STUDIES OF PHYSICAL PARAMETERS OF INDIGENOUS ARTIFACTS
Collecting and preserving the relating oral stories

Catalogue

Prepared by: Dr. Arzu Sardarli, Dr. Evelyn Siegfried, Skylar Wall
Edited and translated to French by Lisette Tillman
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ACKNOWLEDGEMENT

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We would like to acknowledge Elders and Knowledge Keepers from Pelican Narrows- Peter Ballantyne Cree Nation and Sturgeon Lake Cree Nation.

Pelican Narrows

Adam Highway          Gilbert Linklater
Annie Sewap           Madonna Ballentyne
Caroline Merasty      Mary Ann Custer
Clara Linklater       Mildred Ratt
David Custer          Sophie Anna Custer

Sturgeon Lake

Eric Bird             Norma Rabbitskin
Frank Ermine          Rose Daniels
Garry Turner          Terry Daniels
Joseph Naytowhow      Willie Ermine, Community Coordinator
Leonard Ermine        Yvonne Seesequasis
Mike Daniels

We would like to acknowledge Chief Greg Ermine, Chief Peter A. Beatty and all community members of Pelican Narrows and Sturgeon Lake for supporting the Project.

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We acknowledge the great support of Lisette Tillman in preparation of this Catalogue.

We also acknowledge the ongoing support of senior management, the Finance and Human Resources departments’ staff and all colleagues from the First Nation University of Canada during these years.
MEMBERS OF OUR TEAM

- Dr. Arzu Sardarli, Principal Investigator, Project Manager
  (First Nations University of Canada)
- Dr. Evelyn Siegfried, Investigator (Royal Saskatchewan Museum)
- Prof. Ida Swan, Investigator (First Nations University of Canada)
- Dr. Leta Kingfisher, Investigator (First Nations University of Canada)
- Dr. Bill Patterson, Investigator (University of Saskatchewan)
- Dr. Sandra Timsic, Investigator (University of Saskatchewan)
- Dr. Tim Panas, Archaeology Consultant (Program/Policy Officer III for Parks Canada)
- Dr. Lynn Wells, Investigator (First Nations University of Canada)
- Dr. Andrei Volodin, Investigator (University of Regina)
- Dr. Mauricio Barbi, Investigator (University of Regina)
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- Khaysa Osmanli, Research Assistant
- Marah Mattison, Research Assistant
- Margo Jobb, Research Assistant
- Skylar Wall, Research Assistant
PROJECT OUTLINE

The Project, “Studies of physical parameters of Indigenous artifacts; collecting and preserving the relating oral stories,” was initiated by a group of scholars from First Nations University of Canada (FNUniv), University of Regina (U of R) and Royal Saskatchewan Museum (RSM). The Project was supported by the Department of Canadian Heritage within the Museum Assistance Program.

More than forty people, including Elders, Indigenous Knowledge Keepers, community members, students, participated in this Project. Within the Project, we studied the principles of a research Ethics protocol for collecting, studying and preserving Indigenous artifacts, collected oral stories and determined physical parameters of Indigenous artifacts borrowed from communities and the RSM.

The Project was carried out in collaboration with Sturgeon Lake and Pelican Narrows First Nations communities. The Project was conducted from June 1, 2018, to December 31, 2020, in five phases. Within the first phase, we initiated the research Ethics review by the University of Regina. We then consulted with Elders and Knowledge Keepers regarding the research Ethics protocols for collecting and preserving the Indigenous artifacts. The consultations were carried out during the individual meetings, workshops organized in Pelican Narrows and Sturgeon Lake, and ceremonies.

Within the second phase, we trained research assistants (Indigenous students) for working in First Nations communities and at the RSM. The training included Indigenous studies and the basics of Archaeology.

Within the third phase, we interviewed Elders and Knowledge Keepers from Pelican Narrows and Sturgeon Lake and recorded their oral stories. In parallel, we collected Indigenous artifacts in the Pelican Narrows and Sturgeon Lake communities and selected samples from RSM collections for physical measurements.

Within the fourth phase, we carried out laboratory measurements on the selected artifacts. The measurements were done at the Scanning Electron Microscope Laboratory of the University of Alberta, Saskatchewan Isotope Laboratory of the University of Saskatchewan and André E. Lalonde Accelerator Mass Spectrometry Laboratory of the University of Ottawa.

Within the fifth phase, we carried out the statistical analysis of data obtained from the chemical composition measurements on artifacts, determined preliminary results of our studies and prepared materials for first publications. The preliminary results of the Project were presented to Pelican Narrows and Sturgeon Lake community members.
LABORATORY MEASUREMENTS

We obtained twelve bone, nineteen lithic and six metal artifacts from the Royal Saskatchewan Museum (selected by Dr. Evelyn Siegfried, Curator of Indigenous Studies, RSM), Pelican Narrows (nine artifacts) and Sturgeon Lake (two artifacts).

Chemical compositions of artifacts were determined at the Scanning Electron Microscope Laboratory of the University of Alberta using the Scanning Electron Microscopes (SEM) with Energy Dispersive X-ray Spectroscopy (EDS) module. We were able to make the measurements on thirty-one samples (two measurements on each sample).

The Radio-Carbon Dating of the bone samples was done at André E. Lalonde AMS Laboratory of the University of Ottawa. The ages of seven samples were determined.

The Isotopic measurements were carried out at the Saskatchewan Isotope Laboratory of the University of Saskatchewan (bone-made samples and one metal-made sample) by the Laboratory Research Assistant under the supervision of Drs. Bill Patterson and Sandra Timsic.
Artifact #1

Artifact name: Bone Fragment
RSM Catalogue #: 467, A1165/14898
Description: Pieces of animal bone
Location found: Central Saskatchewan
Level: 6
Weight: 11.7 grams
Age: 2140-1943 BCE / ~4000 Years Old

Energy Dispersive X-ray Spectroscopy image (magnified: 10000 times)

Chemical Composition (see Appendix for the key of the names of elements present)
ARTIFACT# 2

Artifact name: Bone Fragment
RSM Catalogue #: 546, A1165/14898
Description: Pieces of animal bone
Location found: Central Saskatchewan
Level: 8
Weight: 17.5 grams
Age: 2160-2020 BCE/ ~4000 Years Old

Energy Dispersive X-ray Spectroscopy image (magnified: 10000 times)

Chemical Composition (see Appendix for the key of the names of elements present)
ARTIFACT# 3

Artifact name: Bone Fragments
RSM Catalogue #: 624, A1165/14898
Description: Pieces of animal bone
Location found: Central Saskatchewan
Level: 9
Weight: 14.2 grams
Age: 2023-1771 BCE/ ~4000 Years Old

Energy Dispersive X-ray Spectroscopy image (magnified: 10000 times)

Chemical Composition (see Appendix for the key of the names of elements present)
Artifact name: Burnt Bone Fragment
RSM Catalogue #: 657, A1165/14898
Description: Piece of burnt animal bone
Location found: Central Saskatchewan
Level: 12
Weight: 2.7 grams

Energy Dispersive X-ray Spectroscopy image (magnified: 10000 times)

Chemical Composition (see Appendix for the key of the names of elements present)
Artifact name: Bone Fragment
RSM Catalogue #: 939, A1165/14898
Description: Pieces of animal bone
Location found: Central Saskatchewan
Level: 6
Weight: 36.9 grams
Age: 1680-1490 BCE/ ~3500 Years Old

Energy Dispersive X-ray Spectroscopy image (magnified: 10000 times)

Chemical Composition (see Appendix for the key of the names of elements present)
ARTIFACT# 6

Artifact name: Bone Fragment
RSM Catalogue #: 1002, A1165/14898
Description: Pieces of animal bone
Location found: Central Saskatchewan
Level: 7
Weight: 30 grams
Age: 2030-1870 BCE/ ~4000 Years Old

Energy Dispersive X-ray Spectroscopy image (magnified: 10000 times)

Chemical Composition (see Appendix for the key of the names of elements present)
ARTIFACT # 7

Artifact name: Burt Bone Fragment
RSM Catalogue #: 1042, A1165/14898
Description: Burnt shard of animal bone
Location found: Central Saskatchewan
Level: 7
Weight: 1.6 grams

Energy Dispersive X-ray Spectroscopy image (magnified: 10000 times)

Chemical Composition (see Appendix for the key of the names of elements present)
**Artifact# 8**

Artifact name: Bone Fragment
RSM Catalogue #: 1075, A1165/14898
Description: Pieces of animal bone
Location found: Central Saskatchewan
Level: 8
Weight: 16.2 grams
Age: 2050-1870 BCE/ ~4000 Years Old

Energy Dispersive X-ray Spectroscopy image (magnified: 10000 times)

Chemical Composition (see Appendix for the key of the names of elements present)
ARTIFACT# 9

Artifact name: Bone Fragment
RSM Catalogue #: 1118, A1165/14898
Description: Pieces of animal bone
Location found: Central Saskatchewan
Level: 12
Weight: 20.8 grams
Age: 3350-3090 BCE/ ~5000 Years Old

Energy Dispersive X-ray Spectroscopy image (magnified: 10000 times)

Chemical Composition (see Appendix for the key of the names of elements present)
Artifact name: Bone Fragment
RSM Catalogue #: 5295, A1165/14898
Description: Pieces of animal bone
Location found: Central Saskatchewan
Level: 5
Weight: 5.1 grams

Energy Dispersive X-ray Spectroscopy image (magnified: 10000 times)

Chemical Composition (see Appendix for the key of the names of elements present)
ARTIFACT# 11

Artifact name: Bone Fragment
RSM Catalogue #: 5296, A1165/14898
Description: Pieces of animal bone
Location found: Central Saskatchewan
Level: 5
Weight: 12.6 grams

Energy Dispersive X-ray Spectroscopy image (magnified: 10000 times)

Chemical Composition (see Appendix for the key of the names of elements present)
Artifact name: Bison Femur
Description: Femur of a bison
Location found: Sturgeon Lake, SK
Size: 56 centimeters
Artifact name: Thumb Scraper
RSM Catalogue #: 8, A829/11624
Description: Thumb scraper made from chert
Location found: Central Saskatchewan
Size: 2 cm

Energy Dispersive X-ray Spectroscopy image (magnified: 10000 times)

Chemical Composition (see Appendix for the key of the names of elements present)
ARTIFACT# 14

Artifact name: End scraper
RSM Catalogue #: 9, A829/ 11624
Description: Chert
Location found: Central
Saskatchewan
Size: 5 cm

Energy Dispersive X-ray Spectroscopy image (magnified: 10000 times)

Chemical Composition (see Appendix for the key of the names of elements present)
ARTIFACT# 15

Artifact name: Flake
RSM Catalogue #: 10, A829/ 11624
Description: Flake from rock used to make a tool
Location found: Central Saskatchewan
Size: 4 cm

Chemical Composition (see Appendix for the key of the names of elements present)
Artifact name: Knife
RSM Catalogue #: 11, A829/11624
Description: Knife made of chert
Location found: Central Saskatchewan
Size: 6 cm

Energy Dispersive X-ray Spectroscopy image (magnified: 10000 times)

Chemical Composition (see Appendix for the key of the names of elements present)
ARTIFACT# 17

Artifact name: Core
RSM Catalogue #: 12, A829/ 11624
Description: Chert rock worked to make tools
Location found: Central Saskatchewan
Size: 5 cm

Energy Dispersive X-ray Spectroscopy image (magnified: 10000 times)

Chemical Composition (see Appendix for the key of the names of elements present)
ARTIFACT# 18

Artifact name: Unidentified Worked Stone
RSM Catalogue #: 13, A829/11624
Description: Unidentified worked stone
Location found: Central Saskatchewan
Size: 6 cm

Energy Dispersive X-ray Spectroscopy image (magnified: 10000 times)

Chemical Composition (see Appendix for the key of the names of elements present)
ARTIFACT# 19

Artifact name: Core
RSM Catalogue #: 14, A829/11624
Description: Chert rock worked to make tools
Location found: Central Saskatchewan
Size: 5 cm

Energy Dispersive X-ray Spectroscopy image (magnified: 10000 times)

Chemical Composition (see Appendix for the key of the names of elements present)
ARTIFACT# 20

Artifact name: Retouched flake
RSM Catalogue #: 1125, A1078/12939
Description: Flake of chert
Location found: Central Saskatchewan
Size: 5 cm

Energy Dispersive X-ray Spectroscopy image (magnified: 10000 times)

Chemical Composition (see Appendix for the key of the names of elements present)
Artifact #21

Artifact name: Projectile Point
RSM Catalogue #: 1139, A1078/12939
Description: Projectile point made in Pelican Lake style
Location found: Central Saskatchewan
Size: 3 cm
Age: 3600–2100 Years Ago

Energy Dispersive X-ray Spectroscopy image (magnified: 10000 times)

Chemical Composition (see Appendix for the key of the names of elements present)
**ARTIFACT# 22**

Artifact name: Blade  
RSM Catalogue #:7, A1396/20638  
Description: Blade  
Location found: Central Saskatchewan  
Size: 12 cm

Energy Dispersive X-ray Spectroscopy image (magnified: 10000 times)

Chemical Composition (see Appendix for the key of the names of elements present)
ARTIFACT# 23

Artifact name: Biface
RSM Catalogue #: 62, A980/ 12720
Description: Biface tool made out of quartzite
Location found: Central Saskatchewan
Size: 6 cm

Energy Dispersive X-ray Spectroscopy image (magnified: 10000 times)

Chemical Composition (see Appendix for the key of the names of elements present)
Artifact name: Projectile Point  
RSM Catalogue #: 72, A980/12720  
Description: Projectile Point made in Pelican Lake style  
Location found: Central Saskatchewan  
Size: 4 cm  
Age: 3600-2100 Years Ago

Energy Dispersive X-ray Spectroscopy image (magnified: 10000 times)

Chemical Composition (see Appendix for the key of the names of elements present)
Artifact name: Projectile Point
RSM Catalogue #: 73, A980/12720
Description: Project Point made in Oxbow style
Location found: Central Saskatchewan
Size: 3cm
Age: 4500-4100 Years Ago

Energy Dispersive X-ray Spectroscopy image (magnified: 10000 times)

Chemical Composition (see Appendix for the key of the names of elements present)
Artifact name: Projectile Point
RSM Catalogue #: 74, A980/12720
Description: Project Point made in Oxbow style
Location found: Central Saskatchewan
Size: 4 cm
Age: 4500-4100 Years Ago

Energy Dispersive X-ray Spectroscopy image (magnified: 10000 times)

Chemical Composition (see Appendix for the key of the names of elements present)
ARTIFACT# 27

Artifact name: End Scraper
RSM Catalogue #: 14, A869/12426
Description: Tool for scraping, possibly made from Knife River Flint
Location found: Central Saskatchewan
Size: 3 cm

Energy Dispersive X-ray Spectroscopy image (magnified: 10000 times)

Chemical Composition (see Appendix for the key of the names of elements present)
ARTIFACT# 28

Artifact name: Knife
Description: Stone knife borrowed from the community of Pelican Narrows
Location found: Pelican Narrows, SK
Size: 4 cm

Energy Dispersive X-ray Spectroscopy image (magnified: 10000 times)

Chemical Composition (see Appendix for the key of the names of elements present)
ARTIFACT# 29

Artifact name: Projectile Point
Description: Project point in the Pelican Lake style, borrowed from the community of Pelican Narrows
Location found: Pelican Narrows, SK
Size: 3 cm
Age: 3600-2100 Years Ago

Energy Dispersive X-ray Spectroscopy image (magnified: 10000 times)

Chemical Composition (see Appendix for the key of the names of elements present)
Artifact name: Projectile Point
Description: Project point in the Pelican Lake style, borrowed from the community of Pelican Narrows
Location found: Pelican Narrows, SK
Size: 3 cm
Age: 3600-2100 Years Ago

Energy Dispersive X-ray Spectroscopy image (magnified: 10000 times)

Chemical Composition (see Appendix for the key of the names of elements present)
ARTIFACT# 31

Description: Borrowed from the community of Sturgeon Lake
Location found: Sturgeon Lake, SK

Energy Dispersive X-ray Spectroscopy image (magnified: 10000 times)

Chemical Composition (see Appendix for the key of the names of elements present)
ARTIFACT# 32

Description: Copper houseware borrowed from the community of Pelican Narrows
Location found: Pelican Narrows, SK
<table>
<thead>
<tr>
<th>Symbol/Symbole</th>
<th>Name of the Chemical Element/ Nom de l'élément chimique</th>
</tr>
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<tbody>
<tr>
<td>C</td>
<td>Carbon/ Carbone</td>
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<tr>
<td>O</td>
<td>Oxygen/Oxygène</td>
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<tr>
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<tr>
<td>Mg</td>
<td>Magnesium/ Magnésium</td>
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