies in Conservation, 2015).

Painting conservators at the Centre de conservation du Québec began using the new BEVA® 371b film in 2015. They soon noticed marked differences in its use and handling properties, compared to the original BEVA film. When strip-lining, it is more problematic to reactivate BEVA® 371b film at the same temperature used for the original film, and the bond strength obtained when lining was not always sufficient overall to ensure that there was no local delamination when re-stretching the lined painting. These observations seem to corroborate the results of the 2015 study on the BEVA ® 371 in solution.

The objective of this study is to obtain quantitative data on the bond strengths of the new BEVA® 371b film produced under various lining conditions. Samples were lined with BEVA® 371b film and the original BEVA film, using two reactivation temperatures (65°C and 70°C) combined with two different holding times (0 and 10 minutes) when selected temperature was reached. The samples were then peel tested to measure bond strength at the Canadian Conservation Institute. The parameters chosen for this study reflect those used by the author for a research project on BEVA® 371 film in 1997.

In general, the results show that for the reformulated BEVA 371b film, the bond strengths obtained were lower than those achieved with the original BEVA® 371 film. With BEVA 371b, an adequate bond strength was only achieved at 70°C with a holding time of 10 minutes. Since the lining time is such a determining factor, each conservator must evaluate the performance of their table to best use these results.

LOOKING PAST THE PASTE: THE H. SARAH HOWARD ALBUM

Laura Hashimoto and Manise Marston, Library and Archives Canada

Scrapbooks and albums, popular in the nineteenth century, represent complimentary objectives of presentation and preservation for both the original creator and the modern conservator. In the 1860s, Hannah Sarah Howard carefully created a family album consisting of family photographs and news clippings embellished with skillful drawings in opaque and wash watercolour. Her efforts in perpetuity and assemblage are now a part of the Library and Archives of Canada (LAC) collection. In 2007, LAC book, photograph, and fine art on paper conservators collaboratively treated the entire album, resulting in the successful stabilization of the album and its contents. Ten years later, in 2017, the item was requested for exhibition-loan purposes. During the assessment, Laura Hashimoto, a conservator in the Prints & Drawings Lab, made an unexpected discovery within the pages themselves. The purple diamond-grained cloth album consists of layered cream paper, resulting in a rigid textblock, embellished with gilded edges. Each page is adhered to linen guards, allowing the album to open easily and lay flat during viewing. The multiple layers of thick watercolour media and adhesive used to attach the 90 albumen photographs caused major undulations in the textblock. During the initial assessment, the stability of each page was analysed using raking light, revealing small numerical annotations and grid lines, undetectable with the naked eye. With the aid of strong, transmitted light, the authors were captivated by the inconspicuously printed areas that became illuminated and legible right before our eyes. Following this discovery, it was determined that the texblock comprised of reused or recycled printed maps, classified as “pasteboards”. Pasteboards, a laminated structure of new or refuse papers ranging in quality, have a long history of use as book board material in bookbinding due to their rigidity and economic value. The Howard album’s pasteboards may have been a stationary or letterpress binder’s scraps or offcuts. Pasteboards happen to make one of the most effective album leaf structures as they can support an accumulation of composite materials. This poster aims to outline the research avenues and preliminary conclusions that the initial discovery afforded, including research into the history and use of pasteboards and album structures. Additionally, transcription efforts and research into the provenance of the textblock and printed maps themselves were completed. The use of imaging techniques such as reflected and transmitted infrared digital photography were completed and the results are discussed. The authors further explore the implications of using pasteboards as textblock, and the potential to conduct a survey of other albums in this fond and collection. Finally, we aim to demonstrate that the discovery of this reformulation of original cartographic printing spoilages into textblock offered new insight into the function and interpretation of the album as a whole, and highlights the value of collaboration among conservators.

GIVING THE BEST IMPRESSION: A COMPARATIVE STUDY ON IMPRESSION MATERIALS FOR ARCHAEOLOGICAL CERAMICS

Angela May, Fleming College student

Collections in museums are often turned to as research materials that can help to answer questions about a culture or people. Handling these collections, however, can be damaging to the artifacts being studied. Conservators have often opted to take impressions of the artifacts under investigation. These impressions allow the artifacts to be handled less, can be easier to read than the actual artifact, and can serve as moulds for casting reproductions. This can only happen if the impression material is of high quality, with fine detail. It must also not pose risks to the artifact itself. Ceramic sherds from the Manitoba Museum's Harvey Zechel Collection are currently being studied for their manufacturing techniques, specifically, the methods used to impress them. By taking impressions of these ceramics, researchers will be better able to understand how these ceramics were formed. But what will give researchers the best impression of these ceramics? With many different products available to conservators and researchers it can be difficult to select a product suitable for a specific set of requirements. In order to find the "ideal impression material" a number of different criteria were assessed to determine the most sutiable product available.

By performing a comparative study using latex, alginate, silicone and modelling clay on sherds in the Harvey Zechel Collection, a better understanding of some of these products and their properties can be gained and informed decisions made based on the results. Although not one of these products possesses all of the characteristics in the "ideal impression material", conservators can maximize the number of positive attributes and minimize the negative ones that their impression material will contain. Although the main focus for this research was ceramics, many of the observations are transferable to other artifact types. The products covered are by no means a thorough investigation into impression materials, but it may serve as a starting point for beginning to think about the qualities to look to in impression materials for future projects.

CONSERVATION BASED ON MATERIAL DYNAMICS AMONG JAPANESE PAINTING PAPER, LINING, AND ENVIRONMENTS: EFFECT OF *DOSA*, CU^{2+} AND ANIMAL GLUE ON THE DEGRADATION OF LINED PAPER IN MOIST HEAT AGEING METHOD

Kang Lee, Japan Society for the Promotion of Science / University of Tsukuba
Toshiharu Enomae, University of Tsukuba
Masamitsu Inaba, Tokyo University of the Arts

The degradation of lined Japanese paintings accelerates significantly due to the lack of proper lining techniques or low-grade material used. In order to inherit the traditionally established techniques and lead to the best way of conservation of art works, the present research is concerned with not only painting paper but also lining paper since the latter helps stabilize the painting as a whole. Our focus was placed on both of *honshi* (painting paper) and *hadaurashi* (directly-pasted lining paper) in several lining processes, which have strong influences on *honshi* since they are contacted. This research evaluates the permanence of *honshi* in the presence or absence of *hadaurashi*. *Kumohada-mashi* (mainly composed of hemp fibres) was used as a model *honshi* and was immersed in a $CuSO_4 \cdot 5H_2O$ solution instead of green pigment and then coated with an animal glue or coated by *dosa* (mixture of alum and animal glue) solution for sizing at three different concentrations each. Wheat starch glue called *shinnori* was used for attaching *hadaurashi* to *honshi*. *Usuminoshi* (kozo fibers) was used as a *hadaurashi*. An accelerated ageing test was performed with samples using a moist heat ageing test (80°C and 65%rh) for up to 6 weeks. In order to compare each paper's degradation behavior with ageing, the discolouration rate ($k_{\Delta E^*ab}$), the degradation rate index (I) of physical strength (folding endurance, zero span tensile strength), degree of oxidation, degree of polymerization (DP) and pH of single *honshi* and lined *honshi* sample were evaluated. Generally, Cu contained in the pigment on *honshi* tends to catalytically oxidize cellulose and generate acids, deteriorating the paper with a painting. The result of the accelerated ageing test showed that *hadaurashi*, an adjacent lining paper prevented discolouration, oxidation, and a pH decrease of *honshi*. This effect was achieved because Cu in *honshi*, co-occurring oxidation and oxidation-produced acids diffused into *hadaurashi* and attached *hadaurashi* regards to be inhibited diffusion of oxygen from back side of *honshi*. Also, animal glue applied to *honshi* presumably prevented a release of Cu from the pigment, considering the discolouration, oxidation-produced acids and acids caused by alum in *dosa* as well tended to be prevented. However, animal glue alone did not sufficiently buffer all acids generated by $CuSO_4 \cdot 5H_2O$. *Hadaurashi* accommodated migratory acids from *honshi* and partly reacted instead of *honshi*. Consequently, lining paper prevented a decrease of DP of lined *honshi*, thus contributing to permanence of Japanese painting.

HISTORICAL GEOLOGY MAPS AT THE NOVA SCOTIA MUSEUM

Ian Loughead and Tim J Fedak, Nova Scotia Museum

Established in 1868, the Nova Scotia Museum is one of Canada's oldest Provincial Museums. When the Museum was formed, the initial collection was established from objects and documents that had been associated with the Halifax Mechanic's Institute (1831-1860), as well as items displayed at the International Exhibitions in London (1862), Dublin (1865) and Paris (1867). Nova Scotia has played an important role in the history of paleontology, with early geology maps and fossil discoveries of great international interest during the early 19th century.

Darwin mentioned the Joggins tree stump fossils in his Origin of Species, and Charles Lyell visited Nova Scotia several times in the 1840s, meeting William Logan and Sir William Dawson. Abraham Gesner did geology work across Nova Scotia and New Brunswick (1830s to 1850), and Dr. David Honeyman, the first Curator of the Museum (1868-1889) was a geologist and had been a Commissioner representing Nova Scotia at the International Exhibitions.

As part of the celebrations of the 150 th Anniversary of the Nova Scotia Museum (#NSM150), an online presentation of historical items associated with Dr. David Honeyman's Scrapbook was developed in conjunction with the Nova Scotia Archives. Wanting to include a historical geology map in the online exhibit, and inventory and condition assessment of the historical geology maps was implemented.

Over forty historical maps had been stored in a single folder in a map cabinet drawer in the Collections Unit of the Nova Scotia Museum. An inventory of the maps was developed, including date, description, assessed value/importance, condition (very poor, poor, good, very good) and dimensions, and the maps were photographed for initial condition documentation. To improve long term storage, the maps are being individually encapsulated using mylar cover sheets attached to matt board with double-sided tape.

The inventory and re-storage project improved the knowledge and long-term storage of these historic maps. The inventory of historical maps has identified important assets of regional and international significance. Several of the maps have been assessed for further conservation and treatment.

REMOTE ENVIRONMENTAL MONITORING IN A MULTI SITE MUSEUM

Ian Loughead, Nova Scotia Museum

Monitoring storage environments and gallery spaces is nothing new for conservators and museum staff. Monitoring the environments in a multi-site, province-wide museum network, though, can be tricky. From sites that are open year round, to seasonal sites with collections storage, keeping on top of issues 24 hours a day offers challenges. Compounding this issue is the fact that various sites have resorted to different methods of monitoring the environment, often with instruments that are not calibrated in any way. The Nova Scotia Museum has undertaken a review of these previous methods and a look at what systems exist to modernize and simplify the collecting of environmental data, and the storage of this data. Four wifi capable datalogger systems were explored and one was chosen on a trial basis for real-world testing. With over one year of testing currently completed, this poster will explain the issues and successes that making the switch to remote wifi datalogging can bring.

CONTRIBUTORS

Duvy Argandoña
University of Miami
1300 Memorial Dr.,
Miami, Florida, 33146, United States
dargandona@miami.edu

Jill Baron
Fleming College
kjb790@mail.usask.ca

Lisa Bengston
Royal BC Museum
675 Belleville Street,
Victoria, BC, V8W 9W2, Canada
LBengston@royalbcmuseum.bc.ca

Kelly Caldwell
CSI Conservation Solutions ULC
Ottawa, ON, Canada
kelly@conservationsolutionsinc.com

Lynn Curry
Library and Archives Canada (retired)
curry.lynn4@gmail.com

Tiffany Eng Moore
Canadian Conservation Institute
#411-1177 Belanger Avenue,
Ottawa, ON, K1H 8N7, Canada

Toshiharu Enomae
University of Tsukuba
#209, Institutes of Biological and Agricultural Sciences C, 1-1-1, Tennodai,
Tsukuba, Ibaraki, 305-0006, JAPAN
t@enomae.com

Tim J Fedak
Nova Scotia Museum
1747 Summer Street,
Halifax, NS, B3H 3A6, Canada
tim.fedak@novascotia.ca

Laura Fedynyszyn
University of Miami
1300 Memorial Dr.,
Miami, Florida, 33146, United States
laurafedy@gmail.com

Élisabeth Forest
Centre de conservation du Québec
1825, rue Semple,
Québec, Québec, G1N 4B7, Canada
elisabeth.forest@mcc.gouv.qc.ca

Scott Edward Fulton
Harvard University Herbaria
22 Divinity Avenue,
Cambridge, Massachusetts, 2138, United States
sfulton@fas.harvard.edu

Michelle Gallinger
The Art Gal
3 Hillcrest Drive,
Dartmouth, NS, B2X-2N6, Canada
michelle@theartgal.ca

Marie-Ève Gaudreau-Lamarre
Library and Archives Canada
625 Boulevard du Carrefour,
Gatineau, Quebec, J8T8L8, Canada
marie-eve.gaudreau-lamarre@canada.ca

Amanda Gould
Canadian Museum of History
100 Laurier Street,
Gatineau, Quebec, K1A 0M8, Canada
amanda.gould@historymuseum.ca

Susan Green
Royal Alberta Museum
9810 103a Ave NW,
Edmonton, Alberta, T5J 0G2, Canada
susan.green@gov.ab.ca

Sally Gunhee Kim
Queen's University
Art Centre Extension, 15 Bader Lane,
Kingston, ON, K7L 3N6, Canada
16sgk4@queensu.ca

Eric Hagan
Canadian Conservation Institute
1030 Innes Road,
Ottawa, Ontario, K1B 4S7, Canada
eric.hagan@canada.ca

Laura Hashimoto
Library and Archives Canada
625 boulevard du carrefour,
Gatineau, Quebec, J8T8L8, Canada
laura.hashimoto@canada.ca

Fiona Hernandez
Museum of Vancouver
1100 Chesnut St,
Vancouver, BC, V6J 3J9, Canada
fhernandez@museumofvancouver.ca

Masamitsu Inaba
Tokyo University of the Arts
Department of conservation science, 12-8 Ueno-Koen, Taito-ku, Tokyo, 110-8714, JAPAN
masa.inaba@nifty.com

Victoria Kablys
Royal Saskatchewan Museum
2340 Albert Street,
Regina, SK, S4P2V7, Canada
victoria.kablys@gov.sk.ca

Susannah Kendall
Library and Archives Canada
625 Boulevard du Carrefour,
Gatineau, Quebec, J8T8L8, Canada
susannah.kendall@canada.ca

Gigi Kulis
Royal Alberta Museum
9810 103a Ave NW,
Edmonton, Alberta, T5J 0G2, Canada
genevieve.kulis@gov.ab.ca

Kang Lee
University of Tsukuba
#209, Institutes of Biological and Agricultural Sciences C, 1-1-1, Tennodai,
Tsukuba, Ibaraki, 305-0006, JAPAN
nigitaz@hotmail.com

Ian Loughead
Nova Scotia Museum
1747 Summer Street,
Halifax, NS, B3H 3A6, Canada
ian.loughead@novascotia.ca

Anne MacKay
McCord Museum
690 Sherbrooke St. West,
Montreal, Quebec, H3A1E9, Canada
anne.mackay@mccord-stewart.ca

Mikaela Marchuk
Canadian Conservation Institute
1030 Innes Road,
Ottawa, Ontario, K1B4S7, Canada
mikaela.marchuk@canada.ca

Manise Marston
Library and Archives Canada
625 boulevard du carrefour,
Gatineau, Quebec, J8T8L8, Canada
manise.marston@canada.ca

Angela May
Fleming College
Box 1386,
Beausejour, MB, R0E 0C0, Canada
Angela.May@flemingcollege.ca

Christine McNair
Canadian Conservation Institute
1030 Innes Road,
Ottawa, Ontario, K1B 4S7, Canada
christine.mcnair@canada.ca

Stefan Michalski
Canadian Conservation Institute
1030 Innes Road,
Ottawa, ON, K1B 4S7, Canada
stefan.michalski@canada.ca

Valery Monahan
Tourism and Culture, Museums Unit
Whitehorse, YK, Canada
Valery.Monahan@gov.yk.ca

Hayley Monroe
Vancouver, BC, Canada
hayleybmonroe@gmail.com

Gail Niinimaa
Niinimaa Enterprises Inc.
25 Cathedral Rd. N.W.,
Calgary, AB, T2M 4K4, Canada
niinimaa@nucleus.com

Megan O'Connor
Parks Canada
1800 Walkley Road,
Ottawa, Ontario, K1H 8K3, Canada
megan.o'connor@pc.gc.ca

Charlotte Parent
Queen's University
2-124 Centre Street,
Kingston, Ontario, K7L4E6, Canada
c.parent@queensu.ca

Antoine Pelletier
Parks Canada
1825 Semple,
Quebec, Quebec, G1N4B7, Canada
antoine.pelletier@pc.gc.ca

Gyllian Porteous
Warren Lasch Conservation Center
Supply Street, North Charleston,
Charleston, South Carolina, 29405, USA
gyllport@gmail.com

Erika Range
Ingenium, Canada Aviation and Space Museum
11 Aviation Parkway,
Ottawa, Ontario, K1K 4R3, Canada
erange@ingeniumcanada.org

Amanda Salmon
Canadian Conservation Institute
1030 Innes Road,
Ottawa, Ontario, K1B 4S7, Canada
amanda.salmon@canada.ca

Carolyn Savage
Private Practice
560, Churchill Ave. N.,
Ottawa, ON, K1Z 5E5, Canada
carolyn.savage@outlook.com

Erin Secord
Ingenium, Canada Museum of Science and Technology
1867 St Laurent Blvd,
Ottawa, Ontario, K1G5A3, Canada
esecord@ingeniumcanada.org

Ann Shaftel
Tsondru
6201 Shirley Street,
Halifax, Nova Scotia, B3H 2N3, Canada
annshaftel@me.com

Doris St-Jacques
Library and Archives Canada
625 Du Carrefour Boulevard,
Gatineau, Quebec, K1A 0M8, Canada
doris.st-jacques@canada.ca

Tom Strang
Canadian Conservation Institute
1030 Innes Road,
Ottawa, Ontario, K1B 4S7, Canada
tom.strang@canada.ca

Dee Stubbs-Lee
New Brunswick Museum
277 Douglas Avenue,
Saint John, NB, E2K 1E5, Canada
Dee.Stubbs-Lee@nbm-mnb.ca

Kyla Ubbink
Ubbink Book and Paper Conservation
2051 Valley Dr,
Ottawa, ON, K1G2P2, Canada
kyla@bookandpaperconservation.com

Sophia Zweifel
Conservation Solutions ULC
PO Box 521 STN B,
Ottawa, Ontario, K2P1K6, Canada
sophiazweifel@gmail.com

ASSURart
SHARES YOUR PASSION

Insurance Coverage Specifically Designed for Art Conservators

1 855 382 6677
assurart.com

This offer is subject to conditions and limitations of the subscribed insurance contracts. Some eligibility criteria may apply.

Professional Liability Insurance

Whether you are a company or self-employed you are not immune from a lawsuit, justified or not, for having caused a financial loss resulting from a professional error. Professional liability insurance, also called Errors & Omissions insurance provides the following protections:

:: Payment of legal expenses to defend you in case of a lawsuit
:: Payment of indemnity if the Court finds you responsible for financial loss suffered by the plaintiff

Studio/Laboratory Insurance

:: Coverage for equipment and tools, including your computer and camera, at or outside your studio
:: Coverage for your building
:: General liability insurance

Art Objects Insurance

Coverage for art objects entrusted for restoration
:: At your studio, at the client s premises or in transit
:: Available on an annual basis, or for a specific project

When it comes to paint, we're the one company willing to bare all.

We constantly put our art materials to the test, and share everything we learn through our live product support, videos, technical pages and articles. The only thing more remarkable than the extent of our research and testing of artist materials is the fact that it is always there to help you, for free.

Visit **goldenpaints.com** and discover the breadth of technical information we offer or **JustPaint.org** for in-depth reporting on everything to do with paint.

And, anytime you have a question, call us at 800-959-6543 or email **help@goldenpaints.com**

GOLDEN ARTIST COLORS®

©2017 Golden Artist Colors, Inc., New Berlin, NY

DORFMAN
MUSEUM FIGURES, INC.

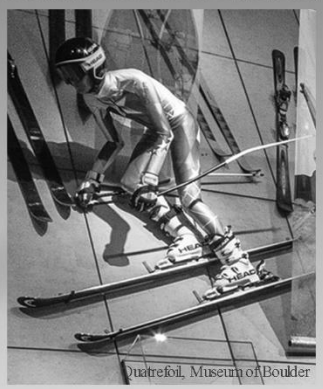
Realistic Figures
since 1957.

Conservation Forms
since 1996.

Dorfman Museum Figures, Inc. 60 Years of EXCELLENCE 1957 2017


MS Arts & Entertainment Exchange


Quatrefoil, Museum of Boulder


Quatrefoil, Museum of Boulder


© Birmingham Museum of Art

www.museumfigures.com

Dorfman Conservation Forms created exclusively with
Ethafoam® brand inert polyethylene foam.

GAYLORD ARCHIVAL®
Preserve Today. Share Tomorrow.®

Your Partner in Preservation

Now you can order your archival supplies directly from Gaylord Archival!

In most cases, purchasing **directly from Gaylord Archival** will save you money because prices will not include dealer markups. Additionally, you can work directly with our customer care team to get the products you need faster.

Our experienced sales and customer care representatives are friendly, knowledgeable and ready to help. Whether you have a question, need help choosing products or want something customized, **we're here for you.**

Discover everything we have to offer on Gaylord.com!

- Products for all your preservation needs—archival supplies, exhibit & display, environmental control, and storage & handling
- Easy online ordering and quotes
- Custom box builder
- Free resources for preservation professionals

Follow us on Social Media @GaylordArchival

1.800.448.6160 | CANADA@GAYLORD.COM | GAYLORD.COM

2019-CO-016-Print-Ad © 2019 Gaylord Archival

ART CONSERVATION
AT QUEEN'S UNIVERSITY

Art Centre Extension
15 Bader Lane
613-533-2742
www.queensu.ca/art/art-conservation

Queen's University

Where ART Meets SCIENCE

Educating the Next Generation of Leaders in Art Conservation

Leader in Museum, Cultural Heritage and Conservation Studies

Fleming College is the only school in Canada that offers two college-level, post-graduate programs for those interested in careers in the Arts, Heritage and Culture sector.

Our advanced level Cultural Heritage Conservation and Management and Museum Management and Curatorship programs provide the theory and hands-on training required to work in cultural heritage conservation and other areas of the museum or gallery sector.

Both programs are intense, fast-paced learning experiences where students are exposed to the industry leaders through networking and a full-time, final semester internship. Our interns and graduates are working here at home and around the globe: From the Canadian Museum of History to the Canterbury Museum, Christchurch NZ, to the Historic Royal Palaces in London.

These programs start in September.
For more information contact:
Gayle McIntyre, Coordinator
1-866-353-6464 ext. 1368
gayle.mcintyre@flemingcollege.ca

Haliburton School of Art + Design
Fleming College

Willard
CONSERVATION EQUIPMENT ENGINEERS