The Alutiiq Technological Inventory:
An Account of the Manufacturing Industries, Tools, and Raw Materials found in Ancestral Alutiiq Archaeological Sites of the Kodiak Archipelago

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FIRST COMPLIATION

FOREWORD

Objects are powerful storytellers. Whether it's an arrowhead or an antique car, cultural artifacts share history in ways that words and pictures cannot. There is an immediacy to artifacts. When you stand beside a 200-year-old kayak at the Alutiiq Museum you feel connected to history. You can understand the size of the boat. You can imagine what it was like to sit in its cockpit with the waves breaking around you. You can identify the challenge of pulling a thrashing halibut on board. The objects passed down through time remind us that we are part of a chain of events that shaped the present, and they place us in moments along that chain. Sometimes these moments have broad cultural or historic significance. At the Alaska State Museum, you can see Secretary of State William Seward's desk, around which negotiators finalized the sale of Alaska to the United States. This national event set in motion dramatic social and economic changes for the people who lived in what is now Alaska. Standing beside the desk transports you to that moment and its impact on the world you live in.

More often, objects reveal the commonplace. They share the daily lives of previous generations—information that is not typically found in history books. Through these more intimate stories, objects open doors to understanding the past and the ways people navigated common challenges, like feeding families or staying warm in the winter. In this way, cultural objects provide data that remind us of both the commonalities and diversities of human experiences. They can also help us evaluate other sources of historical information and address stereotypes.

A 200-year-old Alutiiq kayak illustrates that its creators were skilled at boat design, carving, joining, lashing, and skin sewing, skills that reflect a deep cultural knowledge honed from millennia of adaptation to coastal Alaskan life. If well displayed and interpreted, the boat becomes a cultural ambassador. It is not just a curio, but a window into the ingenuity of an Alaska Native people. It's hard not to respect people who can transform driftwood and animal skin into sophisticated watercraft.

For Native Americans, whose history extends thousands of years beyond written records, objects are an especially valuable source of historical information. Ancestral tools provide a window into distant times seldom available elsewhere. Sometimes, however, decoding that information can be difficult. The tools left behind are often incomplete and very different from those used in the modern era. This can create barriers to understanding artifacts and the activities and cultures they represent.

The Alutiiq Museum cares for tens of thousands of artifacts representing the Alutiiq experience. Our audience is hungry for access to these items and the stories they can tell. A first, essential step in telling these stories is accurately identifying the tools people left behind—how they were crafted, and the materials used. We need a clear, consistent understanding of the objects that form the record of Alutiiq history to interpret that record. This manual is designed to help.

The Alutiiq Technological Inventory presents a summary of the tools Alutiiq ancestors made and used from about 7,500 years ago till the time of historic contact. The manual groups ancestral tools by manufacturing method, to demonstrate how objects were created and the materials craftspeople employed. It is not meant to be a full accounting of Alutiiq technology,

but rather a broad systematic description of the ways Alutiiq ancestors transformed natural materials into implements for daily living. This information is based on twenty-five years of working with archaeological assemblages at the Alutiiq Museum.

We developed this summary to help staff standardize the identification of Alutiiq tools. By extension, we hope that this manual will help institutions that care for Alutiiq objects improve their documentation and interpretation of ancestral objects. More broadly, this manual is also a resource for the many artists, students, educators, researchers, and enthusiasts interested in Alutiiq technology. We hope it sparks additional research. This summary is a start. Every tool presented here could be studied in greater detail to learn much more about Alutiiq lifeways.

TABLE OF CONTENTS

FIGURES

TABLES

CHAPTER 1. INTRODUCTION

The Alutiiq Technological Inventory Project

Beneath the thick blanket of wild grasses that covers Kodiak Island's coastal meadows lies a wealth of cultural information. For more than 7,500 years ancestors of the of Alutiiq people dug their houses into the damp soil, leaving an extensive record of their lives. Kodiak has more than 1,510 prehistoric sites and many are exceptionally preserved (Alaska Heritage Resources Survey 2021). Archaeologists have been studying these sites for over 85 years, recovering assemblages of stone, antler, bone, ivory, wood, fiber, and clay objects.

The Alutiiq Museum and Archaeological Repository (AMAR) cares for an estimated 162,400 archaeological artifacts, in 372 collections, from across the entire Kodiak region (Table 1.1, Figures 1.1 and 1.2). Some of these collections represent recent research by the museum. Museum archaeologists have been conducting surveys and excavations for over two decades, adding large prehistoric collections to the museum's holdings. Other collections from Native, public, and private lands have been entrusted to the museum for long-term care. Together, these collections form a rich record of the Alutiiq world. They span Alutiiq prehistory, from the dawn of human settlement in the Kodiak region to the present era. They represent a range of site types—from villages and camps to food processing sites and garbage dumps. They document technological systems, manufacturing techniques, resource use, trade, and artistic practices. They highlight the environmental knowledge, innovation, and spiritual beliefs of Alutiiq ancestors. And they are inspiration for living Alutiiq culture.

An essential step in caring for Alutiiq objects is effective documentation. All archaeological collections held by AMAR have an object level inventory. Here, each object is described with a catalog number, a name, a material type, a weight, a condition, and its individual provenience data (e.g., site, square/test, feature/level, depth). Developing these inventories has not always been easy. For many years, the museum has had directions for artifact labeling, a standardized catalog sheet, and storage guidelines. However, it has never had a comprehensive, referenced system for describing Alutiiq objects and the materials from which they were made. This is not an unusual situation. Although archaeologists often classify the tools found in individual sites, there are few systematic regional accounts of prehistoric technological industries. To describe tools, researchers working with ancient collections must consult Native Elders, historical accounts, illustrations of ethnographic objects, and previous archaeological studies to identify ancestral objects. This is time consuming work and much of the helpful information is hard to access. It is preserved in memories, obscure reports, exhibit catalogs, and collections records. This means that objects are often poorly identified or misidentified. Different researchers call the same tool type by different names, leading to errors in cataloging, analysis, and the presentation and interpretation of Native traditions.

In Alaska, these difficulties further reflect the complexity of northern technologies. Many Alutiiq tools had multiple parts which can be difficult to identify individually. This situation also reflects centuries of cultural suppression. Many traditional tools are no longer used and knowledge of their manufacture, functions, and traditional names has faded from memory.

Table 1.1. Excavated archaeological assemblages in the Alutiiq Museum's care

Site Name	AHRS #	Location	AMAR #	Objects	OB	Ka	Ko	H	Collected In	Reference
Aleut Town	AFG-004	Afognak Bay	AM330	1715					2006	Clark 2008
Amak Site	KOD-1053	Womens Bay	AM544	426	X	X			2005, 2011-2012	AMAR Collections Records
Array Site	KOD-561	Buskin River	AN421	195	X				2000	AMAR Collections Records
Back Bay Site	AFG-012	Afognak Bay	AM250	189			X		1997	Partlow 2000
Blisky Site	KOD-210	Near Island	AM199	3696	X	X			2005	Steffian, Pontti & Saltonstall 1998
Bruhn Point	KOD-909	Womens Bay	AM534	238		X			2005	AMAR Collections Records
Chert Site	AFG-008	Litnik	AM590	320	X				1971	Clark 1979
Flies & Grass Site	KAR-276	Upper Olga River	AM571	133		X			2007	Saltonstall and Steffian 2007
Horseshoe Cove	KOD-415	Uganik Island	AM498	2356	X	X			2004	Saltonstall and Steffian 2006
Karluk One	KAR-001	Karluk Lagoon	AM193	20,536			X	X	1983-1984, 1987, 1995-1996	Knecht 1995; Steffian et al. 2015
Kashevarof Site	KOD-1132	Womens Bay	AM724	3820	X	X	X		2013-2016	AMAR Collections Records
Katenai Village	AFG-016	Afognak Bay	AM34	21,500				X	1996-1999	Woodhouse-Beyer 2001
Kiavak Site	KOD-099	Kiavak Bay	AM596	1333			X		1963	Clark 1997
KOD-224	KOD-224	Uganik Island	AM383	> 163	X				1977, 1978	Nowak 1979
KOD-952	KOD-952	Woody Island	AM660	526	X	X			2008	AMAR Collections Records
KOD-1362	KOD-1362	Chiniak	AM934	17			X		2020	Odell, Saltonstall & Steffian 2021
KOD-1363	KOD-1363	Chiniak	AM934	10	X				2020	Odell, Saltonstall & Steffian 2021
Kugyasiliwik	KOD-1054	Womens Bay	AM928	326		X			2020	Steffian & Saltonstall 2020
Kumluk Site	KOD-478	Old Harbor	AM711	429			X		2012-2013	Steffian and Saltonstall 2014
Lighthouse Site	KOD-089	Old Harbor	AM12	648	X				1995-1996	Fitzhugh 2003
Malina Creek	AFG-005	Malina Bay	AM24	> 9452	X	X	X		1993	AMAR Collections Records
Malriiq Site	KOD-405	Kiliuda Bay	AM821	347		X	X		2017	Steffian and Saltonstall 2018
Mikt'sqaq Angayaq	KOD-014	Womens Bay	AM662	2032		X	X	X	2009-2010	Margaris et al. 2015
Monashka Bay Site	KOD-026	Monashka Bay	AM422	685		X	X		1989	Donta et al. 2016
Nayurwik Site	KOD-1130	Old Harbor	AM711	258	X				2012-20123	Steffian and Saltonstall 2014
Nunakakhnak	KAR-037	Karluk Lagoon	AM257	3374				X	1984	Knecht and Jordan 1985
Nanwam Caniani	KAR-310	Karluk Lake	AM869	326		X	X		2019	Odell, Steffian, and Saltonstall 2019
Nunalleq	KAR-065	Karluk Lake	AM1004	94					2021	In prep
Old Karluk	KAR-031	Karluk Lagoon	AM258	13,479	X	X	X	X	1984-1985	Jordan & Knecht 1988; Steffian & Saltonstall 2016
Old Kiavak	KOD-100	Kiavak Bay	AM597	1306		X	X		1963	Clark 1997
Outlet	KOD-562	Buskin River	AM327	7435	X	X	X		1999-2001	Steffian et al. 2006
Utaqalirwik	KOD-1282	Bruhn Point	AM1005	63	X		X		2021	In prep
Puyuk Site	KOD-580	Old Harbor	AM711	75	X				2012-2013	Steffian and Saltonstall 2014
Qik'rtangcuk	KOD-605	Near Island	AM846	512	X	X			2018	AMAR Collections Records
Refuge Rock	KOD-450	Sitkalidak Island	AM100	902				X	1992	Knecht et al. 2002
Rice Ridge	KOD-363	Chiniak Bay	AM19	ca.	X				1989-1991	Hausler 1993; Kopperl 2003
Roadcut Site	KOD-438	Ocean Bay	AM838	805	X				1963	Clark 1979

Site	Site #	Location	AM #	Objects	OB	Ka	Ko	H	Years	References
Salmon Bend	AFG-010	Litnik	AM451	415		X			2002	Clark 2002, 2008
Salonie Mound	KOD-451	Womens Bay	AM535	7030			X		2005-2007	AMAR Collections Records
Settlement Point	AFG-015	Afognak Bay	AM33	3224			X		1996-1998	Saltonstall 1997
Slate Site	AFG-011	Litnik	AM590	64	X				1971	Clark 1979
Three Saints Bay	KOD-083	Three Saints Bay	AM591	1813		X			1962	Clark 1970
Tsunami Site	AFG-215	Litnik	AM436	1148		X			2001, 2003-2004	Clark 2001, 2003, 2004, 2008
Uyak Site	KOD-145	Larsen Bay	AM1	165		X	X		1931-1932, 1934-1936	Hrdlička 1944; Heizer 1956
Uyak Site	KOD-145	Larsen Bay	AM3	4509		X			1987, 1988	Steffian 1992b
Zaimka Mound	KOD-013	Womens Bay	AM411	14857	X	X			1998, 2002-2004	Steffian et al. 2006

Note: This table and statistics on the Alutiiq Museum's archaeological holdings, do not include survey and testing collections, beach collections, or teaching collections with thousands more ancestral Alutiiq artifacts.

Key:
Objects = total objects in catalog, not including samples.
OB = Ocean Bay Tradition, Ka = Kachemak Tradition, Ko = Koniag Tradition, H = Historic

Figure 1.1. Alutiiq Museum collections storage

The Alutiiq Technological Inventory (ATI) project is a direct response to this issue. Over the past twenty-six years, Alutiiq Museum staff members have worked to refine and systematize artifacts identifications—to enhance the reliability of collections inventories and facilitate analysis and interpretation. They have worked with Elders to gather linguistic terms and cultural knowledge, studied ethnographic sources (Black 1977, Davydov 1977, Hoffman 1882, Holmberg 1985, Lisianski 1814, Sauer 1802) reviewed archaeological reports and publications, investigated

collections in distant museums, consulted geologists, and experimented with tool production. The inventory of technologies, tool types, and materials presented here, is a compilation of that information. It is our effort to document the museum's artifact identification system, so that it may be used and refined by future museum staff members, colleagues, and the many repositories that care for objects of Alutiiq heritage.

Methodology

The ATI project began in the fall of 2017 and was completed four years later in the fall of 2021. Grant funds from the Institute for Museum and Library Services awarded to Koniag, Inc., allowed members of the Alutiiq Museum's curatorial staff to work as a team to systematically review the objects in the museum's collections, identify artifact types, identify raw material types, take photographs, and develop the summaries presented here in consultation with Alutiiq speakers and source materials. Archaeologists Patrick Saltonstall and Amy Steffian, whose work with Alutiiq collections spans over three decades, led the project with help from Amanda Lancaster, who oversees the care and use of archaeological assemblages at AMAR.

First, working by manufacturing industry Saltonstall compiled artifact descriptions from the museum's many technical reports to create a working list of types. Then, he and Steffian spent time reviewing museum collections—moving from drawer to drawer in the museum's repository to examine objects, identify types and variations, and select pieces for photography. Saltonstall compiled this information, with notes about each industry and passed them to Steffian. Steffian developed the standardized forms for artifact and material types, added Saltonstall's information, augmented it with illustrations and information from other sources, and developed supporting summary information. Lancaster assisted with data collection and entry, photography, review, and evaluation.

The project focused specifically on prehistoric objects, those dating from the colonization of Kodiak roughly 7,500 years ago to Russian conquest starting in the late 1700s. While ethnographic objects stored at AMAR and other museums around the world are an excellent source of information on Alutiiq technology (e.g., Crowell et al. 2001, Graburn et al. 1996, Haakanson and Steffian 2009, Korsun 2010, Krech 1989, Lee 1981, 2006, Varjola 1990), we did not attempt to classify these objects and add them to the inventory. They were used for reference. In part this reflects the fact that archaeologists tend to find pieces of objects and to classify each piece separately. In contrast, ethnographic objects tend to be composites of complex objects. Ethnographic collections hold an entire harpoon assembly. Archaeologists find the bone harpoon point and socket. As such, the units of comparison are different. Additionally, AMAR's ethnographic collections are small. Most of the historic objects that could contribute to technological studies are held by distant repositories and are not easily accessed for detailed study. AMAR is currently working to make these collections more accessible through its Amutat ("things to pull") database, an online resource that identifies the location of Alutiiq collections and shares examples. This parallel resource can be found on the museum's website at http://alutiiqmuseum.org/collection/index.php/browse/institutions.

Similarly, we excluded historic objects of non-Alutiiq manufacture from the ATI. Western traders began introducing many new tools and materials to the Alutiiq world in the 18th century. While Alutiiq people adopted and used these items in Alutiiq ways, objects like iron axe heads

and transfer printed china represent European technologies and manufacturing processes, global trade routes, and Western artistic conventions and beliefs. They are the artifacts of other cultures. Moreover, many classes of historic items used by Alutiiq ancestors have been studied carefully elsewhere (e.g., Crowell 1997, Knecht and Jordan 1985, Margaris et al. 2015, Woodhouse-Beyer 2001). The goal of this project was to create a baseline account of ancestral Alutiiq technologies.

In a few cases we also excluded prehistoric finds that were clearly introduced to Kodiak. For example, at the Salmon Bend site (AFG-010), Clark found a cache of eighteen, Norton-style, basalt projectile points (Clark 2002:26, 40) that are not included in this inventory. Similarly, Kodiak assemblages dating to the centuries around 3,500 B.P. include a very small number of tools thought to reflect interaction with neighboring people of the Arctic Small Tool tradition (Steffian and Saltonstall 2005). These tools were also excluded from our study.

Finally, as the museum cares for a large and diverse sample of Alutiiq objects, and because these materials are immediately available to our staff, the inventory reflects the items in our repository. Published references on Alutiiq archaeological assemblages were useful for supplementing tool descriptions, but they were rarely used to identify additional tool types. With only a few exceptions (e.g., shovel blade, cf. Heizer 1956), every tool type reported here can be found in the Alutiiq Museum's holdings. The sample from which these tools came is summarized in Table 1.1, showing the major archaeological collections in the museum's care. Figure 1.2 illustrates the geographic distribution of the sites that produced these collections. Importantly, our review of reference materials on Alutiiq artifacts indicated that the manufacturing categories and artifact types identified here are robust. They can be used to broadly describe most known artifacts in the published record.

The ATI is organized by technological industries. Artifact types are grouped in the ways the objects were manufactured. It is very important for users to recognize that the classification system does not link the groups of tools used in a particular manufacturing activity, but the tools made by that activity. For example, the chipped stone industry includes projectile points, knives, bifaces, scrapers, cores, flakes, and other objects and waste create by flint knapping. However, it does not include hammerstones and flakers used to make chipped stone tools. Hammerstones fall in the cobble industry and flakers in the carved organic industry, to reflect their manufacture.

Although objects are grouped by their method of manufacture, where possible, we identify a likely function for each type and suggested one of fourteen general categories of activity to which it may be related, e.g., fish, cooking, gaming. Of course, some objects, could be reasonably associated with multiple activities. Ulus, for example, are widely used cutting tools employed for splitting fish, cooking, and skin working. We also indicated whether the object is known to occur in miniature. Ancestral Alutiiq assemblages often hold small replicas of full-sized tools. Some of these miniature implements may be children's toys, others may be models (e.g., small kayak frames), or even ceremonial pieces (Steffian et al. 2015:261-263).

Importantly, because our classification system focuses first on manufacturing industries, and then on tool function, some objects with the same function appear more than once in the inventory. For example, gaming balls were made both by forming clay into spheres, by collecting small round cobbles, and by carving wooden balls. As such, gaming balls can be found in the ceramic, cobble, and carved organic industries. Similarly, labrets fall in both the ground stone (slate, coal, and limestone labrets) and carved industries (wood, bone, ivory, and antler labrets).

For each industry, we include preforms with the artifact type and not as a separate type. We also identify and describe manufacturing stages for some types of artifacts, where information is available. For example, bone artifacts from Kachemak tradition sites illustrated the process of transforming a bird bone into awls or sewing needles (Figure 1.3). First, a carver removed the knobby ends from the hollow wing bone of a large bird. This created a tube from which long narrow slivers of bone were cut. The slivers were then ground to a sharp point with a piece of pumice or sandstone. A valuable, future addition to this manual would be the description and illustration of additional preform pieces.

Figure 1.3. Bird bone artifacts illustrating the creations of an awl or needle, Uyak Site (AM3).

Many of the artifact types presented here have temporal affiliations. They correspond with a specific period of Kodiak Alutiiq history (Table 1.2). For example, ceramic pots occur only in late prehistoric sites of the Koniag tradition, while blades are characteristic of the earliest centuries of the Ocean Bay tradition. Section 2 provides a general overview of Alutiiq manufacturing and the industries and artifacts associated with different time periods, followed by tables summarizing major trends. Additionally, the discussion of each manufacturing industry includes a table summarizing temporal data on the manufacture and use of the tools in that tradition. These are generalized pictures of tools use over time not a tight chronological summary. There is also temporal information in both the industry and artifact descriptions found through this manual. Again, this information is based on published information and the knowledge we've gained excavating and studying Alutiiq tools. Like much of the information in this manual, the temporal trends will change as research expands.

Each artifact type description contains an English name and where possible an Alutiiq name. The Alutiiq language terms reflect the museum's work with Elder Alutiiq speakers at the museum's weekly Elder Sessions (Steffian and Counceller 2020:57-58). This process was assisted

by museum staff member and Alutiiq speakers April Counceller and Dehrich Chya. For the current project, we compiled terms from two previous efforts (Counceller 2015:347; Steffian and Saltonstall 2016), added additional terms from historic research, and consulted with Elders about missing terms. The COVID-19 pandemic slowed this process, and more work needs to be done to formalize some tool names. Those marked with an asterisk (*) are current suggestions that need further evaluation.

Table 1.2. Cultural traditions of the Kodiak Archipelago

Tradition	Phase	Date
Ocean Bay	Ocean Bay I	5500 BC to 3000 BC
	Ocean Bay II	3000 BC to 2000 BC
Kachemak	Early Kachemak	2000 BC to 700 BC
	Late Kachemak	700 BC to AD 950
	Transitional Kachemak	AD 950 to AD 1300
Koniag	Early Koniag	AD 1300 to AD 1500
	Developed Koniag	AD 1500 to AD 1763
Alutiiq	Russian	AD 1763 to AD 1867
	American	AD 1867 to the Present

Other data we compiled for each type include example dimensions, the names of one or more site collections that include artifacts of that type, one or more published references that show or describe these objects, and a written description. The written descriptions provide an abstract description of each type. These are not descriptions of specific objects, but summaries of the general characteristics of the type. They are general morphological descriptions. Within these summaries, we discuss some of the variation in the type, identify subtypes where evident, discuss decoration, and share any other general observations that are helpful for understanding the type. Following each page of written information, users will find labeled photographs of the types and in some cases, photos of specific subtypes, preforms, or characteristics.

It is important to note that our types are broad and could easily be broken down into additional categories. For example, we do not differentiate between the different styles of chipped projectile points, although there are distinct forms of this artifact types. Our goal is not to provide a precise typology of artifact styles, but to identify manufacturing industries and major tool types. Almost every type could be more carefully studied to compile additional details on the temporal and morphological characteristics of its members. This type of information could be added to the ATI in the future.

Another important part of this study is the use of raw materials. For each artifact type we suggest the materials commonly used in its manufacture. This is not an exhaustive list, but a guide. Our study of material types also grew from previous efforts to classify Kodiak artifacts, particularly inorganic materials. Kodiak's bedrock is largely the result of sedimentary and metamorphic processes that reflect the location of the archipelago on the edge of the Pacific Oceanic plate where it subducts beneath the North American plate. In contrast, the neighboring Alaska Peninsula is made of igneous rocks reflecting its volcanic history. As such, it is often possible to determine if the stone used in tool manufacture is from Kodiak or the neighboring mainland. Additionally, as Kodiak has a distinct set of geological terranes that run north / south

parallel to the long axis of the island, researchers can further determine the part of the archipelago from which a stone originated. While imperfect, geological information, is very helpful in understanding how people and materials moved around the archipelago.

To confirm and refine our understanding of raw materials used by Alutiiq toolmakers, we consulted with a geologist Tom Corbett. Corbett spent two days in Kodiak reviewing the museum's raw material classification scheme and examining examples of stone represented in the museum's collections with help from Patrick Saltonstall. His observations are summarized in a written report and annotated map included in this manual, and they helped the museum confirm and refine its identification system. This work was built on an earlier study of raw material types, conducted by Saltonstall with the assistance of thin sectioning work by May and Carver (see Section 5).

Like the stone available to tool makers, the animals available on Kodiak are distinct from those available in surrounding areas. Ancestral islanders had access to a wide range of marine species, yet walruses are not present in the Gulf of Alaska and abalone are found only in southeast Alaska. Both walrus ivory and abalone shell are found in Kodiak sites. Similarly, Kodiak's terrestrial fauna was limited to brown bears, land otters, fox, ermine, voles, brown bats (Rausch 1969), domestic dogs (West and Jarvis 2015), and in a few locations, ground squirrels (Clark 2010). Caribou, moose, mountain goat, wolverine, beaver, porcupine, marmot, and other species common to the mainland were not locally available to Kodiak hunters and trappers (Tennessen 2010). Again, the origin of organic materials provides clues about travel, trade networks, and manufacturing activities. For this reason, identifying the type and likely origins of the raw materials used in tool production in an important component of the Alutiiq Museum's artifact cataloging work.

Section 10 provides a summary chart showing the raw materials found in Alutiiq Museum collections and their likely origins. This section includes a description of each material. To aid the identification of raw materials we also created a raw material identification kit. This kit has two specimen boxes, one each for organic and inorganic materials. The boxes contain labeled compartments, each with an example of a material used in Alutiiq tool production. Most of these materials were collected on Kodiak and are non-artifactual. A few, like an example of abalone shell, were purchased for the set or pulled from the unprovenanced artifacts in the museum's teaching collections.

Study Limitations

We recognize that classification is an imperfect practice and that the descriptions offered here can never fully capture the intricacies of Alutiiq technology. Because classification is based on central tendency, the idea that there is an average or common way to make something, classification systems often obscure important variability or impose the classifier's observations. As such, users should be aware of the limitations of our study. We offer the following notes.

First, while the artifact and material types identified by archaeologists are a valuable tool for analyses, they are idealized categories that don't necessarily represent the tool and material types recognized by their makers. Alutiiq Elders were extremely helpful in identifying tool names, but they did not create the categorization of objects found here. The inventory was developed

by archaeologists consulting with Alutiiq people, but not by Alutiiq tool makers themselves. The ATI is a research framework, informed by indigenous knowledge.

Second, for some objects and many materials, traditional terms have not survived (Counceller 2015:347-350). This is particularly true for the oldest items in our sample, like microblades and many other chipped stone tools. While ethnographic data has been extremely helpful in identifying and interpreting recent artifacts, there are tools for which we found no recent counterpart and no Alutiiq term. Some artifact types like chipped stone manufacturing debris like flakes, may never have had Alutiiq terms.

Third, our analysis is not statistical. We have not identified morphological types by measuring or coding artifact characteristics and analyzing the data. The typology presented here is based on a visual review of tools, grounded in Alutiiq cultural knowledge and ethnographic information from the Alutiiq people and their neighbors (particularly the Yup'ik, e.g., Fienup-Riordan 2007). Alaska has a rich ethnographic record, and the functions and names of many tools are well known—adze, lamp, mask, needle, ulu, net float. However, in some cases, we use a descriptive term like flake tool, because the object's function is not known. There is clearly more work to be done on tool classification, and statistical analyses are needed to refine the ideas presented here.

Fourth, although the museum's sample is very large, the ATI is incomplete. Many items once made by Alutiiq ancestors have not survived to the present and thus cannot be documented. This is especially true for older ancestral materials and implements made of organic materials. While stone tools are found through Kodiak's prehistoric sequence, there are very few organic objects from the early millennia of Alutiiq prehistory. Bone tools become more common in sites dating after about 2,500 years ago, and wooden and fiber objects are sometimes found in sites from the past ca. 600 years. As such, differences in preservation influence the tools presented here. We know much more about the tools from the last six centuries of Alutiiq history than we do about the implements used in the deeper past. Moreover, new discoveries are made with continued archaeological research. Just this summer, Saltonstall discovered a new tool type in an excavation of KAR-065, a Transitional Kachemak site on the Karluk River.

Fifth, while we believe that the inventory represents many of the tools found in ancestral Alutiiq sites, we have not systematically surveyed the literature or consulted collections in other repositories for a full accounting of types. We expect that there are additional tool types, subtypes, or variations in tool characteristics that could be included in the inventory.

Sixth, our study of raw materials relies on visual assessments of materials and limited thin section studies of flakes from the Blisky site (Steffian et al. 1998). While these thin sections provide valuable clues to material types and origins, the analysis of local stone remains incomplete. The location of sources, studies of source materials, comparisons between source samples and archaeological samples, and XRF studies are needed to refine the raw material types suggested here. Our model, while carefully reviewed by a professional geologist and supported by empirical information, is a first step in systematizing raw material identifications.

Given these limitations, this inventory is intended as a living document. As research on Alutiiq history continues, we fully anticipate that the ATI will be updated to include new tool and material types and refine those suggested here. We welcome this growth in knowledge and encourage colleagues to suggest improvements to the museum. We also ask future researchers

and museum staff members to continue improving this document. New information will advance collections care, support heritage research, and enhance interpretation of the Alutiiq world.

How to Use the Alutiiq Technological Inventory

The Alutiiq Technological Inventory is organized to help people identify Alutiiq objects. In Chapter 2 there is a brief introduction to the history of Alutiiq manufacturing, followed by a table of all the artifact types in the inventory—an outline of the type descriptions by technological industry (see Tables 2.3 and 2.4). You can use these tables as a guide to locating objects. The artifact identification process is much like using a bird book to identify a bird. Users gradually narrow the identification down using clues to exclude industries and types of objects. We recommend the following steps.

1. Be sure that the object is an artifact

Sometimes unmodified rocks and animal remains end up in artifact bags and make their way to the artifact cataloging process. These may be naturally occurring materials (till rocks, root casts, fulgurites, etc.) or items introduced to a site by people (Figure 1.4). In contrast, an artifact has been intentionally modified by a person. Artifacts include whole and fragmentary:
- Finished tools – these may be complete or fragmentary
- Preforms – items that are in the process of being manufactured
- Debitage – the waste created by tool making

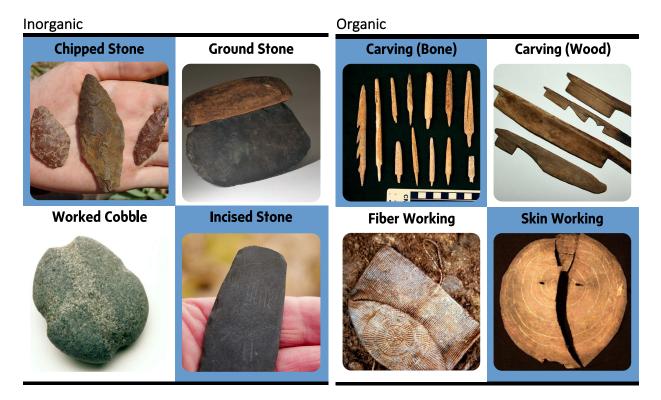**Figure 1.4. Examples of rocks that are not artifacts.**

Look for evidence of chipping, grinding, pecking, molding, incising, carving, drilling, stitching, etc. to determine if the piece is an artifact. If you suspect that the piece is NOT an artifact, set it aside for confirmation by a museum staff member.

Rocks are a common find in Alutiiq settlements and can sometimes be difficult to separate from stone artifacts. Kodiak soils are formed in volcanic ash deposits and typically lack naturally occurring rocks larger than a small pebble. As such, when sizeable rocks appear in sites, they are typically the result of human activity. Some may have been displaced from a geological context that includes rocks. For example, when Alutiiq ancestors dug a house foundation, they frequently disturbed underlying glacial till which contains naturally occurring rocks. Till rocks are typically whole, angular, stained orange, and do not display the characteristics of stone reduction (e.g., evidence of percussion, thin sharp edges). However, they may have striations from being carried by glacial ice. People also transported rocks to sites to build hearths, stabilize posts, and use in steam bathing, smoking, and cooking. Fire cracked rock is stone that has been charred, reddened, or cracked by heating. It's very common in Kodiak sites, typically occurs as slate or greywacke, and can be confused with worked material.

2. Identify the artifact type
    a. Determine if the artifact is made of inorganic (stone, clay, or mineral) or organic material (bone, antler, ivory, shell, wood, etc.— Figure 1.5) and turn to that part of the manual.

Figure 1.5. Major manufacturing industries.

Note: Ceramics are considered an inorganic industry. Carved bone and wood are both part of the carving industry.

b. Determine which manufacturing industry the object is most likely affiliated with by comparing the object with the technology overview sheets (Figure 1.5). Turn to that part of the manual. Look for evidence of chipping, grinding, or cut marks. Each industry summary begins with a general description of that manufacturing method, with a discussion about its temporal span and characteristics that may also provide clues about the identification of an item.

c. Search through the artifact photos to find a like picture. Within each industry the tool types are listed alphabetically. Browse the photos to find objects like the one you wish to identify. Because the section of the carved tool industry is so large, we have further divided it by groups of activities. Here the descriptions are alphabetized within broad activity categories—collecting, fishing, hunting and trapping, boating, building, cooking & storing, manufacturing, steam bathing, playing, warring, gaming, adornment, and spiritual life.

d. Check your identification—The ATI provides site names, published references, and information on common material and dimensions so users can evaluate tools by comparison with others. If you are unsure of an identification examine other items in the museum's collections or in one of the publications suggested to confirm it.

3. Identify the raw material

a. Determine if the material is organic or inorganic and select the appropriate raw material comparison box. Check the piece you are identifying against the samples.

b. Select a sample that matches the material you are trying to identify and read the raw material descriptions.

c. For each object type we list the common raw materials used in its manufacture. Check this list of materials to consider the object's raw material.

d. Check your identification—If you are unsure of a raw material identification examine other items in the museum's collections or in one of the publications cited.

Table 1.3. Alutiiq terms for object parts

English	Alutiiq	Comment
Base	Acia[m]	Its bottom
Body	Qaik[m]	
Distal (furthest from the user)	Yaqsisqaq[m]	"one that is far"
Edge	Cenii[m]	
Fragment	Kepii[m]	
Medial (only the middle)	Qukaa[m]	"it's middle"
Piece	Ilakuaq[h]	piece of something (removed)
Proximal (closest to the user)	Yaagiasqaq[m]	"one that is near"
Rim	Iterwia[m]	"It's entrance"
Stem	Pamyua[m]	"Its tail"
Tip	Iqua[m]	
Whole	Luucirmi[m]	

m = term in modern usage, h = historic term, c = term created by Elder Alutiiq speakers

4. Determine the part of the tool present

Many of the artifacts in Alutiiq assemblages are broken. They are fragments of tools that disintegrated with time or were discarded because they were broken during use, manufacture, or refurbishing. Table 1.3 shares Alutiiq terms for object parts and Figure 1.6 illustrates the locations of these parts for select tools. We record the part of the tool present in the condition column of our catalogs.

Figure 1.6. Terms for Artifact Parts.

Proximal   Medial   Distal

Tip

Stem / Base   Blade / Body

Slate Bayonet from Rice Ridge

Body

Base   Tip

Barbs

Non-toggling Harpoon from Karluk One

Line Hole

Barbs

Body

Base   Tip with End Blade

Arrowhead from Karluk One

Rim

Collar

Rim

Body

Base

Base

Bentwood vessel from Karluk One

Clay pot from the Laughlin Collection