

Managing and Harvesting Mountain Goats for Traditional Purposes by Indigenous User Groups

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ABSTRACT The Tlingit Tribe in southeast Alaska, USA, has historically used mountain goat (*Oreamos americanus*) wool for weaving traditional robes. These robes are repositories of Tlingit culture, history, and aesthetics, as well as an archive of the animal itself. The twinning method of Tlingit weaving has been used for thousands of years. During regular hunting seasons, wool is either absent (late summer and fall) or is difficult to separate from guard hairs (early winter) because it is firmly attached to the hide. Late winter and early spring, which are after regular hunting seasons, are the best times to collect wool from hides for weaving. Male mountain goats shed their wool in late spring while the nannies do not lose all of their winter wool until they have weaned their kids. In addition to wool from harvested goats, wool shed during late spring and summer and wool from winter and spring mortalities can also be collected. The lack of mountain goat wool during the regular hunting season, combined with limited knowledge of shed areas, makes wool hard to come by, putting the traditional art form of mountain goat robes at risk. Since 2004, Alaska Fish and Game has made 3 goat permits per year available for the Tlingit Tribe for Unit 4 (Baranof Island) in the spring. The harvest must be affiliated with a cultural class of Tlingit weaving; hunters must be registered with the tribe; and the meat must be shared with the community. This special harvest is a step toward renewing our relationship with the mountain goat, which provides wool for weaving traditional robes, meat for the community, and harkens back to the traditions of the Tlingit Tribe to sustainably harvest mountain goats during the spring.

Biennial Symposium of the Northern Wild Sheep and Goat Council 19:37-41; 2014

KEY WORDS Alaska, mountain goat, *Oreamos americanus*, robe, Tlingit Tribe, indigenous, weaving, wool.

My name is Teri Rofkar; I am a member of the Tlingit Tribe, in southeast Alaska, USA. My Tlingit name is “Chaas’ koowu tlaa.” I am from the Tak’dein taan Clan, Tax Hit, a Raven from the Snail house. Our clan comes from the outside coast on the northern Gulf of Alaska. Our clan has been known for its weaving skills for thousands of years and I work towards continuing that legacy.

The Tlingit Tribe has traditionally used mountain goat (*Oreamos americanus*) wool in our weaving. The Janwu Aani robe, which took

me over 900 hours to weave, is an example of a traditional mountain goat wool robe (Fig. 1). This robe is woven without the use of a loom; it is composed of two and three strand twinning, similar to spruce root basketry in my area. The Tlingit were recognized as the last active weavers using this ancient weaving technique. Examples of this twinning method using other materials have been found in archaeological sites in other parts of the Americas. These include: 1) a fragment of a twined mat dating back 11,200 years found in Fishbone Cave,

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Nevada; 2) twined mats binding remains dating back 9,400 years found in Spirit Cave, Nevada; and 3) a twined textile discovered with the Kennewick Man dating back 9,300 years ago (Kehoe 2006).

In 2008, I was asked to provide mountain goat samples from Baranof Island to be included in a DNA study (Shafer et al. 2012) and I incorporated symbols that articulated the details of the DNA study in the Janwu Aani robe I was weaving (Fig. 2). This robe has symbols that relate to the 2 mountain goat populations on Baranof Island. The side borders are an identical double helix with one flipped adenosine bridge to symbolize the 2 goat populations. I covered the stranding with beads to represent the proteins and amino acids. Windswept alpenes and bear tracks are also embedded in the weaving. This is the first Raven's Tail robe woven with 100% mountain goat wool in over 200 years. I used wool from about 7 goats to weave this robe and it required about 2,000 hours to process the wool and do the weaving. This robe holds the history of the Tlingit relationship with the mountain goat of Baranof Island. It has images linked with the past but, most importantly, it documents the present for the future. Similar to other traditional Tlingit objects, this robe is a repository for cultural, historical, and aesthetic information and archives the animal itself. In 100 years this robe will still be dancing and the details of our collective relationships with the mountain goats will still be told. With the lack of wool during hunting season, combined with limited knowledge of shed areas, it took me 17.5 years to gather enough wool to weave this one robe using every wool collection method available.

Tlingit village sites date back 11,000 years on the outside coast of Glacier Bay and Icy Straits, Alaska where the ancient Tlingit weavings originated. There are 10 purely geometric robes and 4 hybrid Raven's Tail and Chilkat robes (Fig 3.). Russians collected



Figure 1. Janwu Aani robe woven from 100% mountain goat wool by Teri Rofkar, the Tak'dein taan Clan, Tlingit Tribe, Alaska, USA.



Figure 2. Detail from the Janwu Aani robe woven with 100% mountain goat wool by Teri Rofkar, the Tak'dein taan Clan, Tlingit Tribe, Alaska, USA. One of the symbols on the robe is the double helix in keeping with the tradition of robes being repositories of information.

6 of the 10 geometric robes in 1788 from Lituya Bay; they are now at the Kunstkamara Museum in St. Petersburg, Russia. As the weaving cultures encountered each other there was exploration of technique. I believe that the two techniques were both fully evolved when this exploration took place. To my knowledge, none of the existing mountain goat wool robes have been dated. I was involved in recovering a 4,700-year-old basket from the tidal zone on Baranof Island; it was woven using the exact

Table 1. Approximate percentages of useable wool and unusable waste (i.e., guard hairs and debris) for mountain goat wool collected from different sources, Alaska, USA.

Source	Waste Description	Wool %	Waste %
Winter/Spring mortality sites	Much guard hair and debris	25	75
Shed wool	Few guard hairs, some debris	33	67
Slipped hide (hunter harvest)	Much guard hair	44	56
Combed hide (hunter harvest) or live goat	Few guard hairs	85	15

twine methods as the Janwu Aani robe.

I have researched how traditional mountain goat robes were made, including the math used in creating a large geometric robe. There is natural science and biology needed to harvest the mountain goat wool. With no agriculture or domestic animals, indigenous harvesters closely followed changing environmental conditions to collect materials. The Tlingit have no words for “art” or “science” but these concepts were part of everyday life, from understanding weather patterns and harvesting seasonal foods to collecting materials for shelter and navigating the complex waterways

of southeast Alaska. Thousands of years of learning are still present in the methodologies used today.

Wool Collection

Wool can be collected from 4 sources that can vary greatly in the percentages of wool and waste (i.e., guard hairs and debris) present (Table 1). Natural mortalities that occur during late winter and early spring can have useable wool present even if found later in the year. Shed wool can be found from late spring to summer near mineral deposits and summer grazing areas. Slipped wool can be obtained

**Figure 3.** Hybrid Raven's Tail/Chilkat mountain goat wool robe (foreground) and 2 geometric mountain goat wool robes, Tlingit Tribe, southeast Alaska, USA.

from the hides of animals harvested by hunters in the early winter. Slipping is a method of removing wool from the hide by rotting it until the wool and hair fall out together. This creates a smooth skin great for drum making. Slipping is the most labor-intensive method because many guard hairs must be removed individually from the wool. In our area, wool is available from slipped hides during the last 2-3 weeks of the regular hunting season. Combing hides of animals killed during late winter or early spring (or live animals) produces the highest quality wool with few guard hairs and little debris.

Harvest Seasons

Regular hunting seasons for mountain goats in Unit 4 (Baranof Island) run from early August through the end of December (Table 2).

There is an annual cycle for collecting food on Baranof Island. Summer is the season for salmon and berries, while the fall brings deer and halibut that are fat and healthy. During late fall and early winter, there are small runs of late salmon and other small animals to supplement the proteins and berries stored from the summer and fall. However, by late winter and early spring, there is a lack of fresh protein until herring arrive on the coast in late spring, bringing sea mammals and eggs for harvesting.

In the late winter and early spring, the goats move down the mountains to avoid high winds and storms; some come down as far as the beaches for salty seaweeds. The wool begins to detach from the skin in anticipation of the spring shed. These are all indications of a traditional time for hunting, based on needs rather than sport. The regular Unit 4 goat harvest season only provides two weeks to one month for collecting wool that is usable for weaving.

A respectful relationship with mountain goats includes harvesting when they have wool without jeopardizing the population. Mountain

Table 2. Mountain goat hunting season dates and wool availability in Unit 4 (Baranof Island), Alaska, USA.

Dates	Hunting Season	Wool Available
Aug. 1 - Nov. 15	Regular	No
Nov. 15 - Dec. 31	Regular	Yes
Dec. 31 - April 15	None	Yes
April 15 - Aug. 1	None	No
Nov. 15 - April 15	Traditional	Yes

goat has been a staple in the Tlingit diet for over 10,000 years. Winter and spring are a traditional time for harvesting goats for wool and meat. However, spring is the time goats have their young and their reserves are depleted from the winter. To understand how traditional spring harvest could occur and still sustain the population, I would like to relate a story. An Elder from the Chilkat River area visited me at my studio while I was removing guard hairs from the wool of a late-hunted hide. He looked at my pile of wool and asked “Is that from a billy?” I explained I wasn’t sure because some of the hides I had slipped were from nannies. “We used billies!” was his response. When I inquired why, he answered, “It’s traditional.” I have since found the science in this tradition. The billies shed out first in the spring, while the nannies don’t lose all their winter wool until they have weaned their kids, thus creating a method of built-in sustainability (Chadwick 1983). The traditional harvesting cycle in the spring coincided with annual low tides for gathering clams, octopus, chiton, abalone, and sea urchin. With the rich proteins from the sea, it only required a few goats to feed a whole village.

Shed wool can also be an important source of wool for weaving. The elders talked about specific areas the goats would travel in the spring, seeking mineral licks and rich grazing opportunities, creating areas of shed along these corridors. Documenting shed areas with the help of biologists, hikers, and hunters

would be very helpful for collecting wool in the future.

The lack of mountain goat wool during the regular hunting season, combined with limited knowledge of shed areas, makes wool hard to come by, putting the traditional art form of mountain goat robes at risk. For centuries, the Tlingit tribe harvested mountain goats during the late winter and spring without jeopardizing the sustainability of the populations. If sufficient wool for traditional robe weaving was to be available, some harvest at this time was necessary. To this end, I took my case to the Federal Subsistence Board, resulting in a Customary and Traditional Harvest Permit with the Sitka Tribe of Alaska. Since 2004, Alaska Fish and Game has made 3 permits per year available for the Tlingit Tribe for Unit 4 in the spring. The permit comes with numerous restrictions: 1) the harvest must be affiliated with a cultural class of Tlingit weaving; 2) the hunters must be registered with the tribe and the United States Forest Service; 3) the meat must be shared with the community; and 4) hunters must apply for the permit every year. From 2004-2012, the Tlingit Tribe harvested 7 male goats out of a possible 27 animals. Our numbers are added to the harvest total for each calendar year; a total of 518 mountain goats were harvested in Alaska in 2007 (Alaska Department of Fish and Game).

I would like to encourage agencies and individuals to work together to create sustainable relationships with the animals in their respective homes. Relationship, by definition, is not preservation. Therefore, maintaining a sustainable relationship can describe a different management methodology than natural resource management. This small change can make the difference between a purely economical equation and a more holistic environmental decision. We all know relationships can be complicated.

Wildlife managers can learn from indigenous groups and their ancient traditions. Underlying traditions may hold more than spiritual customs—they may hold unidentified sustainable scientific solutions and, by my definition, that is a form of spirituality.

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