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Conservation and Study of Simon Pokagon's Birch Bark Books

INTRODUCTION

While birch bark is more often found in museum collections, it is less common in libraries and archives. The need to learn more about the history and material technology of birch bark in bookmaking arose when the authors received damaged copies of Potawatomi author Simon Pokagon's birch bark books, *The Red Man's Greeting* and *The Red Man's Rebuke*, at the Weissman Preservation Center (WPC), Harvard Library, and the conservation lab at the University of Michigan (U-M) Library. Neither of the authors had treated birch bark before, although Kaye specializes in the conservation of ancient Egyptian papyrus at U-M and has worked on other lightly processed plant-based substrates. When the authors received these books to treat in their respective labs, they both had to think deeply about how to proceed. Before starting treatments, they needed to learn more about Simon Pokagon and the cultural significance of birch bark to the Anishinaabe culture. In this essay, the authors share their in-depth research into Simon Pokagon's birch bark books. Sjoblom and Kaye considered their roles as conservators in treating a text by an Indigenous author while learning about the materiality and use of birch bark. Both the tangible and intangible aspects of Pokagon's birch bark books were considered as a framework for conservation and preservation.

The research presented in this article relied heavily on experts in many areas. The authors are grateful to have learned from the work and knowledge of Anishinaabe scholars, artists, historians, scientists, and many more experts. The Anishinaabe (or *Neshnabéék* in Potawatomi spelling, meaning "original people," referencing the Anishinaabe creation story) is a group of culturally related Indigenous peoples in the Great Lakes region of what is now called Canada and the United States¹ (Pokagon Band of Potawatomi, 2022, *History*). They include the Ojibwe, Odawa, and Potawatomi. The authors want to particularly highlight Dr. Blaire Morseau (Pokagon Band of Potawatomi) and artists Kelly Church (Gun Lake Band of Potawatomi/Odawa/Ojibwe) and Devan

Kicknosway (Mohawk/Potawatomi). Dr. Morseau served as the first archivist for the Pokagon Band of Potawatomi Language and Culture Center. Her article in *Michigan History* magazine was one of the first resources both authors read and discusses the meaning of Pokagon's use of birch bark and the collection of his birch bark books in the Pokagon band archive. Kelly Church is a fifth-generation basket-maker and creator of birch bark bitings in Michigan. She teaches widely, speaks about threats to natural resources used by Indigenous artists, and exhibits her work globally. Devan Kicknosway is a quillwork artist and YouTuber whose videos provide viewers the chance to learn about his artistic process and how he harvests and makes use of birch bark for his work.

The authors also corresponded with representatives of the Pokagon Band of Potawatomi, experts on the Native American Graves Protection Repatriation Act (NAGPRA) at their respective institutions, and professors and students who use the collections. They also listened to talks and read papers related to the conservation of Indigenous items and reviewed specifications such as *Guidelines for Collaboration* from the Indian Arts Research Center (IARC) at the School for Advanced Research (SAR), *Protocols for Native American Archival Materials* from the First Archivist Circle, and resources from the Association of Tribal Archives, Libraries and Museums (ATALM). These resources provided a foundation for Sjoblom and Kaye to approach treatment, as neither had previously worked with Indigenous collections. They also helped the authors understand the broader context of working with Indigenous collections in library and archives, such as sovereign rights of Indigenous communities, issues with collecting and ownership in non-Native institutions, digital and physical collection access, intellectual property issues, and proper naming and cataloging information.

Through the process of conserving and studying Pokagon's books, the authors learned about the many diverse ways the books can, and have been, used and interpreted. One exciting opportunity that came out of this research is the chance to contribute a chapter on the materiality and conservation of the books to an upcoming book edited by Dr. Morseau and published by Michigan State University Press called: *As Sacred to Us: Simon Pokagon's Birch Bark Stories in Their Contexts*.

Papers presented during the Book and Paper Group Session, AIC's 50th Annual Meeting, May 13–18, 2022, Los Angeles, California

The book is geared towards an Indigenous Studies audience and will include transcriptions of Pokagon's birch bark books, as well as chapters by scholars, including members of the Pokagon Band, about linguistics, geology, and the printing and distribution of the books, highlighting the myriad topics relating to these birch bark books. Participating in this project helped Sjoblom and Kaye gain a deeper understanding of the context and use of the books and shows the importance of reciprocity when doing research.

SIMON POKAGON

Simon Pokagon was a citizen of the Pokagon Band of Potawatomi Indians, a federally recognized tribe in southwest Michigan and northern Indiana (fig. 1). He was born in 1830 near Bertrand, Michigan and died in 1899 in Hartford, Michigan. He was the third son of Potawatomi Chief Leopold Pokagon. Chief Leopold Pokagon was chief in the first half of

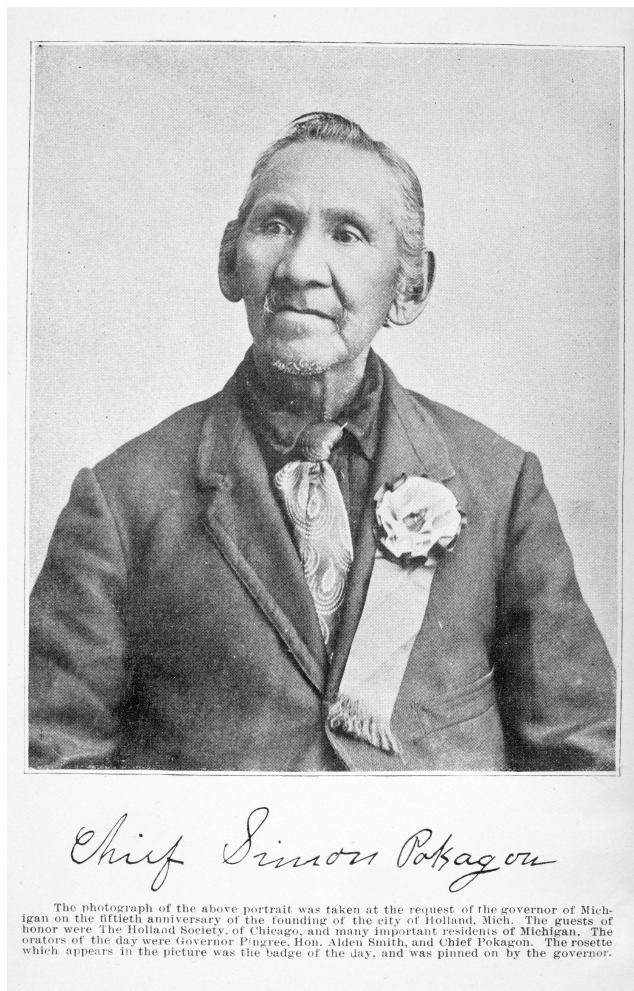


Fig. 1. Portrait of Simon Pokagon in *O-gi-maw-kwe Mit-i-gwa-ki, Queen of the Woods*, Simon Pokagon, 1899 (Special Collections Research Center, University of Michigan Library).

the 19th century, serving as the head of a Potawatomi village in the St. Joseph River Valley in southwest Michigan. Details of his life are largely unknown, but he was likely born as Odawa or Ojibwe and raised by the Potawatomi. Unlike other bands of Potawatomi, the Pokagon Band avoided forced removal from Michigan by the Federal Government because of Chief Leopold's role in the 1833 Treaty of Chicago. Chief Leopold separated his community from the rest of the Potawatomi by upholding strict temperance and emphasized the band's conversion to Catholicism to negotiate an amendment to the treaty, allowing the Pokagon Band to remain in Michigan (Low 2016, 29). Some Potawatomi were permitted to return to their land in Forest County, Wisconsin and in a few other areas in Michigan, but the majority were forced to leave the Midwest, with some fleeing to Canada and Mexico. With the Indian Removal Act signed into law by President Andrew Jackson in 1830, those who remained in villages in Indiana and Illinois were forcibly moved west in what is known as the "Trail of Death." Their descendants now live in Kansas (Prairie Band) and Oklahoma (Citizen Band) (Low 2016, 30). Although the Pokagon Band applied for federal recognition after the Reorganization Act of 1934, it wasn't until 1994 that their federally recognized status was reaffirmed by Congress (Pokagon Band of Potawatomi 2022, *History*).

Simon Pokagon was an activist for Indigenous rights who fought for treaty payment for the Pokagon Band, eventually obtaining partial payment. To collect payment due to the tribe from the cessions of the 1833 Treaty of Chicago, Pokagon visited President Abraham Lincoln twice and met with President Ulysses S. Grant after the Civil War (Low 2016, 41). Yet he was also criticized for his questionable business practices, selling off the Band's interest in Chicago lakefront property to non-Native real estate speculators, with no authority to do so (Low 2016, 76). He is often described as being caught between two worlds, as he assimilated with the settler-colonial population around him, yet held strong to his own heritage and culture. His writings are interpreted as promoting reconciliation between the two races, rather than continued efforts to "civilize" Indigenous Americans out of existence (Cushing Davis 2015, 46). When he was not writing, Pokagon spent much of his time in tribal politics. By the 1890s he was no longer a leader of the Pokagon Band but still called himself the "chief" (Low 2016, 74). Pokagon Band member and scholar Dr. John Low (2016) speaks to this dichotomy when discussing Simon Pokagon's novel, *O-gi-maw-kwe Mit-i-gwa-ki, Queen of the Woods*:

Holding history in my hands, a portal to a shared past, time speaks to me through this book—its leaves, like worn and delicate sheets of birch bark—its talking pages pass on traditions as I turn them, as I fold the covers in to keep safe the lived experiences of then and now. This small book, a treasure, a memorial to my ancestors, a monument to the resiliency of a people, a tribe—ironically, unexpectedly, and eloquently,

written by a man despised by some of his own people, yet embraced by the wealthy of his day. This man insinuated himself and his work into the high culture of America and there recorded our survival. (52)

Due to the Potawatomi's distinct public presence as Indigenous Americans within the city of Chicago, Simon Pokagon played a visible part in the World's Columbian Exposition held in the city in 1893. This world's fair was held to commemorate the 400th anniversary of Columbus arriving in the Americas and the perceived development of the country. He was the honorary umpire of a lacrosse game where the Pokagon Potawatomi used their athletic traditions to assert their presence in the city (Low 2016, 142). He also built a birch bark tipi/wigwam at the Exposition, which was later moved to his home in Hartford, Michigan and after his death used by his publisher C.H. Engle as a tourist attraction (Low 2016, 168). Seen as a celebrity in Chicago, he was a featured "Chicago Day" speaker at the Exposition, where he spoke out against the oppression of Indigenous people and culture. It was for this event that he wrote and sold *The Red Man's Rebuke*, which was soon retitled *The Red Man's Greeting*, rebuking the celebration of colonization and asserting the continued Native presence in the area. This book was also featured on the fairgrounds at the Michigan State Exposition Building, becoming a highly sought item by book dealers and antique shop owners in Southwestern Michigan from the very start (Low 2016, 46).

Pokagon had a successful writing career and published many books and essays with the help of his publisher, C.H. Engle. Engle was a central figure in the white settler-colonial community and is frequently referred to as Pokagon's friend and attorney. Pokagon's most well-known work is the semi-autobiographical novel, *O-gi-maw-kwe Mit-i-gwa-ki, Queen of the Woods* (1899), which was also turned into a stage play. Five of his books were printed on birch bark: *The Pottawatamie Book of Genesis: Legend of the Creation of Man* (1901), *Algonquin Legends of Paw Paw Lake* (1901), *Algonquin Legends of South Haven* (1900), *The Red Man's Rebuke* (1893), and *The Red Man's Greeting* (1893). His work is important for its use of Potawatomi, Odawa, and Ojibwe language and holds a significant place in Indigenous book history for his ability to tell Indigenous narratives using his own language, but successfully marketed to a non-Native audience.

Pokagon's birch bark books are all small and short in length, 10 to 14 pages. The horizontally oriented *Rebuke* and *Greeting* are roughly 3 × 5 inches and only about 1/8" thick (approximately 75 × 126 × 3 mm). His vertically oriented works on birch bark, such as *The Algonquin Legends of Paw Paw Lake* and *Pottawatamie Book of Genesis* are also tiny, at 84 × 60 × 2 mm and 94 × 65 × 2 mm respectively. All of Pokagon's birch bark books are oversewn with ribbon through three punched holes on the left edge. The pages vary in thickness, color, and natural aspects. They are relief printed in black



Fig. 2. Photomicrograph (15x magnification) of *The Red Man's Greeting* (AC85 P7565 893r, Houghton Library, Harvard University). An example of printing where the text sits only on the highest points due to the uneven surface.

ink, with text and illustrations throughout. Pokagon's publisher, Engle, had access to the printing plant at the *Hartford Day Spring* newspaper, which is where Pokagon's books were letterpress printed. The illustrations in the books appear to be wood engravings that were turned into stereotyped plates. Recent research by Dr. Kelly Wisecup to be published in *As Sacred to Us* provides new information on the printing, chronology, and differences between copies of these books. In examining the books, the printed impression varied greatly due to the natural variations in the page, such as knots and uneven laminations (fig. 2). The white powdery substance on the surface of the birch bark, called betulin, also reduced the legibility of some text. These observations highlight the challenges in printing on an uneven, water resistant, natural material, such as birch bark.

BIRCH BARK

Pokagon (1893) explained why he chose to use birch bark for his book in *The Red Man's Rebuke* at the very start of his text. He states:

My object in publishing The Red Man's Rebuke on the bark of the white birch tree is out of loyalty to my own people, and gratitude to the Great Spirit, who in his wisdom provided for our use for untold generations, this most remarkable tree with manifold bark used by us instead of paper, being of greater value to us, as it could not be injured by sun or water (By The Author).

Paper birch, or wigwas in the Potawatomi language, is found in the sub-boreal forests of Northern United States and Canada (Moser et al. 2015, 1). It is the periderm layer of the



Fig. 3. Photomicrographs (15x magnification) in *The Red Man's Greeting* (AC85 P7565 893r, Houghton Library, Harvard University); from left to right: betulin, lenticels (inner), lenticel (outer).

outer bark of the tree and has a laminar structure caused by seasonal growth (Maitland 2016, 51). Seasonal growth also leads to the color differences in the laminates, with cells formed in the later spring to early summer that are broad in the radial dimension and light in color due to a high betulin content; and the cells formed in the later, colder season that are narrow in the radial dimension and dark in color due to tannins and other phenolics (Tse et al. 2018, 424). Betulin is a white powdery triterpene found on the surface of the bark that is antifungal and, along with the natural oils in birch bark, means that birch bark is incredibly resistant to insects, biodeterioration, and water (*ibid*). The layers of the bark are held together with pectin, as well as the horizontal streaks in the bark called lenticels, spongy weak areas that allow gas exchange between inner and outer tissue (Krueger 2008, 30) (fig. 3).

In the late 19th century, when the books were made, much of Michigan and the Great Lakes Region were ceded. Harvesting could occur on private land, and treaty rights may have allowed the Pokagon Band access to public land as well (*Great Lakes Fish and Wildlife Commission [GLIFWC], [N.d.]*). In the early 19th century, the Pokagon Band was in Bertrand Township in southwest Michigan (Pokagon Band of Potawatomi, *History*).

However, the Treaty of 1833 required the Pokagon band, led by Leopold Pokagon in 1838, to relocate north to the L'Arbre Croche region (present day Emmet County, Michigan) with the Odawa. Further treaties between the Odawa, Ojibwe, and the United States government led to the cessation of this land, and Leopold and his band returned to southwestern Michigan, purchasing land near present day Dowagiac, in Van Buren County, using annuities from land treaties. Although once more widespread, birch remains in southwestern Michigan but is now more concentrated in the most northern regions. Kelly Church, who lives and works in Michigan, noted that although birch is more prominent in northern Michigan, she believes that there would have been large stands of birch in southwestern Michigan before the area was cleared for housing development (Church, pers. comm.). This is seen in the use of birch for summer lodges, canoes, baskets, and scrolls in the area, showing that the material was available and widely used (*ibid*). It is important to note that Native artists' ability to obtain materials such as birch bark is impacted by restricted land access and climate change, risking the loss of generational knowledge.

To understand the material and have samples to work with, both authors attempted to harvest birch bark (fig. 4).



Fig. 4. Sjoblom harvesting birch bark from fallen trees in Oakland, Maine in 2020.

This was before speaking to experts, and it became very clear just how much knowledge and skill goes into harvesting birch bark successfully. Sjoblom harvested from dead trees in autumn in central Maine in 2020, and although she was able to peel some thinner sheets, she struggled to achieve sheets the size of the book pages without splits. She experimented with heat and soaking to see if this helped separate the layers, but with little success.

Pokagon (1898) described how he understood the way birch trees grow and how they can provide material for those who work with it:

Nature has richly provided this particular tree with two grades of bark: an inner gray bark, which runs with the grain of the wood, and an outer bark, the grain of which runs round the tree at right angles to the inside gray bark. During each year a layer of thin, tough, paper-like bark is found around the outside of the inner gray bark and under the previous year's growth. These sheets, being formed annually, cause the bark in time to become manifold; and as the tree increases in size they must grow and expand so as to correspond with the increased diameter of the tree. During springtime the various years' growth of bark can be separated and wound off in single, double, or triple sheets, so as to suit the different kinds of work desired. For some cause these sheets of bark of different years' growth vary in hues of red, white and gold. (540)

Understanding the structure of birch bark provided a vocabulary to describe the material but not an understanding of its cultural significance and what this indicated about the creation of the books. The chance to speak with Kicknosway and Church in 2021 provided information that was key to understanding the books based on their skill and generational knowledge. Both artists are dedicated educators who share their knowledge in many settings. However, out of respect for their traditional knowledge, in this article the authors focus on understanding birch bark harvesting in relation to Pokagon's books, rather than an effort to record the process more broadly. This information can be found in interviews, blog posts, and recordings of Church and Kicknosway, as well as other Anishinaabe artists, in their own voices. The authors provide a closer examination of the birch bark books in relation to the artist interviews in *As Sacred to Us*.

Devan Kicknosway's YouTube video, "How I Harvest Birch Bark," is an excellent resource for observing the process in detail. Most often, birch bark is harvested from live trees and, if done without damaging the cambium, does not harm the tree and the bark will eventually regrow (Emery et al. 2014, 208; Kicknosway 2020). However, even if properly harvested, the new bark growth will be permanently changed (Geniusz 2009, 183). To harvest the bark, Kicknosway makes a long vertical and two small horizontal cuts in the outer bark (like a serif capital letter I) and gently removes the bark (Kicknosway 2020). If a larger piece of multilayered bark is harvested at the correct time, the harvested piece of bark can

be successfully peeled into even thinner layers later. Both artists explain that properly harvested and stored birch bark can be preserved for many years and retains its desired working qualities (Church and Kicknosway, pers. comm.).

From the artist interviews it became clear that the time of year directly influences the physical qualities of the final product. When lighter-colored, thin, and flexible bark is needed, such as for quillwork and birch bark bitings, bark harvested on the warmest days in the summer is used, which is referred to as summer bark. Winter bark, harvested on the coldest days, is darker because it is rich in tannins. This bark is used for etchings and is stiffer and thicker. Both artists explained that summer bark is easily peeled into thin layers, but this can be more difficult to accomplish with winter bark. Church uses summer bark peeled into single layers for her birch bark bitings, which have a similar quality to the thinner pages seen in Pokagon's books. In examining the books, the authors found that there was significant variation in color from white to orange, as well as thickness from single to multiple layers (fig. 5). Therefore, they were able to identify that both summer and winter bark were used.

Many varying characteristics were observed when examining the books, and no two pages are the same. Some pages have knots, remnants of inner bark, and sap accretions, and the size and direction of the lenticels varies. Both artists noted that they consider all these things when selecting the trees they harvest because of the aesthetic and mechanical impact it has on their work. The artist interviews provided key information used to interpret the differences seen in the books and helped explain what this suggests about how the bark was collected for printing *The Red Man's Rebuke/Greeting*. At this time no records have been found about who harvested and prepared the bark for Pokagon's books. Pokagon included images in the back of his novel, *O-gi-maw-kwe Mit-i-gwa-ki, Queen of the Woods*, showing items made of birch bark and the women who created this work in his town (fig. 6). At the time there was increasing demand by museums and tourists for Indigenous handicrafts, supporting the economic interests of the Michigan Potawatomi (Cushing Davis 2015, 45). This may indicate that they, or someone in the direct family, were involved in harvesting and preparing the bark for Pokagon's books. It supports the theory that the bark came from Potawatomi artists, or those in the Pokagon Band. The presence of both summer and winter bark in a single book suggests that Pokagon Band artists had a collection of birch bark on hand for various uses, which may have been used for the printing of the books. With the growing demand for the books, supplies may have been quickly depleted, leading to less pristine birch bark being used. Without further examination of more copies of the books, and without supplementary information on the time of purchase and provenance, it is not possible to come to a definitive conclusion as to where the birch bark was harvested and sourced.



Fig. 5. A comparison of estimated winter bark (top row) and summer bark (bottom row). Note that although the outer layer (left) of both barks is light in color, the inner layer (right) is significantly darker for the inner layer of the winter bark. *The Red Man's Greeting* (AC85 P7565 893r, Houghton Library, Harvard University).

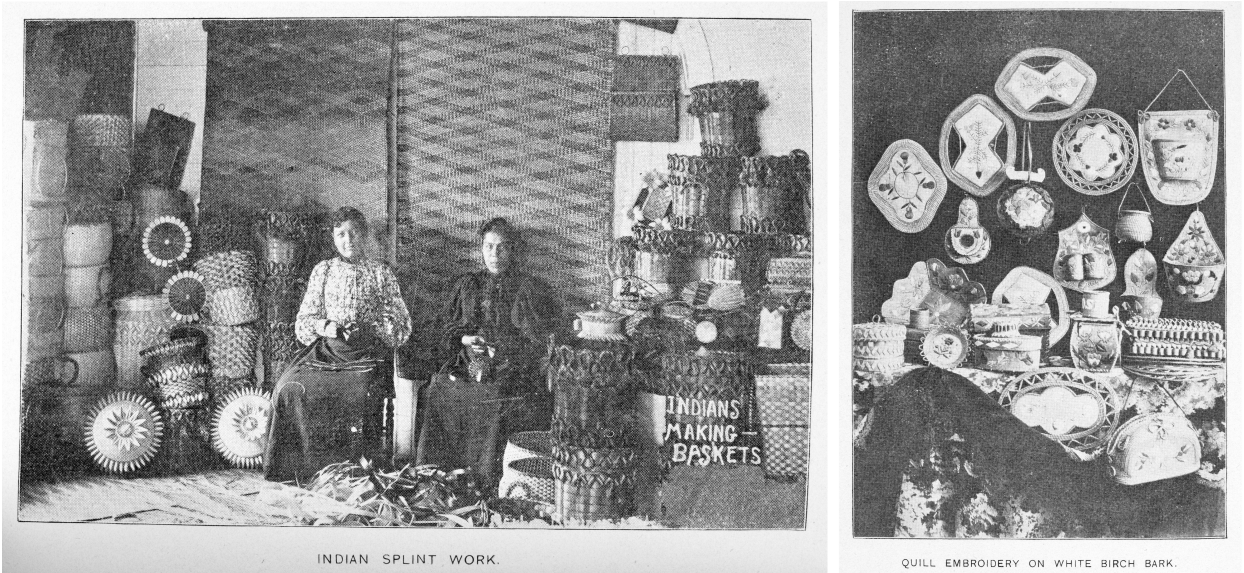


Fig. 6. “Indian Splint Work” and “Quill Embroidery on White Birch Bark” images from *O-gi-maw-kwe Mit-i-gwa-ki, Queen of the Woods*, Simon Pokagon, 1899 (Special Collections Research Center, University of Michigan Library).



Fig. 7. Vertical and horizontal book structures. *Algonquin Legends of Paw Paw Lake*, Simon Pokagon, 1900 (Special Collections Research Center, University of Michigan Library). *The Red Man's Greeting*, Simon Pokagon, 1893 (AC85 P7565 893r, Houghton Library, Harvard University; photo by Laura Larkin).

However, understanding how birch bark was harvested and used by the Pokagon Band may offer clues about when and by whom the birch bark was obtained. While Pokagon's works were printed by a white man, the birch bark may have been provided by Indigenous people who unfortunately remain nameless at this time.

BOOK STRUCTURES

With a better understanding of the materiality of birch bark, its use for book structures was also considered. An online review of historic book structures making use of birch bark revealed that most examples were created in South Asia, such as the Kashmir region. A literature review and conversations with conservators who worked on these types of structures showed that these books are usually sewn with an unsupported link-stitch through sections of folded sheets (Randell 2020; Todd 2017). Dr. Morseau's article on Pokagon's birch bark books also highlights the important connection to birch bark scrolls. Dr. Morseau writes, "While not explicitly mentioned in his texts, Pokagon's use of birch paper to print his works also hints to birch-bark scrolls used by Anishinaabe across the Great Lakes. Those scrolls were and continue to be used to transcribe oral histories, stories, ceremonial knowledge, and other important information through pictographs" (Topash-Caldwell 2018, 52). For sacred or sensitive items, such as some birch bark scrolls, access should be limited to only community members. Many birch bark scrolls are in non-Native institutions under questionable circumstances,

including digital images online, so the authors did not examine examples of Anishinaabe scrolls for this research.

Examples of Anishinaabe bookmaking with birch bark were also important to review in order to understand the context of Pokagon's books. One example is from the public-facing Pokagon Band digital archive database, "Wiwkwébhégen," which includes an image of an undated album-style book with a quilled birch bark cover and blank birch bark pages. The few other examples found in online searches feature quilled birch bark covers, but they do not always have birch bark pages. An important example of this is a book in Amherst College's collection, which has quilled birch bark covers by artist Margaret Blackbird Boyd (Ojibwa), adhered to a traditional gold-tooled leather-bound binding with a paper textblock containing her brother Andrew Blackbird's text, *History of the Ottawa and Chippewa Indians of Michigan*, 1887. There are examples of non-Native authors and publishers using birch bark for printed books in the 19th century, especially sold as souvenirs in resort towns. One such example in the U-M Clements Library collection, titled "Bay View the Beautiful," was published by Engle's brother in 1892, a year before *The Red Man's Rebuke/Greeting*, and has a very similar book structure as Pokagon's books.

Two types of oversewn codex structures were used for Pokagon's books: a horizontal format with loose pages oversewn along one edge; and a vertical format made of folded sheets that are nested together and oversewn on one edge (fig. 7). In both cases the edges are bound with a green silk ribbon. Often in bookbinding with single sections of folios,



Fig. 8. The combination of vertical lenticels and the birch bark page flexing at the oversewing leads to splits in the page, as seen in the front cover of *The Red Man's Rebuke* (Special Collections Research Center, University of Michigan Library). Photomicrographs (15x magnification) show punched holes and a broken area within a lenticel of *The Red Man's Greeting* (AC85 P7565 893r, Houghton Library, Harvard University).

the pages are sewn through the center fold with a pamphlet stitch, but this is not the case with the Pokagon books. Oversewing the pages in this manner results in a book that is difficult to open and read, due to the elimination of margins in the center of the book, which has led to many of Pokagon's birch bark books being dis-bound.

CONDITION ISSUES

A major concern with birch bark is that it can split with use due to the naturally weak areas of the lenticels. In handling birch bark samples, the authors found it to be very strong cross-grain, but weak and prone to splitting with the grain, which is in the direction the lenticels run (fig. 8). Much of the damage in these books resulted from the oversewn structure and flexing of the page, with worse damage on pages where the lenticels run vertically. It was also found that the thicker pages of 4–6 layers were stiffer and more prone to splitting than pages of 1–2 layers. The thicker bark were largely identified as winter bark, with the thinner pages as summer bark. Some books have areas of planar distortion, which pose treatment challenges because the bark is inherently water resistant. Handling and abrasions also led to disrupted bark fibers. The friable nature of the betulin leads to damage or loss of the matte surface. Figure 9 illustrates the loss of betulin in the upper right corner where a catalog number was written in pencil and then erased.

Birch bark has a much lower percentage of cellulose than paper, and the lenticels contain even less, weakening the bark (Maitland 2016, 52). As the bark becomes brittle, it is less able to flex. This, coupled with the natural desiccation of the pectin between the laminates, leads to the natural delamination of the bark (fig. 10). Peeling occurs between the two types of cork cells from different times in the trees seasonal growth. Birch bark is very resistant to deterioration through chemical reactions because it does not readily absorb water due to the waxes and oils found in the bark, and therefore

has a low moisture content. It is not prone to acid hydrolysis, which requires water for activation (Suryawanshi 2006, 111).

CONSERVATION TREATMENT

A literature review of birch bark treatments and conversations with other conservators from different specialties provided a better understanding of the material and a foundation for treatment (Adney and Chapelle 1964; Batton 2000; Dignard et al. 2012; Gilroy 2008; Krueger 2008; Kurtz 1997; Maitland 2016; Randell 2020; Suryawanshi 2000 and 2006; Todd 2017). It was also important to consider questions about culturally appropriate treatment of birch bark and examples of conservators working in collaboration with source communities

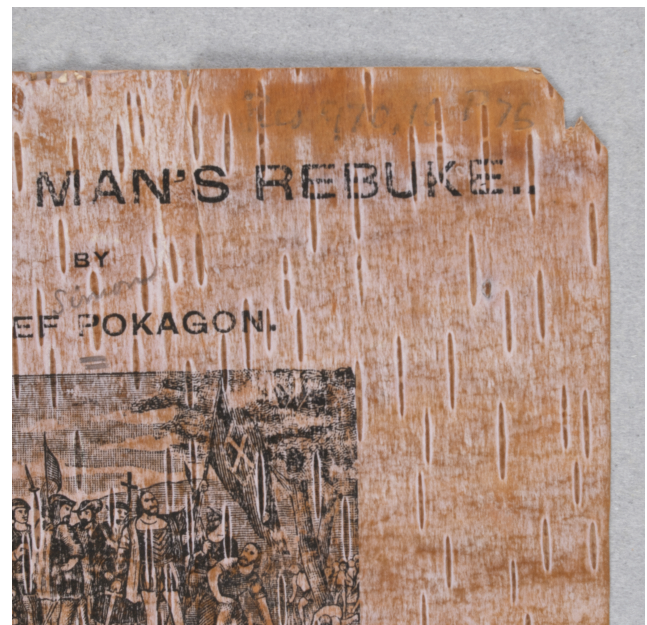


Fig. 9. Loss of betulin due to erasure on the front cover of *The Red Man's Rebuke* (Special Collections Research Center, University of Michigan Library).

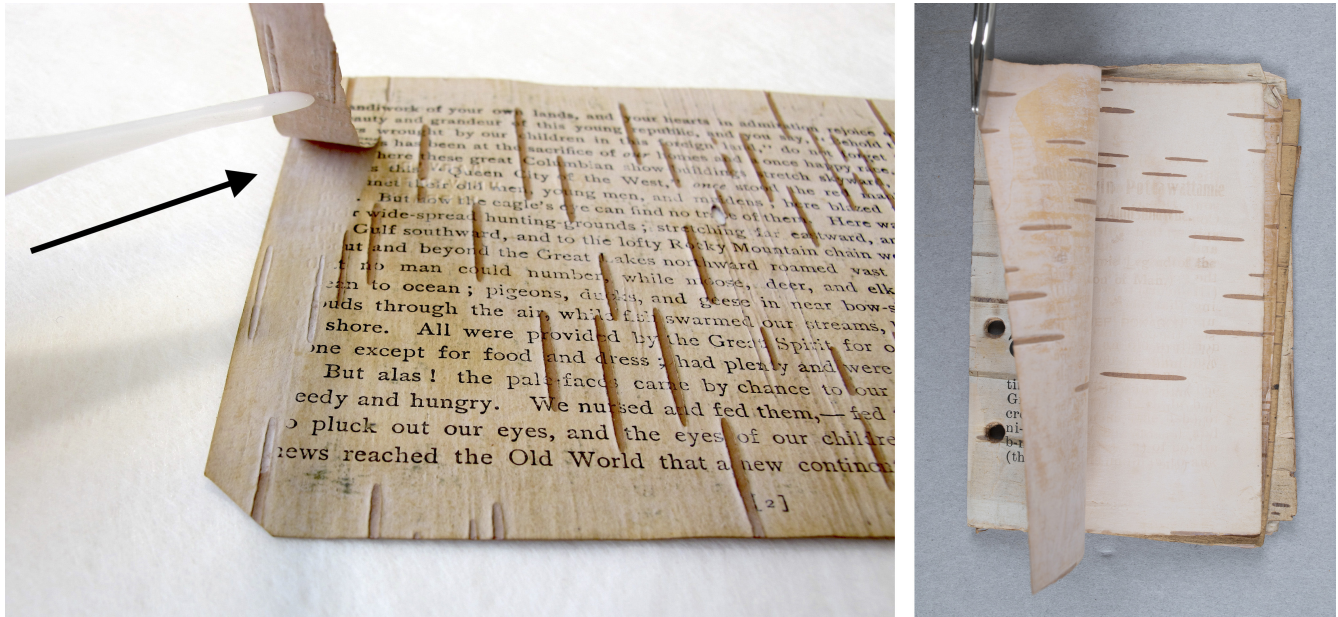


Fig. 10. Delamination of pages; left: *The Red Man's Greeting* (AC85 P7565 893r, Houghton Library, Harvard University); right: *The Red Man's Rebuke* (Special Collections Research Center, University of Michigan Library).

(Camp 2021; Clavir 2002; Gleeson and Springer 2008; McHugh 2022). Kaye reached out to the Pokagon Band Tribal Historic Preservation Officer and the Director of Language and Culture for the Pokagon Band. However, due to layoffs and the COVID-19 pandemic, communications were brief. Although these books are of incredible historic and cultural significance, they were made for general sale and were written for an audience outside the Pokagon Band. They are not considered sacred objects subject to NAGPRA regulations, and the authors found no specific cultural guidelines for treatment and handling. However, because Pokagon begins the *Rebuke/Greeting* stating that birch bark is sacred to him and his culture, Sjoblom used artist intent and general guidelines on treating Indigenous (also includes First Nations) birch bark items to guide the treatment she performed at the WPC working as a contractor in fall 2020, after completing her graduate internship year in the lab.

The book treated by Sjoblom had splits and delamination throughout but compared to other examples of the Pokagon's birch bark books viewed online, had only moderate damage. In selecting an adhesive for tear and delamination repair Sjoblom wanted one that was biodegradable, like wheat starch paste and methyl cellulose. This is a general guideline for treating organic Indigenous items, acknowledging that these items must have the ability to naturally decompose and go back to the earth (Clavir 2002). Because birch bark is very resistant to water, there was little concern about moisture in an aqueous adhesive causing distortions. However, in testing on samples, water was found to saturate the inner face of the bark, causing some color change (fig. 11). This mostly

reversed with drying, but excess moisture was still something to avoid. Organic solvents and alcohols should be avoided because they solubilize components in the bark (Maitland 2016, 56).

Wheat starch paste is more matte, like birch bark, so it was considered for repairs. However, because wheat starch paste contracts when dried, this could cause delamination of the layers. Testing also revealed that repairs with dilute wheat starch paste (Aytex P) were too stiff compared to the birch bark. The book had a library label pasted to the last page,

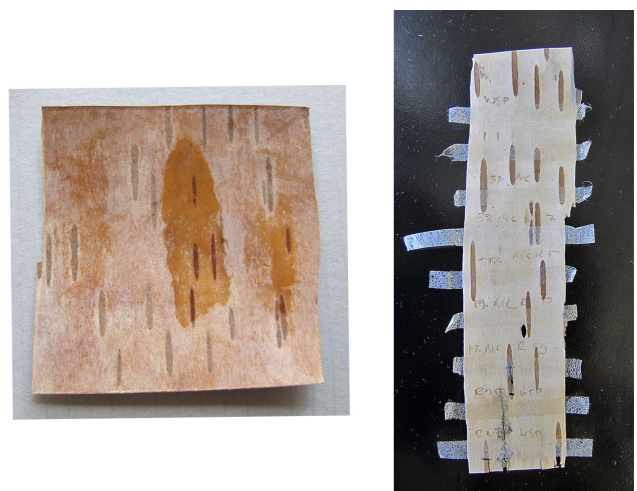


Fig. 11. Darkening of inner face of Sjoblom's birch bark sample due to water saturation (left). Testing adhesives and support materials for delamination and tear repair (right).

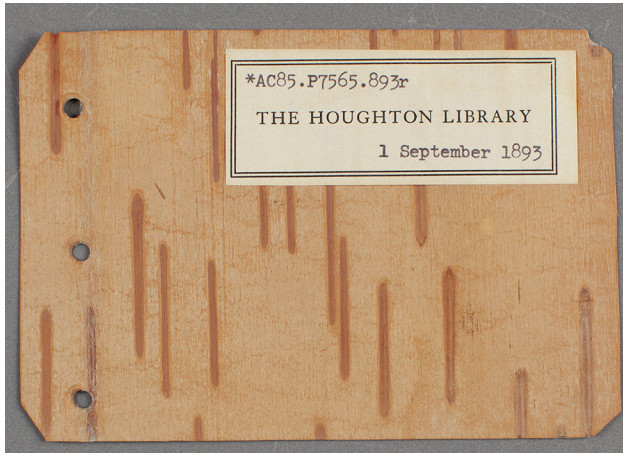


Fig. 12. Library label pasted to the last page of *The Red Man's Greeting* (AC85 P7565 893r, Houghton Library, Harvard University) causing the top layer of the bark to delaminate.

causing the top layer of the page to delaminate—a warning to choose adhesives and support material with great care (fig. 12). Tests proved that dilute methyl cellulose (A4M) provided the most flexible repair, which was required for the thin pages. Methyl cellulose was also considered a sympathetic adhesive to use with birch bark, since they are both composed of cellulose. Remoistenable tissue was chosen to reduce the sheen of dried methyl cellulose compared to brushing methyl cellulose onto the support tissue. Pre-made remoistenable tissue also allowed for the use of a very thin tissue for more subtle repairs. All testing was done on birch bark samples Sjoblom collected in Maine. Unused birch bark samples were not thrown away but were returned to the forest or used for fires. This respect for the material is something Indigenous artists emphasize.

Another challenge was mending a laminar structure. A technique used by conservators at the British Library for bound Kashmiri manuscripts is a woven repair that goes over and under the layers (Randell 2020; Todd 2017). Sjoblom planned to use this technique, but when she started making mock-ups, she found that the birch bark she was practicing on did not have clean breaks, but stepped tears, as did the copy of *The Red Man's Greeting* (fig. 13). These tears were like a scarfed tear in paper and had a beveled edge where the multiple layers of bark did not tear evenly. Therefore, the woven repairs were not suited for this treatment. Instead, repairs were executed from the recto and verso, with one piece of tissue wrapping over the edge to the other side of the page, when possible, to encapsulate the edge and prevent delamination (fig. 14). The difference in the damage, and therefore the treatment approach, for these two types of birch bark books (Kashmiri vs. North American) is important to note. Although both are made from birch bark, the material is prepared differently, with birch bark pages in South Asian books often being made of artificial laminates (Maitland 2016, 52).



This highlights the importance of understanding not only the physical characteristics of the material, but also its traditional use and preparation, and that birch bark is used by many cultures globally in unique ways.

Sjoblom used 5.0- and 7.3-gram NAJ Tengucho tissue, pre-coated with 1% or 3% methyl cellulose. The weight of tissue and adhesive concentration were selected based on the color and thickness of the page and the extent of the damage. Because of the color difference on the recto and verso of the pages for the winter bark, the 5.0-gram tissue could be used on the darker side of the page and 7.0-gram on the lighter side, to provide support with minimal visual distraction. For thicker pages with larger tears, the 3% concentration of methyl cellulose was used, whereas 1% methyl cellulose was used for the pages made of 1 to 2 layers. A dry brush and cotton swab were used to tamp the mend into place. Birch bark can easily



Fig. 13. The “stepped” tears found in Sjoblom’s samples, like the tears in the Houghton copy of *The Red Man's Greeting*.



Fig. 14. Photomicrographs (15x magnification) of repairs using 5.0 and 7.3-gram NAJ Tengucho remoistenable tissue (*The Red Man's Greeting* (AC85 P7565 893r, Houghton Library, Harvard University).

be gouged or burnished, so one must avoid using a bone folder. The pages were not surface cleaned due to concerns that the betulin layer would be disturbed. For delamination, 1% methyl cellulose was brushed onto the surface between the laminates and the page was dried between blotters under a weight. No issues with cockling were observed, and once dry, the flexibility of the repaired areas matched the rest of the sheet. After treatment, the pages were significantly more stable and could be carefully handled by researchers.

REBINDING

The Red Man's Greeting arrived at the WPC lab dis-bound, so the next consideration was to determine what type of binding, or if any binding, was appropriate. Sjoblom proposed rebinding the book to the curator of the collection because of the significance of the combination of a material from Native American written history with the codex structure. Loose pages were also more likely to abrade and catch, especially with researchers handling and restacking them. While it might seem like encapsulation could be an option, in speaking with Kaye about her experience treating papyrus, it became clear

that Mylar is not a suitable material to use with plant-based laminar structures because the static can cause delamination. For birch bark, the powdery betulin layer can also easily be disturbed when in direct contact with Mylar (fig. 15).

To allow the page to turn with minimal flexing, the movement of the page had to be at the spine rather than the margin. As illustrated in a model, Sjoblom used the original punched holes to attach the birch bark pages to paper stubs using tackets of Japanese tissue (HM-1 Tengucho/Tengujo Ash, 11 g/m²) (fig. 16). The paper stubs were medium-weight Japanese paper (HM-57 Yuku-shi Thick, 41 g/m²), folded into a single section and sewn with a pamphlet stitch. This paper was selected because it has a flexible drape, allowing the pages to lie flat when opened, but strong enough that the weight of the page does not cause the stub to slump or become distorted—similar to considerations for selecting stubbing material for atlas structures. The paper was toned with acrylic paints to match the lightest colored pages. Since the pages varied in color from recto to verso, the stub could not be toned to match a specific page. The pages were attached to the stubs in a manner that ensured that the sewing holes remained aligned by adjusting the

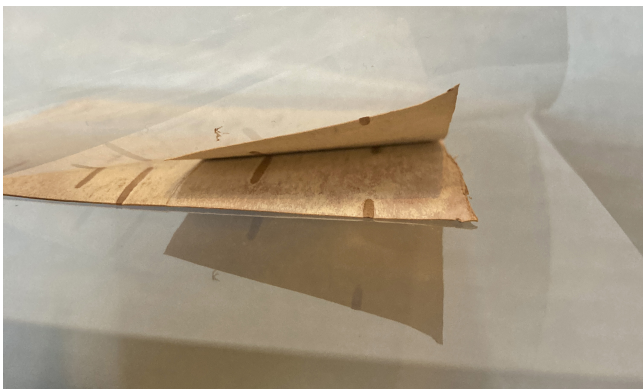


Fig. 15. The negative effects of using Mylar for storage with birch bark: delamination (left) and transfer of friable betulin layer (right).

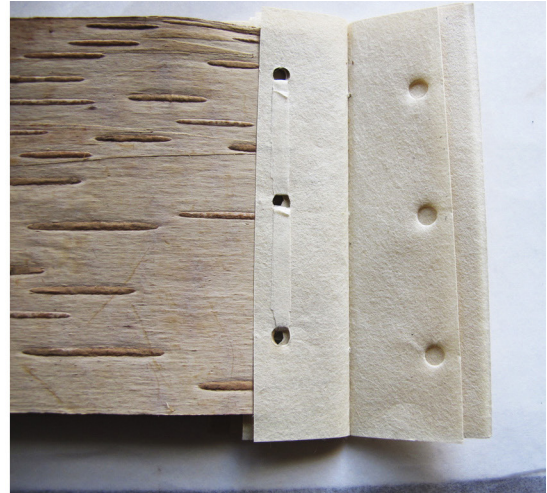
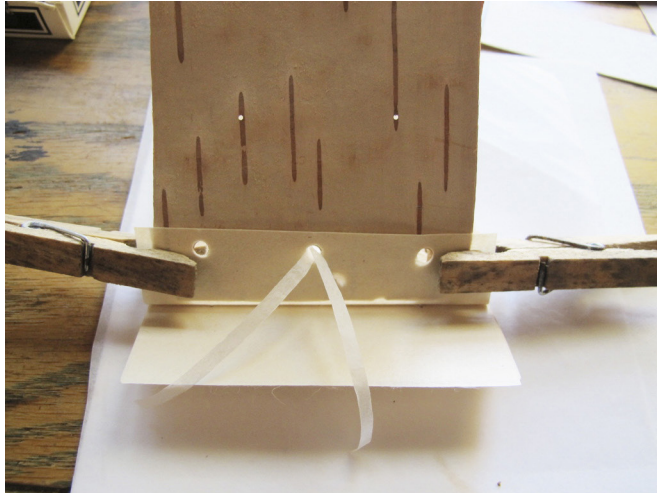


Fig. 16. Sjoblom’s book model, indicating the paper stubs and tackets.

placement of the holes in the stub, starting with the pages in the center of the book, and moving outwards towards the front and back. A Japanese hole punch tool was used to punch holes in the stubs, and then thin strips of lightweight tissue were passed through the holes in the stub and page to secure them together as tackets. These binding tacket strips were secured to themselves with wheat starch paste forming a loop. The weight of the tissue for the tackets was selected to be strong enough to support the page but thin enough that it was transparent and not distracting and did not abrade or stress the birch bark at the punched holes. To keep the page from flexing and moving away from the stub when the page is turned, small tabs of the remoistenable tissue that had been used for the repairs were also adhered along the spine edge of the page, securing it to the stub. Sjoblom also relaced the green ribbon through the holes only on the title page. This gives users a suggestion of the original structure and indicates that the current structure is not original, but does not limit the opening of the book. The

book can now open fully for easy access. This new structure is reversible, which is an important element when changing a bookbinding structure, allowing for new ideas and future considerations (fig. 17).

LONG-TERM PRESERVATION

There are many preservation options and considerations for Pokagon’s birch bark books. Given the goals of the institution, intended use, and condition of the birch bark, rebinding was a good option for the treatment at WPC. However, given that many of these books in library collections have been digitized and images are readily available, some custodians of the books may choose to leave the books bound with the original ribbon. This results in limited handling because of the risk of damage opening the oversewn structure. Current interest in these books means they are being used more often, and it is likely many will be dis-bound, making examples of the original structure more difficult to find. Because of the simplicity

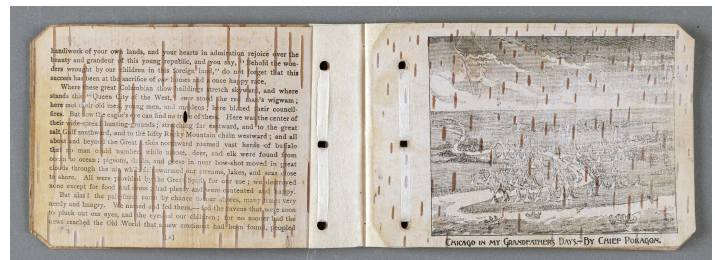


Fig. 17. After treatment images of *The Red Man's Greeting* (AC85 P7565 893r, Houghton Library, Harvard University). These images show the new stubbed bookbinding structure and ease of opening.

of the original structure, images and written documentation may be adequate records. The benefit of handling the pages and ability to carefully examine the books to find differences in editions and birch bark qualities must be weighed against the risk of damage in handling, or changes to the original structure. Some collections have made facsimiles of the books for researchers to handle instead, such as the Bentley Historical Library at U-M.² Depending on the quality, facsimiles can recreate many aspects of the books; however, the tactile experience of handling birch bark and the variations of page thicknesses cannot be conveyed.

Housing is also very important for these books. For the housing of Harvard's *Greeting*, Sjoblom used smooth stiff materials that would prevent the book from being flexed and not cause abrasion. She made a four-flap cardstock enclosure and modified a pre-made folder to safely hold the book. This folder is large enough to prevent the book from being lost on the shelf. An example at the Bentley Historical Library at U-M is housed in a large clamshell box for this reason. Any rough surfaces should be avoided, including uncovered foam and padded wedges often found in reading rooms.

Proper environmental conditions will also prevent damage to birch bark. Environmental factors to consider include temperature, relative humidity (RH), light, pollution, and pests. Birch bark is very resistant to water compared to paper. Whereas paper will often absorb water in a few seconds, birch bark requires 24 hours for at least partial absorption (Suryawanshi 2006, 105). However, early and late cells in the bark respond differently to changes in RH, which can lead to curling of the bark (Maitland 2016, 52). Because the desiccation of the natural pectin adhesive between the layers leads to delamination, a low RH is not recommended. Kicknosway also takes this into account, as he is at a high elevation in Montana and notices the difference in how dry the bark gets compared to when he works with birch bark on the East Coast. The cracking and curling of birch bark happens faster and easier when the RH is very low. Birch bark can therefore be safely stored at about 55% RH. Anything higher introduces the risk of mold growth for typical library collection materials such as paper, leather, and parchment (Wilson 1995, 1). This is not as much of a concern for birch bark because of its resistance to biodeterioration, but since birch bark books are often stored with other paper-based collections, this is a suitable RH. When it comes to an ideal temperature for the storage of organic materials, 65–70 degrees Fahrenheit is the accepted standard (Wilson 1995, p. 2).

Light can cause color change to birch bark and should be limited by storing the books in protective enclosures. This is also a consideration for exhibition. Even without light exposure, color change can occur in dark temperature- and humidity-controlled environments with elevated and fluctuating conditions, especially in the red to orange-red colored winter barks (Tse et al. 2018, 439). Fortunately, birch bark is

very resistant to fungal and insect damage, largely due to the betulin content. If the storage areas are kept clean and the environmental controls remain steady, concerns about pests can be kept to a minimum.

CONCLUSION

While conversations with other conservators helped to establish treatment protocol for these books, speaking with experts outside of conservation was vital to understanding the material and context of the books. Although it is common practice for conservators to reach out to colleagues in other labs, it can be more challenging to make connections outside of conservation due to lack of familiarity with resources and organizations. However, there have been generations of work and collaboration around caring for Indigenous collections from which conservators can learn. Conservators who build a foundation in this collaborative way of working can ask more informed and respectful questions when reaching out to experts in other fields and representatives from source communities.

As conservators become more familiar with the legal requirements of NAGPRA and ethical considerations involved in conserving Indigenous collections, this project highlights ways to go beyond basic requirements. Although no restrictions were found for the treatment of these books due to their intended sale outside the Pokagon Band of Potawatomi, understanding the context of the books and the sacred use of birch bark was pivotal. The conversations with Anishinaabe artists and scholars were eye opening and amplified how much the authors would have missed without these voices. Further conversations and more time would have certainly yielded even more information and understanding, particularly to have spoken more with official representatives of the Pokagon Band of Potawatomi. As conservators who had not previously treated Indigenous items, through this process the authors learned many lessons about guidelines, collaboration, and timelines, which they will carry into their future work.

The authors found it beneficial to share what they learned through their examination of the books whenever possible and appropriate, and this helped create more reciprocal relationships and led to their contribution to *As Sacred to Us*. Compensation was not provided to the artists interviewed for the chapter in *As Sacred to Us* due to it being independent scholarly research for a publication connected to the Pokagon Band of Potawatomi. However, the SAR guidelines recommend that community members be compensated for their time and expertise (Indian Arts Research Center 2019, 5). As a field we should acknowledge the benefit of conservation departments developing general consultation guidelines ahead of time, including if and how compensation can be given.

The use of birch bark in Pokagon's books has been described partially as a marketing technique to attract buyers in the Victorian tourist trade. However, through research and artist interviews, the authors understand the use of birch bark as a strong political and environmental statement by Pokagon, which also carries with it a unique charm that draws people in to learn from his writings. The Indigenous knowledge and tradition involved in the use of birch bark should be in the forefront for all who handle the books. When studying Pokagon's books, we must consider who made them, past and present access to birch trees and land, and intergenerational knowledge. Although many questions remain about how these books were made, gaining a deeper understanding of birch bark as a material and its use in Anishinaabe culture helped guide the thoughtful conservation treatment of these books. This now allows researchers to study them firsthand and to continue seeking greater knowledge and understanding of a material and its role in Anishinaabe futures.³

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NOTES

1. Refer to <https://native-land.ca> to look at the land of the Anishinaabe.
2. The Newberry Library online catalog lists a facsimile in the record of their copy of *The Red Man's Greeting*, but neither author viewed it in person or online.
3. The authors shared the following resource list during their presentation: <https://tinyurl.com/2kmw4n97>

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SOURCES OF MATERIALS

- NAJ Tengucho tissue, 5.0 and 7.3 g/m weights, made by Hidaka Washi in Kochi, Japan, purchased from Hiromi Paper, Inc., used for repairs.
- Methyl Cellulose A4M (viscosity 4000), purchased from Hollinger Metal Edge, Inc.
- Wheat Starch Aytex-P, purchased from TALAS.
- HM-1 Tengucho/Tengujo Ash, 11g/m² weight, purchased from Hiromi Paper, Inc., used for the rebinding tackets.
- HM-57 Yukyu-shi Thick, 41 g/m² weight, purchased from Hiromi Paper, Inc., used for the stubs.

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