Conservation Treatment of the
Conne River
Mi’kmaq Prayer Book
David Hanington
Book & Paper Conservator
Works on Paper Laboratory
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In the spring of 1998, CCI received a Mi’kmaq Prayer Book from the Conne River Mi’kmaq Band in Newfoundland for Conservation Treatment.

This rare manuscript, provided a special challenge and a great opportunity to conserve a very valuable artifact.

The manuscript is an early Newfoundland Mi’kmaq Prayer Book containing hymns, prayers and other religious texts in use in divine worship according to Roman Catholic observance.

The majority of the text is written in a hieroglyphic script which is unique to the Mi’kmaq tradition.

The script is pictographic rather than phonetic.

The manuscript is an example of a writing system in use two and a half centuries ago.
When the Prayer Book arrived at CCI for conservation, the manuscript was in an extremely vulnerable and deteriorated state. The leather cover had completely separated from the text block and the boards were warped, misshapen and soft. The text consisting of 150 pages, was written on handmade paper, with a watermark of 1807. The paper was exceptionally dirty, with water stains and in-ground surface dirt particularly around the edges where the book was handled.
The leather cover had stains that resulted from exposure to water.
The leather had completely separated from the grey boards and had many wrinkles throughout.
The cover was badly stained and had areas where the leather was split and had become very brittle.
On examination of the front cover, I observed a pencil inscription along creases in the leather, which said, "No man or woman living at Conne knows how old this book is".
The year, 1959 above, suggested that the inscription was added at that time.
The text block was completely detached from the cover.
This exposed the four vellum thongs that the text block was sewn onto.
Over time, the vellum thongs had become hard and brittle and had snapped in the areas where they were laced into the cover.
The Conne River Mi’kmaq Prayer Book has a handwritten entry dated 1812, making it certainly the oldest paper copy of the prayer book to survive.

The pages had prominent water stains around the edges.

In many cases, the hieroglyphic symbols had become faint or the ink had been washed away entirely.

The pages were badly torn and damaged, especially where they were handled at the fore edge and in the lower right corner.

Many of the pages had tears that extended across the width of the page and in many cases areas of the paper were missing.
Throughout the prayer book there were numerous pages with drawings and annotations in pencil and in a variety of coloured inks.

As you can see, this image shows, two sailing ships and a canoe, with a person paddling at the back and a person fishing at the front.
A number of pages throughout the prayer book have decorative designs.

These were usually a combination of black and red ink and may have been later additions to the manuscript.
The handmade paper was very soft and appeared to have lost most of its sizing.

Observations under transmitted light show the laid and chain lines in the paper and a watermark dated 1807.

The watermark had a Crown & Shield design as shown in the computer enhanced image on the right-hand side.
On the opposite side of the folio is a countermark, of the papermaker’s name J. JELLYMAN.

Research confirmed that Joseph Jellyman had an interest in the Dowton Mill in Salisbury, England as early as 1781.

Again the watermark at the bottom of this slide has been computer enhanced to improve the image.
During the examination of the Mi’kmaq Prayer Book for the condition report and treatment proposal, it became apparent that I could not read the hieroglyphic text nor determine the front and back of the volume.

I also found a number of detached pages throughout the volume.

It was obvious from the water stains and some identification marks, that these pages were in the wrong order.

I decided that I could not proceed with the dismantling of the book without knowing the correct sequence of the pages.
At this stage, CCI approached the Conne River Band for assistance to determine the correct location and order of the detached leaves of the prayer book.

They arranged for Helen Sylliboy, a Mi'kmaq Educator to come to Ottawa to ascertain the correct order of the detached leaves.

Helen worked in Language Development with the ESKASONI School Board, Cape Breton, Nova Scotia,
During her visit, Helen often referred to a recent publication “Mi’kmaq Hieroglyphic Prayers”.

Helen contributed to the research and the translation of the hieroglyphic symbols in the production of this publication.

The publication shows the hieroglyphic symbols, described as glyphs, which represent a word or words in the Mi’kmaq language.

Below each glyph, is printed the alphabetic Mi’kmaq language and a translation in English.
Helen informed me, that there are approximately two thousand, seven hundred hieroglyphic symbols which are read from left to right.

The hieroglyphic symbols in the red rectangle can be translated to say.

“Who created heaven and earth”.

The symbol A in the circle below, means and.

It can be found on most pages, and it assisted me in determining the top and bottom of the page.
During Helen Sylliboy’s examination of the manuscript, I was struck by her comments regarding the spirituality of the Mi’kmaq Prayer Book.

She wondered if it would be more appropriate, and more respectful of the object to leave it untouched.

It was clear from Helen Sylliboy’s response to this object, that there was a very powerful spiritual element of the book, to which we had not been sensitive.
The Significance of the Prayerbook

- Helen Silliboy felt a very powerful spiritual element of the book
- She suggested it might be more appropriate, and more respectful of the object, to leave it untouched
To Treat or NOT to Treat

- As a result of her insightful comments, treatment options were reconsidered, and a ‘no treatment’ option was included in the proposal.
- It was clear that a meeting with the owners should be arranged in Newfoundland to discuss the options.

As a result of her insightful comments, I reconsidered the treatment options and included a no treatment option in the proposal.

It was clear that a meeting of all interested parties should be arranged in Newfoundland to discuss the options prior to deciding on an appropriate treatment.

A meeting would also allow for a comprehensive discussion of the long term implications of each treatment option.
In the summer of 1998, I flew to Saint John’s Newfoundland to meet with Martin Howley, the Humanities Librarian at Memorial University.

The Prayer book had resided at the University for a number of years before being accepted for treatment.
Meeting in Saint John’s Newfoundland

Signal Hill, St. John’s

Gerald Penney

I also met with Gerald Penney, an Archaeologist and Heritage Consultant who was negotiating on behalf of the Conne River Band and was instrumental in arranging for this artifact to be preserved.
The following day, I was driven by Gerald Penney to meet with the Conne River Mi’kmaq Band, 600 km. from St. John’s.

To get to Conne River, we had to drive north from St. John’s to Gander before traveling south to Bay D’Espoir a good seven hour journey.
Conne River is located at the mouth of the river, it is an excellent place for salmon fishing and for interior access.

Conne River was designated a colonial reserve of 720 acres in 1872. Now, nearly 700 people live in the community.

It gave me the opportunity to meet with the Band members, and observe many of their traditional customs.
The next day, we held our meeting with the Band Council Members.

During the meeting, the condition of the prayer book and the difficulties associated with the treatment were presented.

I explained the advantages and disadvantages for treating or not treating the Mi’kmaq prayer book and described the treatment options in the proposal.

After a lengthy discussion, it was the decision of the Band Council Members that the prayer book should be fully treated.

The option chosen was to repair the pages of the text block using the leaf-casting technique, and to rebind the volume.
Meeting with the Band Council Members

• The condition of the Mi'kmaq prayer book and the difficulties associated with the treatment were presented, along with the advantages and disadvantages for treating or not treating it.

• After a lengthy discussion, it was the decision of the Band Council Members that the prayer book should be fully treated.
During the examination and treatment of the Prayer Book, before, during and after treatment photography was carried out by the Analytical Research Laboratory at CCI. A number of experiments were conducted, using UV and Infrared wavelengths to see if it was possible to enhance the inks.

None of the tests showed noticeable enhancement.
Analysis of several samples of ink from the Mi'kmaq prayer book was undertaken by the Analytical Research Laboratory using FTIR.

Three samples of ink, which appeared to be typical of the ink used throughout the prayer book, were probably composed of iron-gall ink.

The ink used in a design element of the text contained a red organic dye.

The blue ink used in a drawing of a sailboat was pigmented with ultramarine blue.
When the prayer book arrived at CCI for Conservation Treatment, the documentation provided by the owner suggested that the cover was caribou leather.

Analysis was undertaken by the Conservation Processes Materials Research laboratory using a polarized light microscope.
The original cover along with leather samples of caribou, calf, deer and sheepsheen were analysed. The hair follicle patterns on the original cover were compared to the other leather samples. It was apparent from the outset that the cover was not made of caribou skin. On caribou, the follicles are more numerous, closer together and larger than the follicles visible on the cover.
The results of the comparisons suggested that the original leather was likely sheepskin.

This identification remains tentative, however, because of the poor condition of the surface of the original leather.
The paper treatments commenced. Each section was removed from the text block by opening the section in the center and cutting the sewing thread. To keep the book in order, a small pencil number was placed on the top right hand corner of each page.
Each page was surface cleaned using a soft brush to remove loose dirt.

The prayer book was exceptionally dirty in the gutter area, where dust and debris had collected.

Each page was surface cleaned using a combination of eraser compounds.

Care had to be taken when erasing, as the paper was very soft and easily damaged.
One page in the prayer book had been removed at some time and laminated with a plastic film.

Fortunately, I was able to remove the laminated material from the surface of the page without the use of solvents.

This left strips of pressure sensitive tape along the fore edge and tail of the page.

The resulting residue stain from the tape was removed from the paper using acetone.

The procedure was carried out on the small suction table in the paper laboratory fume hood.
Before and after washing, pH measurements were taken on a number of pages randomly throughout the volume.

Spot tests revealed that the inks were stable enough to allow the prayer book to be washed.

Each page or folio was sandwiched between Reemay® and washed for one hour in deionized water.

The page or folio was lifted frequently from the washing water to release any soluble impurities in the paper.

The washed pages were removed and placed onto drying racks to air dry.
Leafcasting is a mechanical method for infilling damaged areas of paper artifacts with a matching pulp.

Leaf-casting is suitable for damaged books and documents that have large missing areas.

Leaf-casting the folios from the Prayer Book was one of the most critical procedures of the conservation treatment.
Combination of paper fibres

Measuring the pulp

Tests were conducted to determine a pulp which would provide a sympathetic colour match, thickness and weight of leaf-cast paper.

After many experiments with various fibres and information from previous recipes, a combination of cotton linters, handmade paper, oriental paper and a small amount of German fibres was torn up into small pieces.

The measured amount of pulp was carefully weighed, placed into beakers and soaked overnight in water.
Before beating, the pulp was disintegrated into a slurry and poured into a Hollander beater which is traditionally used in papermaking.

The pulp slurry circulated between the roll and the bedplate and was rubbed, cut, macerated, and separated until the required amount of beating was attained.
To determine the amount of pulp required, the missing area of each page was calculated using a planimeter on the light table.

The resulting measurement combined with the thickness of the paper was determined by a micrometer.

The calculation determined the amount of pulp required for the in-fills.
After the missing area of each folio had been calculated, a determined amount of air dried pulp was re-hydrated before disintegrating. This produced an even dispersion of fibres in water without causing further modification.

The folio was placed on Reemay® a spun polyester support, inserted into the upper chamber of the Vinyector leafcaster and was masked off with black polyethylene.

The measured amount of pulp was then poured into the chamber. The water and pulp fibres were evacuated under vacuum, forming a fine web of fibres in the missing areas.
After casting, each folio was removed from the upper chamber on its Reemay® support and pressed between blotting paper in the hydraulic press.

Following the casting, each folio was sized using a 1% solution of Klucel G in ethyl alcohol.

The folios were trimmed to size leaving a small margin of paper on the outside edge of each page.
In consultation with the owner and prior to rebinding, it was arranged to have the Mi’kmaq Prayer Book microfilmed at the National Archives of Canada, Gatineau Preservation Centre.

I was present for the microfilming process and handled the folios during the filming.
Microfilming

Staff filming and processing film

Three staff members from the Microfilming Division were responsible for the filming, processing and quality control.

The process took a day to complete.

Three copies of the film were made, one copy went to Conne River Mi’kmaq Band and one copy to Memorial University of Newfoundland.

In exchange for microfilming, one copy was made and retained by the National Archives of Canada.
In consultation with the Mi’kmaq Band, it was decided that the original cover would not be used in the rebinding.

The leather was very deteriorated, no longer supple and flexible and would have hindered the opening of the prayer book.

It was decided to bind the book with a new limp style parchment cover.
Sewing the Text Block

The text block was hand-sewn onto four alum-tawed thongs using a traditional wooden sewing frame.
A linen thread was passed backwards and forwards through the centre fold of each section until all sections were attached.
A strip of alum-tawed goatskin was cut and stained to form the core of the headband.
The headbands were sewn onto the head and the tail of the text block using a linen thread.
The headband formed the secondary thongs which were eventually laced through the parchment cover to secure the text block to the cover.
The volume was rounded and placed into a press between wooden pressing boards.
Two thicknesses of Japanese paper were attached to the spine between the thongs with wheat starch paste.
A limp parchment style cover was selected with yapp edges and thongs that were laced through the parchment to secure the text block to the cover. Limp vellum or parchment bindings provide an opportunity for disassembly, maintenance and reassembly, with no damage to the text block.
A specially prepared parchment skin was obtained from a local supplier in Ottawa.

The goat skin was dyed brown to create a colour sympathetic to the original cover.

Here you can see some of the procedures, that include unhairing, fleshing, stretching, drying and finishing, for producing this skin.
A pattern for producing the cover was made of paper to form a template to custom fit the text block.

The corners of the cover were constructed combining a Yapp edge at the fore-edge turn-in. This interlocking corner technique requires no adhesive and can be reversed at a later date if the cover needs to be removed.

Small round holes for the thongs and the headbands were made with a Japanese screw punch into the parchment to allow the thongs to be laced through the cover.
A custom made cover was constructed by cutting and folding the parchment to fit the text block.

A piece of 2ply matboard was inserted in the centre of the front and back cover for added support.

After completing the manufacture of the cover, the four thongs and headband ties were laced-in and out of the cover to attach the text block.

The thongs also laced through a reinforcing strip of alum-tawed goatskin that was incorporated to strengthen the endpaper joint.
The thongs and headband ties were cut to length and the endpapers positioned under the cover turn-ins to conceal the thongs.

The detail image on the right shows the Yapp edge. This small lip on the fore edge helps protect the edge of the pages when the book is closed.

The close-up, also shows the interlocking corners and inside peg ties.
These two images show the headband that is sewn onto the head and tail of the text block. This also shows where the headband core ties are laced through the cover.
Two pegs were manufactured of caribou tusk to keep the Mi’kmaq prayer book closed. Small pieces of the tusk were cut to size on the bandsaw and shaped to size using files and sandpaper. A small slot was cut in the pegs to affix the alum-tawed goatskin fore edge ties. These were hand sewn onto the ties and laced into the cover. Two small leather loops were secured to the front cover to hold the pegs in place and keep the book closed.
This slide shows the finished front and back cover with the four leather thongs and headband ties showing along the spine joint.

It also shows the two caribou pegs and ties for holding the prayer book closed.

The cover, has a sympathetic colour match in tone and character to the original binding.
A solander box was constructed to house the Mi’kmaq prayer book.
The box was manufactured with millboard covered in neutral coloured bookbinding cloth.
The prayer book is encased in its leather book jacket and sits on top of a second solander box below for storing the original binding materials.
A portfolio was constructed to house the sewing materials that included the old sewing thread and the vellum thongs.

These materials were encapsulated in 3mil Mylar® before placing them into the portfolio.

A second solander box was constructed to house the original cover and the portfolio containing the sewing materials.
The completed Prayer Book is shown sitting open on a Plexiglas® Stand.

A leather skin, supplied by the Mi’kmak Band, was used to construct a padded book jacket for the Prayer Book to rest on while on display.

This support or book jacket also wraps around the Prayer Book for protection and storage in the solander box.
Acknowledgments

Conne River  Band Council Members
Sherry Guild  Conservator, Works on Paper Section, CCI
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Gerald Penney  Archeologist & Band Negotiator
Martin Howley  Humanities Librarian, Memorial University
Helen Sylliboy  Mi’kmaq Educator

The treatment of the Mi’kmaq Prayer Book in the Paper Laboratory proved to be of great interest to everyone who passed through the laboratory.

I would like to thank the people I have listed for their assistance.

I particularly would like to thank Sherry Guild for her guidance throughout the treatment and Juliet Graham for her assistance in leaf-casting.
As you can see from this long list, I received help and advice from a lot of people.

About a month ago, the Prayer book was returned to Memorial University in Newfoundland.

In June, I will be visiting the University to speak about the book and its treatment.

I will then have the great pleasure of returning the Prayer Book to the members of the Mi’kmaq Band in Conne River.

They are looking forward to giving it a position of prominent display in their community.

For me, the Mi’kmaq Prayer Book is a unique artifact with great spiritual presence and it was a privilege to treat it.