**From Bones to Behavior: Chinese Foodways in Boise Basin Mining Camps**

Abstract

As the site where gold was first discovered in the Boise Basin in 1862, Grimes Creek was subject to intensive placer mining in the late nineteenth and early twentieth centuries. Chinese miners began arriving in the Boise Basin in the mid-1860s. The focus of this research is on the faunal remains and the insight they can provide on meat consumption habits and food culture of Chinese in Idaho. Evidence from the assemblage shows that the Chinese miners of Boise Basin consumed a variety of meats, and seemed to have a strong preference for pork, but due to the low cost of the beef, consumed sizable amounts of both meats.

Introduction

Gold was first discovered in the Boise Basin by George Grimes and his company in 1862 at what is now known as Grimes Creek. Chinese miners began arriving in the Boise Basin a few years later. Between 1870 and 1890, mining camps in places like Idaho City, Placerville, Centerville, and Pioneerville (Fig. 1) were home to nearly 2,000 Chinese (US Bureau of the Census 1870; US Bureau of the Census 1880)
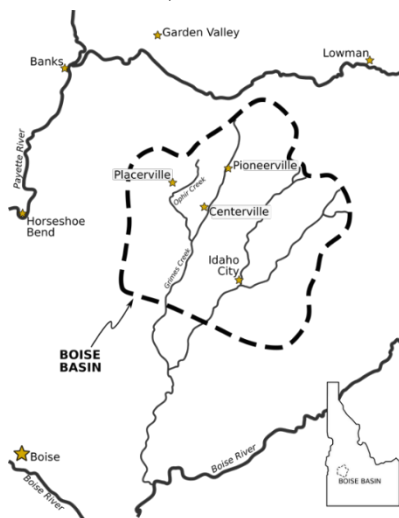
The Boise Basin was a unique place for mining in Idaho because there were good mining returns for quite a while in the 1860s. However, it was not until the 1870s that many of the American and Euroamerican miners moved out once the returns fell, leaving the mining population largely Chinese in the basin (Zhu 1997). Although their occupancy was brief, Chinese immigrants left an enduring legacy in the Boise Basin, which today includes a vast landscape of mining features, historical buildings in Idaho City and Placerville, and over 300 Chinese-occupied archaeological sites.

One of these sites includes 10BO357 (also BS-780), which was recorded by the Boise National Forest (BNF) personnel in 1984 during a land exchange survey. Because of the diversity of surface material and the evidence of ongoing looting, the site was excavated in 1985. In a letter report on the 1985 excavations, Geer and his colleagues note a depression that may have been a cellar or foundation (1985). Most artifacts appear to have been recovered from this feature and from a refuse scatter that may have been used to backfill a placer ditch. The authors describe recovering a variety of Chinese manufactured goods from the site, as well as a relatively large faunal collection. The faunal assemblage contains around 424 bones, most of which are either pig or large mammal bones.

This project focuses on the faunal remains excavated from the BS-780 archaeological site, while also using a thorough investigation of meat market ledgers from a nearby historical meat market in Placerville. These two sources of data are used to identify purchasing patterns of the Chinese in Idaho and shed light on meat economics and availability and how these factors influenced cultural preferences of Chinese miners. This paper uses a combination of faunal and

historical data to explore the foodways of a Chinese mining community and the role food played both in affirming Chinese heritage and adapting to an unfamiliar environment.

Chinese Immigration to America for the Gold Rush

Many Chinese traveled to America in the early 1850s at the beginning of discovery of gold in California. Chinese people continued to immigrate to other places as more and more gold was discovered in surrounding areas. The first recorded immigration occurred in 1849 when 325 Chinese immigrated to the U.S. The numbers of migrants quickly grew with 2,716 in 1851 and 20,026 in 1852, leaving a total of about 63,000 Chinese in America by 1870. Gold was discovered in the Clearwater Mountains in 1860, leading to the gold rush in 1861 in places, such as Pierce, in northern Idaho. Many miners rushed to other mines in Idaho in the following years (Stapp 1993). Many of the Chinese immigrants to mining sites were men that had left their families to seek riches. However, many Chinese were not allowed into major mining cities until most of the gold had already been extracted (Sisson 1993). As the Chinese were then allowed to purchase mining land, a new rush of Chinese immigration began later in the 1860s (Longenecker and Stapp 1993).

Other groups of Chinese ventured all over the west in search of other sources of gold. Many explored into the Rocky Mountains in 1856 eventually settling in the Boise Basin area following the Oregon-California Trail to Idaho. At their arrival, friendly Shoshone and Bannock Indians helped them get settled by giving them some food and showing them the areas that contained gold. Word eventually spread to other Chinese miners in the west about gold in Idaho in 1862 when a band of miners led by George Grimes found gold in the Boise Basin. This and other discoveries of gold in northern Idaho led to a gold rush in 1863 causing tens of thousands

of other miners to flock to many places in Idaho, including the Boise Basin. However, most of the Chinese miners waited to come to Idaho until many of the mining sites were "depleted" and the Euroamericans were willing to sell their mining property, or when there were more convenient travel routes later in 1865. Eventually a route was established from northern Nevada into southwestern Idaho to Silver City, then to Fort Boise where the miners followed the Boise River into the mining towns of Idaho City, Centerville, Pioneerville, and Placerville (Zhu 1997)

Near Placerville is a Chinese-occupied placer mining site, 10BO357 (also BS-780), located along Grimes Creek in Southern Idaho's Boise Basin. In many cases, Chinese immigrants purchased claims abandoned by others, thus revitalizing local communities. Between 1870 and 1890, mining camps in places like Idaho City, Placerville, Centerville, and Pioneerville were home to nearly 2,000 Chinese individuals, who accounted for as much as 49.9 percent of the entire population (Zhu 1997; US Bureau of the Census 1870; US Bureau of the Census 1880). Although their tenure was brief, Chinese immigrants left an enduring legacy in the Boise Basin, which today includes over 300 Chinese-occupied archaeological sites, a vast landscape of mining features, and historical buildings in Idaho City and Placerville.

Methods

Skeletal identifications were made using the University of Idaho's comparative osteological collections. And osteological manuals were also consulted (Thomas 1989; Gilbert 1990; Schmid 1972; Cohen and Serjeantson 1996; Gilbert et al. 1996). The analysis process included identifying various characteristics, especially the individual species and skeletal element, and calculating measures such as the Minimum Number of Individuals (MNI), Number of Identified Specimens (NISP) and the approximate meat yield or biomass.

McDevitt Meat Market Ledger

The McDevitt Meat Market ledgers (1875) were transcribed from scans received from the Idaho City Historical Society. The pages contained records of meat purchases from the McDevitt butcher shop in Placerville. The ledger recorded meat purchases by the Chinese from 1875 to about 1879. Each page recorded the individual's name, what they purchased and how much they paid for it. This project used this historical data to compare the meat purchases with the archaeological remains.

Results

The faunal assemblage (ca. 1830-1890) consisted of 424 bones with the total weight of the assemblage being 5.7565 kilograms. Four species are identified in the assemblage cow, bison, pig, and chicken. A minimum of 9 individuals are identified. Most of these remains can be associated with mammalian meat consumption. Table 1 summarizes the faunal remains. Pig and medium mammals are the most frequently identified animals by bone count while large mammals are the most commonly represented animals based on bone weights. The only medium mammal bones identified to species are pigs. Seventy-seven pig bones are identified representing a minimum of five individuals. Large mammals consisted of both cow and (unexpectedly) bison with a total MNI of two. The NISP totals are: Cow = 2, Bison = 8, Lg. Mammal = 94. Overall, mammalian bones comprised approximately 97 percent of the assemblage. Further, almost 50 percent of the assemblage (NISP = 208) showed evidence of various forms of butchering such as being chopped or sawn.

Species	NISP	%NISP	MNI	Weight (g)	Biomass (kg)	%Biomass
Cow	2	<1%	1	32	0.595	1%
Pig	77	18%	5	989.8	13.061	18%
Chicken	7	2%	2	5.1	0.114	0%

Bison	8	2%	1	1403.8	17.889	24%
Unidentified Large Mammal	94	22%	--	2594.9	31.096	42%
Unidentified Medium Mammal	131	31%	--	548.2	7.674	10%
Unidentified Bird	6	1%	--	2.4	0.058	0%
Unidentifiable Mammal	99	23%	--	180.3	2.821	4%
Total	424	100%	9	5756.5	73.308	100%

Table 1: Summary of species identified at BS-780

Eight bison bones are identified, adding a rather interesting piece of data. Two of the bone fragments are identified as a single left radius that was chopped mid shaft, most likely for marrow extraction. Two other bison bones are identified in the assemblage that articulated; a right tibia and astragalus. The astragalus had several deep cut marks on it indicating joint disarticulation. Twenty-two percent of the total bone count are the other unidentified large mammal fragments. Twenty of these bones are ribs are ribs and ten are scapulae. Many of the long bone fragments were sawn into steak cuts from the femurs and humuri as well as about 12 butchered bone fragments from the loin area.

There are 77 pig bones identified in this assemblage collectively weighing 989.8 grams (table 1) with an approximate meat weight of 13.061 kg. The pig element distribution is quite diverse. In addition to bones such as femurs and scapulas which are the byproducts of common meat cuts the assemblage also contains a surprising number of, head, teeth and jaw fragments (n=30). Finally, 31 of the 77 bones showed evidence of butchering.

Butchering and Meat Cuts

Zooarchaeologists identify and study particular cuts of meat/butchering techniques to evaluate meat consumption patterns and potentially economic status. As discussed above,

scholars study butchery to determine how animals were processed, such as how an animal was disarticulated or how it was cut up for consumption. In historical contexts animals were commonly butchered and sold in small amounts, such as meat for an individual meal. The significance of attempting to identify specific cuts of meat is that there are typically considerable price differences particular meat cuts providing the analyst some insight into the finances of the household. The system used in this work is based on a relative value of meat cuts instead of absolute values as those are too difficult to calculate with any reliability. The relative rankings are derived from average meat prices for pork and beef. Basically, the higher ranked meat cuts will be more expensive per pound than the lower ranking meat cuts. A faunal assemblage consisting of more high-ranking meat cuts than low ones could suggest that the consumers had more resources at their disposal to purchase better-quality meats. Generally, the higher-ranking meat cuts come from the loin/pelvis area of the animal, because the meat here is tenderer than from other parts of the body. The further from this area the cuts come from, the lower rank of the meat cut. The lowest quality, in turn, would come from the head and the feet of the animal.

Something to be mindful of when trying to interpret economic status from meat consumption patterns is that the purchasing patterns of meat are not always consistent with status. For example, households with limited resources may celebrate special occasions with fancy meals. Food is an extremely important symbol that many do not like to compromise, even in desperate times. Thus, food remains may indicate that people lived a comfortable life, while their actual economic situation said otherwise. Alternatively, sometimes cultural preferences lean more toward cheaper meat cuts. Finally, it should be acknowledged that these faunal

remains are not entirely representative of all the meat that was consumed at this location. Boneless meat cuts or other items such as sausage and lard would not be evident in the assemblage. As with any archaeological data there are limitations—however the data also presents the past in ways that textual sources cannot. As will be demonstrated patterns in meat consumption will be identified that sheds some light on overall the economic status of Chinese in Idaho.

The approach to finding these patterns has been to identify cuts of meat based some form of economic scaling associated with the meat cuts as well as a more general assessment of how animals were processed. In many cases, the ways in which an animal is butchered depends on the way the animal is built, but there are also individual and cultural variations. This assemblage provided some evidence both on Chinese butchered animals and what they consumed that either differ from or align with Euro-American-occupied sites.

Overall, about half of the assemblage had some evidence of butchering. Seventy-one medium mammal bones are identified that could be associated with a particular meat cut. Seven percent of the identified medium mammal cuts (including pig) are from the loin which would be the most expensive cut (table 2). However, 35% of the medium mammal meat cuts are from a leg bone and 30% are from the rib area. Finally, head, neck and foot cuts comprise 8% of the identified medium mammal cuts, outnumbering the shoulder cuts which seems unusual.

Meat Cut	NISP	%NISP	Weight (g)	Biomass (kg)
Head and Foot	6	8%	72.2	1.24
Loin	5	7%	397.4	5.75
Rib	21	30%	25.7	0.49
Leg	25	35%	307.3	4.56
Shoulder	2	3%	129.2	2.09

		17%	19.2	0.38
Unidentified	12	17%	19.2	0.38
Total	71	100%	951	14.51

Table 2: Medium Mammal Meat Cuts

The large mammal meat cuts are rather evenly distributed throughout the entire body, however most of the cuts came from the ribs, ranked second for the best meat, while only 2% came from the loin area that is ranked as the best meat (table 3). Based off the meat weight and biomass, though, most are shank cuts ranked ninth, meaning they are among the cheapest meats.

Meat Cut	NISP	%NISP	Weight (g)	Biomass (kg)
Arm (6)	1	2%	24.3	0.46
Chuck (blade) (5)	10	15%	397.5	5.75
Foot (10)	1	2%	52.2	0.92
Loin (1)	1	2%	14.3	0.29
Neck (8)	1	2%	29.6	0.55
Rib (2)	16	25%	225.5	3.45
Round (3)	10	15%	359.2	5.24
Rump (4)	4	6%	134.1	2.16
Shank (9)	14	22%	1580.3	19.9
Sirloin (2)	7	11%	243	3.69
Total	65	100%	3060	42.41

Table 3: Large Mammal Meat Cuts

McDevitt Meat Market Ledger Results

The 332-page ledger recorded Chinese meat purchases in Idaho City during the years 1875-1878. The ledger shows that pork was purchased in higher quantities than beef and it was purchased more regularly. A crucial point drawn from the ledger is the fact that pork consistently cost much more than beef. Overall beef was sold at $0.13 cents per pound while pork sold at $0.25 cents per pound. This data shows that, despite this dramatic difference of price, pork was purchased in greater amounts than beef. Over the three years of records 35120.2 pounds of pork and 28006.54 pounds of beef is recorded as being sold (table 4). This emphasizes that these cheaper cuts may have cultural importance to these Chinese, rather than just an economic value considering the price and the great consumption of the pork.

Items Purchased	Weight	% Weight	Price	% Price
Bacon	756.367	1%	$ 226.91	2%
Beef	28006.54	39%	$ 3,640.85	26%
Cat	--	--	$ 4.40	0.03%
Dog	--	--	$ 13.46	0.1%
Head Cheese	11.25	0.02%	$ 3.94	0.03%
Heart	28	0.04%	$ 7.00	0.05%
Hog	2984.5	4%	$ 565.84	4%
Kidney	2	0.003%	$ 0.25	0.002%

Lard	360	0%	$ 145.81	1%
Lung	6.5	0.01%	$ 4.97	0.04%
Mutton	3.46	0.00%	$ 6.92	0.05%
Oxtail	--	--	$ 1.88	0.01%
Pig Feet	842.77	1%	$ 109.56	1%
Hog Head	540.23	0.7%	$ 70.23	0.5%
Pork	35120.2	49%	$ 8,780.05	62%
Sausage	54.7	0.1%	$ 16.43	0.1%
Shank	13	0.02%	$ 24.51	0.2%
Steak	2974.87	4%	$ 446.23	3%
Tongue	5	0.01%	$ 2.13	0.02%
Veal	439.7	0.6%	$ 87.94	1%
Total	72149.09	100%	$ 14,159.31	100%

Table 4: Items purchased at the McDevitt Meat Market and their total weights and money spent

Non-typical parts of the pig parts such as pigs' heads and feet were also purchased with some regularity as well as occasional purchases of cat, dog, mutton, lung, heart, liver, head cheese, oxtail, kidneys, and various others. This could also indicate some cultural significance to these meat products seeing that the consumers seemed to have the means necessary to purchase more expensive meats but chose to purchase cheap and low-quality meat.

Small, yet significant details that surfaced are those of company names often written off to the side of the customer name showing affiliation. Other times the word "company" is written with the name indicating that these individuals were likely buying meat supplies to share amongst their companies, or households, that the Chinese miners usually lived in. Whether these individuals were buying supplies for the miners or buying these meats to cook for the entire company is not known.

Discussion

With the notable exception of bison, the species represented is rather typical of late nineteenth century meat consumption namely cow, pig, and chicken. The bison remains are quite exceptional. They represent both the acquisition of food through hunting and private butchery. The bone marrow extraction seen with the radius is fairly atypical. It shows a non-professional was butchering these bones for their private use as it would not be something sold through a market.

In terms of overall numbers, pork dominated, a fact that is potentially significant given a cultural preference for pork amongst Chinese, something that will further be elaborated on later. The evidence of both the assemblage and the ledgers shows a broad use of the animal, namely pig, as seen with the body part representations and the purchasing of pigs' heads and feet.

Chinese traditional cultural beliefs include a theory of opposing natural forces in the world: yin and yang. This is incorporated into most aspects of their lives -- including architecture, colors, health, and food – to create harmony. Many Chinese believe that food is more than merely sustenance, it can help prevent and treat diseases, therefore, disease and sickness are caused by the imbalance of either yin or yang. Too much yin in the body can result in sicknesses such as colds, flus, nausea, weight loss and something the Chinese call weak blood; treatment would be to consume yang foods such as certain herbs and protein rich soups. These soups often include ingredients such as chicken, pork liver, eggs, pig's feet, or oxtail. Rattlesnake and dog meat are also included in that mix of yang foods promoting health. Too much yang in the body can result in sicknesses such as acne, hemorrhoids, constipation, fever, sore throat, hangovers and others. To treat these, yin foods are used for remedies, which are usually bland and cold (Kittler and Sucher 2001).
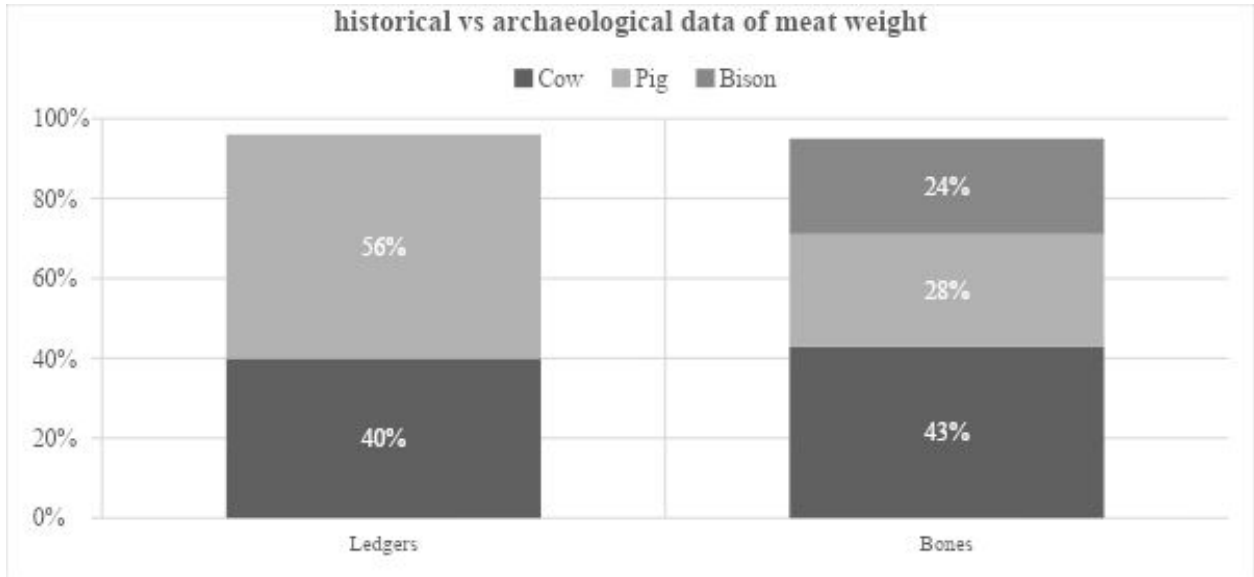
In China, the most popular meat consumed was pork (Newman 2004; Anderson and Anderson 1977). When Chinese immigrated to America, the most abundant meat was beef, resulting in many immigrants adjusting their food choices (Warner et al. 2014). What is intriguing about the Idaho city archaeological data is that it demonstrates the continuing significance of pork. Despite costing twice as much as beef, pork was purchased in significant amounts based on the ledger data. The consumption of all this pork also says something about both the cultural and economic status of the miners in Idaho.

Going back to the ledgers, they indicate the residents clearly had the finances available to afford what was apparently their first choice in meat. Also interesting is that there are a significant amount of purchases including those of pigs' heads and feet. The faunal remains also

display this complexity in meat consumption. These elements are the least expensive meat cuts on the animal. They cost approximately $0.13 per pound, half that of the other pork cut. Taking this data into consideration led me to believe that the consumption of the cheapest meat cuts was not due to low economic flexibility but were rather significant to them in some other way, such as what is mentioned above.

Beef and pork were the most important sources of meat to the Chinese in the Boise Basin of Idaho, with a surprising discovery of several processed Bison bones. Chinese miners maintained many of their traditional food practices such as their preference for pork and the use of cleavers in butchery of the animals. Evidence shown in this study suggests that there was still a significant amount of beef being consumed, likely due to the higher availability of beef in the food supply systems of the area. This suggests that these miners were likely purchasing meat cuts according to their preferences rather than price, because of the higher percentages of higher quality meat cuts of both pork and beef, which has something to say about possible socioeconomic status of the people of this Chinese mining camp. At the same time, there is a surprisingly high percentage of pig heads and feet being represented in both the assemblage and the ledgers, but this is likely a preference for traditional Chinese food patterns, providing further evidence that their purchases were more preference-driven, albeit a convenient preference. The same could be argued about the amount of more obscure meat purchases such as cat and dog, and animal organs such as heart, lung and head cheese.

However, the amount of beef in the assemblage adds an element of complexity. Figure 3 is based on the weight measurements from both the ledgers and the bones. From the bone assemblage data, there are 208 pig and medium mammal bone fragments, while there are 102

historical vs archaeological data of meat weight

Cow | Pig | Bison

| Ledgers | Bones |
| 40% / 56% | 43% / 28% / 24% |

cow and large mammal bone fragments identified. This is a large contrast in the overall count of

the cow and pig remains. But the interesting part is that the beef biomass – or meat weight – is

vastly greater than that of pork (pork at 13 kg; beef at 32 kg), demonstrating that there is a

greater quantity of beef present overall as shown in figure 2. So, we can see that the proportions

of cow and pig in the ledgers is quite different than in the bone assemblage, especially that of

pig.

Figure 2: Comparison of faunal assemblage and meat market ledger meat market

A shocking surprise in the assemblage is the identification of several bison bones

(discussed earlier). There are only eight bones identified as bison, but these eight bones

represent 24% of the meat weight of the entire assemblage. Whereas, the cow and large

mammal meat weight had 43% and pig and medium mammal meat weight characterized 28%.

These statistics conflict with the data obtained from the meat market ledgers. Regardless, I

would argue that pork was consumed more regularly than beef.

To discuss the bison bones further, I would first note that they all seem to come from a single individual, based on the evidence that several of the bones both mend and articulate. There is the distal end of a right tibia that articulates with an astragalus, both of which are obviously butchered; the tibia is sawn and the astragalus is heavily chopped (Fig. 3). The multiple chop marks at the joint suggest a non-expert's attempt at joint disarticulation. There are also two fragments of a bison radius that mend after being chopped in half (Fig. 4). Again, this

butchering is almost certainly done by a non-professional and the purpose is likely to extract the marrow from within.

These articulating bones not only suggest that these elements come from the same individual animal, it also means that the 24% of the meat represented in this assemblage was obtained at one single point in time. The other large bison bones that do not mend or articulate come from other parts of the body but considering their size in comparison to the other bones, I would like to suggest that they also come from the same individual.

But why is there any bison present in the assemblage at all? And why is it so interesting? There were bison present in this region, but it suggests that there was some wild game hunting

going on, either by these Chinese in the community or others in the surrounding area. Not only was there hunting of this wild game, but also consumption by the Chinese mining community, though obviously not obtained through a local meat market as seen with the ledgers. The pork, on the other hand, was likely obtained over a period of time evident in that there is a higher MNI count and a higher NISP of pig and medium mammal bones. This proposes a more regular pattern of pork consumption over time, considering little articulation and mending is identified among these bones.

A few other artifacts found at the site besides bones are also a meat hook, a Chinese meat cleaver, and a fragment of a large wok. The wok was probably an extremely large one used for cooking massive amounts of food at once. I think these items may corroborate the point that the miners were acquiring and processing meat in a variety of ways as the cleaver indicates an on-site need for butchery. The heavy chop marks on many of the bones are evidence of the use of cleavers on-site.

Conclusion

Many scholars have noted the importance of food to group identity and the Chinese were no exception. Food may have been even more important to the Chinese who immigrated to the U.S. because of the status as outsiders.

Ethnographic and historical sources repeatedly have identified the preference of pork among Chinese. Both the archaeological and ledger data agree with these sources in that many Chinese miners maintained many of their traditional food practices. The ledger data provides additional evidence about how important the pork was to the miners, but they also indicate that

pork was much costlier than beef. However, it was clearly the preferred meat indirectly
indicating the importance of pork.

Figure 5 is photographic evidence of much that has been discussed. It shows the use of a
large wok for cooking a whole pig, suggesting a broad use of all parts of the animal. It also
suggests that there was an on-site need for butchery for easier consumption of all parts of the
pig.

The faunal assemblage also suggests that these miners were purchasing meat cuts
according to their preferences rather than price, shown in the greater percentages of higher
quality meat cuts of both pork and beef. At the same time, there is a surprisingly high
percentage of pig heads and feet being represented in both the assemblage and the ledgers, but
this is likely a preference for traditional Chinese food patterns, providing further evidence that
their purchases were more preference-driven. Further, body part representation as identified
archaeologically indicates non-typical consumption of feet and heads, possibly associated with
Chinese health and traditional cultural beliefs. Bison findings are particularly unexpected.

Between the species being present and the disarticulation marks and long bone splitting, it is

evidently suggesting meat acquisition outside of local markets and suggesting most likely

private provisioning.

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