Archeology Around Yellowstone Lake

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In this paper, I will be looking at Yellowstone Lake during the Precontact period—that time in the past before written records—and I will summarize our current thinking about who was here and when, what their activities and subsistence practices were, and how these activities varied across the seasons. These questions are, of course, interrelated. Presentations in this symposium cover a grand diversity of topics relating in one way or another to Yellowstone Lake. Through archeology, we can learn about the people of many cultures who visited and lived here at different times in the past, and compare their different adaptations to the changing environment. The unique contribution that archeology brings is that of time depth. In addition, archeological sites also contain bits of pollen, burned seeds, animal bones, and other residue remains from which it is possible to learn about the past environment, including its plants and animals.

Before discussing what we have learned about the past, I need to first describe the data from which my thoughts and impressions are derived (Figure 1). Yellowstone Lake has 100–110 miles of shoreline and seven islands. At the pres-

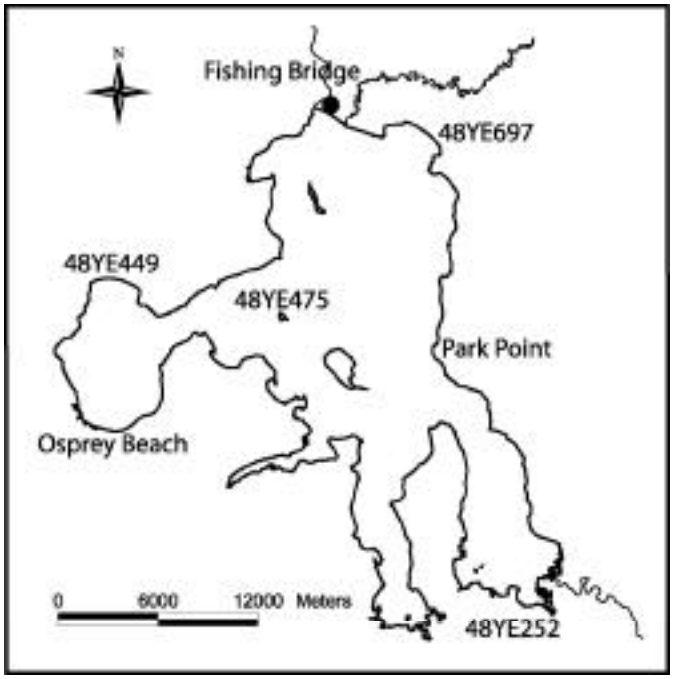

Figure 1. Archeological sites around Yellowstone Lake.

ent time, there is a good-quality archeological inventory for only about 10 miles of shoreline, with occasional reporting of sites along another 50 miles. These are primarily on the north and west sides of the lake. Additionally, there are archeological sites on six islands, but a reasonable inventory is available only for Dot and Peale islands. Most sites are known only from eroding cultural deposits or a few tools. It is ironic that our best information about prehistoric use of Yellowstone National Park comes from cultural deposits that are being destroyed by erosion.

Chronology

The most basic question is, When were people here? Figure 2 illustrates the frequency of radiocarbon dates for the entire park in 300-year increments, with the year AD 2000 on the left side. Dates in the text are in BP (years before present) starting at AD 2000. There are few dates for the oldest and the most recent human use of the park. We expect to find that all of the earliest peoples in Montana, Wyoming, and Idaho visited Yellowstone Lake. In fact, more of the points representing early (Paleoindian) use of the park are found around the lake than any other area. This is due to the greater erosion, and thus exposure of sites, in this area. But unfortunately, sites from 7,000 to 11,000 years ago are rarely identified, at least in part because they have been removed by natural erosion or are buried.

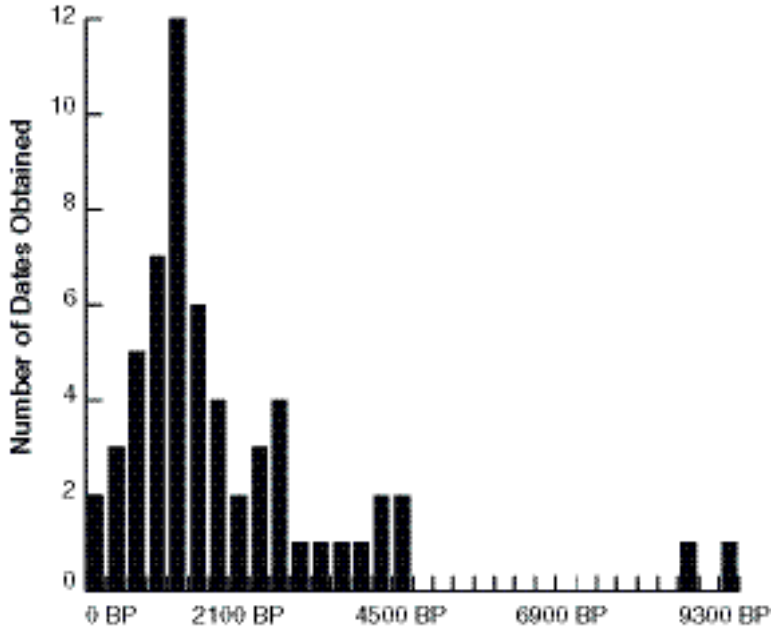

Figure 2. Frequency of radiocarbon dates for Yellowstone National Park in 300-year increments, beginning with AD 2000–1700 on the left.

The oldest recognized site in the park is the Osprey Beach site (48YE409), which represents occupation by the Cody Complex. It is called a complex because this "culture" is identifiable by more than one diagnostic artifact, including Scottsbluff and Eden points, and Cody knives (Figure 3). The radiocarbon date from the Osprey Beach site (48YE409) is represented in Figure 2 by the date on the far right of the chart at more than 9,000 years ago (Shortt 2001; see also Shortt, this volume). On the other end of the time scale, there are few dates (and sites) after 800–900 BP. The reasons for this are not clear, but the interior of the park may not have been as favorable for animals and humans due to the colder and snowier environmental conditions during the Little Ice Age (150-550 BP).

Figure 3. Cody knives from the Osprey Beach site.

Figure 4. Typical Pelican Lake projectile point.

The McKean Complex dates to about 3000 to 5500 BP and is well represented in sites around the lake. However, the most intensive use of the park dates from about 900 to 3000 BP (see the frequency peak in Figure 1); 78% of the dates fall within these time brackets. The Pelican Lake culture (Figure 4) is dated from 1800 to 3000 BP, and more sites in the park are identified as Pelican Lake culture than any other. The reasons for this period of intensive use are unknown, but this was also the time of the most intensive use of Glacier National Park. We speculate that environmental conditions must have been favorable during this time period. In recent years, there are more and complementary studies on the past environment, ranging from pollen, dendrochronology, and geomorphological age correlations with lake terraces. These all contain good information for the archeologist's interpretations.

Use of the Islands

Although there are archeological sites on six of the seven islands in Yellowstone Lake, the temporal parameters of this use are basically unknown. One reason for this is that the archeological resource has been severely affected

by erosion and collecting. The islands were heavily used by the concessionaires, tourists, and park staff and their families during the 20th century and collection of Indian artifacts was a popular pastime.

One prehistoric campsite (48YE475) is contained within buried soil at Dot Island. Site 48YE475 has been severely damaged by erosion, but produced a radiocarbon date of 1500 ± 40 BP (Beta-157907). There is a bison bone deposit at the top of the buried soil that was previously identified as a paleontological site (Cannon 1996). The bone deposit was very compact, without taphonomic disturbance, and represented at least one animal. Because wave action has so severely eroded this deposit, it may never be possible to resolve whether this is a natural or cultural deposit of bison bone.

I am frequently asked, How did people get out to the islands? Did they walk out on the ice? That question presumes people were present in the winter. One wonders what resources people could find on the islands in the winter. Animals, of course, are able to cross on the ice and to swim back and forth to the lakeshore, but it is highly unlikely that people would swim out. This is not because of the distances, but because the cold water temperature could be expected to cause hypothermia. Various kinds of watercraft (canoes and rafts) might have been used.

As to why people went out there, the answer may be as simple as they were curious. We are unaware of any resources that would not have been available in greater quantities on the lakeshore.

Seasonality

As hinted at above, archeological sites have another aspect of time: seasonality, that is, the time of the year or season that the sites were occupied. Analysis of animal bones from archeological sites is the most common method of seasonal identification. However, few bones survive in the acidic soil around the lake, and other approaches, perhaps pollen analysis or identification of insects, will need to be used.

To date, we have not found any seasonal indicators for sites around the lake. This is not unusual because only four or five sites parkwide can be placed during a particular time of the year. Interestingly, these few sites all show early-spring to early-summer occupations. While it is premature to extrapolate from such a small data set to the lake area or to the entire park, it seems reasonable to suggest sites around the lake were used during the summer and into the fall. The archeological season-of-use data set will grow through time, and clearly illustrates the need for long-term research goals so that relevant data can be captured as they are identified.

If elk, deer, and bison stayed in the center of the park over the winter, then people would have been able to as well, because the limiting factor for human survival is availability of food resources. Winter travel would have been facilitated through the use of snowshoes. Today, some small groups of ungulates do not migrate out and those that successfully overwinter usually are found in thermally influenced areas. If bison and elk migrated to lower elevations for the win-

ter prehistorically, with no political boundaries or developments to hinder their movement, we believe Precontact people would have followed. Typically, people time their movements around the landscape to match resource availability, such as fish spawning, the presence of camas and other edible bulbs, ripening fruit, and so on. Since Idaho obsidians are represented in tools found at sites on the lake, the seasonal movement model suggests that people wintered at lower elevations in Idaho and summered on the lake.

Site Types

Sites reflect the people and activities that created them, and can be interpreted by artifacts and other remains, such as hearths. Thus, archeologists classify sites into different types representing those activities.

Functionally, sites around the lake are dominated by base camps and sites where tools were manufactured or repaired. Base camps would be populated by extended family groups, young and old, men, women, and children. Most necessary living activities would take place there, and are represented by a wide variety of tools: projectile points, knives, scrapers, and perforators, and stone debris from their maintenance. Tools such as drills and perforators suggest manufacturing, possibly with leather and wood. Prehistoric pottery was first identified in the park at site 48YE449 and dates to about 500 BP. Base camps occupy favored locations around the lakeshore; these places were often used by many groups through time.

We do seem to find fewer end-scrapers than one might expect. If these are summer camps, the infrequency of these hide-working tools might suggest few hides were prepared in summer, when hair is thin and the hides would have to be carried to winter camp many miles distant.

There are few examples of kill sites in the park, in part due to the poor bone preservation in the generally acidic soil, but also because the topography does not lend itself to mass kills such as bison jumps. Instead, it is likely that one or more animals were taken by ambush at the tree–meadow juncture. It is possible that bison bone on the north shore of the lake (site 48YE697) represents a kill of an individual animal (Cannon et al. 1997). A problem with this interpretation is that the bison was basically not butchered, and the few flakes and tools found in association with the bones could have washed downslope from a campsite (48YE696). Also, lakeshore erosion removed an unknown amount of bone before the locality was documented.

We have little evidence for the types of shelters people may have used. No tipi rings (circles marked by the stones used to hold down the tipi cover) are known from around the lake, but due to the heavy ground cover they may be nearly impossible to identify. In the early historic period, conical timbered lodges (wickiups) were observed around Indian Pond (Norris 1880). In most cases, wickiups are temporary shelters for traveling groups (Kidwell 1974; Grinnell 1920).

Subsistence

As mentioned above, animal bone is rarely preserved in the acidic soil. Specialized analysis for blood residue left on tools provides clues about hunted animals. The standard suite of animals—rabbits, sheep, bison, canids—are present in the park from at least 9,000 years ago (Cannon et al. 1994; Shortt 2001). Grinding stones are usually assumed to represent plant processing, but a metate from site 48YE701 tested positive for deer antiserum and is interpreted as representing the processing of meat.

To date there is no evidence for prehistoric predation of fish around the lake, but relatively few excavations have been carried out and the fine screening of archeological sites necessary to recover such small bones has not been used. Because fish bone is small and fragile, there may be preservation and visibility problems. It is worth mentioning that flotation of hearth contents would recover fish bones if present, but the analyzed contents of seven such features have tested negative for fish.

Notched pebbles (net weights) are interpreted as evidence of weights used to hold fish nets in place. These can have either two or four notches, set opposite each other (in the case of two) or at 90 degrees from one another (in the case of four). Net weights have not been found around the lake, although some are known from the Yellowstone River close to Gardiner. Of course, specialized tools would not have been necessary to obtain or cook spawning cutthroat. While it may seem unusual to us, fish is one potential resource that many cultures do not define as food. The prehistoric use of fish is a matter of continuing investigation.

While there is some camas in the Lake horse pasture, this is marginal habitat and probably could not survive heavy collecting.

Stone, Tools, and Travel

Sites contain large amounts of fire-cracked rock, as well as debitage or flakes and shatter (broken flakes) that represent repair, manufacture and sharpening of tools. The fire- cracked rocks are derived from the local gravels, and are usually of the igneous varieties. These rocks would fracture in recognizable patterns after heating and cooling. Their presence represents hearth construction and stone boiling cooking of food.

The stone selected for tool production can be glossed as tool stone and includes a wide variety of different raw materials contained within the Absaroka glacial gravels as cobbles. The presence of tool-quality raw materials increased the attractiveness of the southern lakeshore and possibly increased the length of stay at these sites while tool kits were repaired and replenished. These gravels contain agates, petrified woods, quartzites, and volcanic tuffs: a grocery store for the flint knapper.

Volcanic tuff is similar in appearance to poor-grade obsidian and occurs as cobbles (both Huckleberry Tuff and Lava Creek Tuff). People were actively selecting these raw materials from which to manufacture tools. The tuff is typically black (or less often, red), opaque, and may have white crystalline inclusions. A geological source of this material is Park Point on the east lakeshore, but

we don't understand the distribution nor do we know which parts of the geological exposure may have been used by people.

Questions about where people were before they came to the lake can in part be answered through the analysis of their tools: specifically, the sources of the stone. Archeological modeling suggests that people were familiar with resources in their home territory and would collect stone for new tools when near known geological exposures. Obsidian Cliff obsidian dominates tool assemblages throughout the park, although the percentages vary from area to area (Figure 5), so it is often the stone that occurs in smaller amounts that is more interesting.

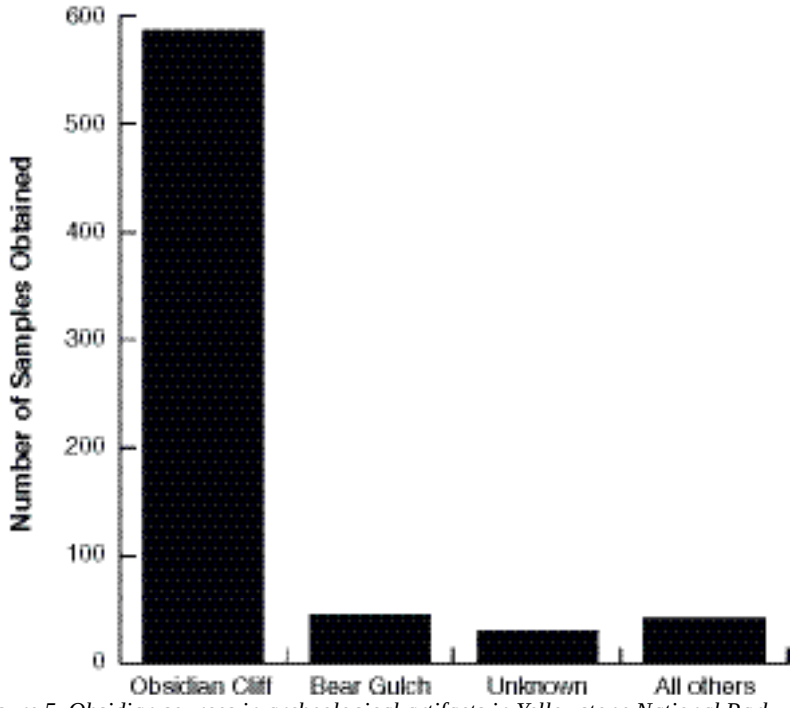

Figure 5. Obsidian sources in archeological artifacts in Yellowstone National Park.

We find evidence of contact or movement to and from Jackson Hole in the presence of tools manufactured from Teton Pass, Conant Creek, and Crescent H (south of Wilson, Wyoming) obsidians. These are limited, just as Obsidian Cliff obsidian is infrequently found in Jackson Hole. Packsaddle, Timber Butte, Malad, and Bear Gulch obsidians were imported into the park from Idaho. Bear Gulch was imported into the park in the highest amount and is second to Obsidian Cliff in popularity of use (Figure 5). Any analysis of a large sample of obsidian specimens results in some specimens with chemical fingerprints unlike any in the existing database, and we continue to seek samples of geological obsidians to add to the database.

As topography channeled early travel to a much greater degree than today, we

are looking at mountain passes, river valleys, and lakeshores as transportation corridors. Through this line of inquiry we are investigating north–south prehistoric travel between Jackson Hole and Yellowstone, and between the park and Idaho, either over Jackson Pass, past Grassy Lake Reservoir, or down the Madison River valley. As people would obtain new obsidian for tools from sources along these routes, analysis of artifacts from Yellowstone Lake sites show where people had been. It is clear from tool and raw material analyses that people living on the southern lakeshore have very different territories (to the south into Jackson Hole and southwest into Idaho) from those around park headquarters, where there are greater relationships with the west and north.

Summary

Yellowstone Lake was important to people throughout prehistory because it is rich in plant, animal, and stone resources. The oldest sites in the park are known from around the lake. One of the reasons for this is the erosion that is exposing and destroying terrace deposits. On the positive side, because of this erosion, we have the opportunity to look "under the ground," to see cultural deposits that elsewhere in the park are deeply buried. At the present time, we interpret the archeological deposits around the lake as representing seasonal occupations where tool stone procurement, tool manufacture, and repair activities took place. As the basic outline of who used the park and lake area is understood, we can begin to ask better questions of our site data. Clearly, we are poised to make significant increases in our understanding and interpretations of the prehistoric human use of Yellowstone Lake.

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