Annual Meeting and Blessing Ceremony

Each fall, the VBJF has our annual meeting. All Foundation members are invited to attend. This year, the meeting was held September 14 in the excavation building at the Vore Site. At the meeting, board president Jackie Wyatt gave a short recap of the events of 2019 and summarized the financial standing of the Foundation. Officers were elected. Serving the Foundation again next year will be Jackie Wyatt as president, Glen Wyatt as vice president, Jena Rizzi as secretary, and Ted Vore as treasurer. The other four members of the working board are Roy Bush, Wanda Burget, Mitch Mahoney, and Dan Fairbanks. Dan Fairbanks will step down as of January 1 and the seat will be taken by Jen Womack. Jen, who is owner of Sagebrush Marketing, will bring much needed marketing and advertising experience to the board.

Paid admissions were down about 15% this summer from 2018. A wet, cool June and a longer Sturgis motorcycle rally likely adversely impacted visitation. Generally, admission paid by summer visitors covers the payroll for tour guides, but this summer we fell short by about $8,000. As of the meeting date, available cash was $19,678; this included a recent donation from the Sundance State Bank for $5,000. In 2013, the VBJF board took out a loan for $250,000 to put up the exhibit tipi and drill a well. As of the meeting date, the principal owed on the loan was $66,116. The recommendation of the working board was to pay the interest on the loan and $7,500 toward the principal; a decision was made to accept this recommendation. This left the Foundation with a loan balance of $58,616 and a bank balance of $9,203. Membership dues make up a critical portion of the VBJF income. Please renew for 2020!

Following the annual meeting, we were honored to have Alaina Buffalo Spirit say a blessing over the bonebed. Ms. Buffalo Spirit is a member of the So'taa'ee band of the Northern Cheyenne Nation, she is a member of the Northern Plains Resource Council board and is a well-known ledger artist. During the ceremony Ms. Buffalo Spirit spoke about her life and how her mother and grandmother have influenced her artwork. She also emphasized the cultural importance of sites like the Vore Buffalo Jump. The burning of the sage and the song that she sang during the ceremony created a very personal and moving event. We were very honored to have her come to the site and share her time.
Sarah Keenan Joins the VBJF Advisory Board

Sarah W. Keenan, who is an Assistant Professor in the Department of Geology and Geological Engineering at the South Dakota School of Mines Technology has joined the Vore Buffalo Jump Advisory Board. Dr. Keenan received her B.Sc. from the University of St. Andrews in Scotland, an M.S. in Paleobiology from the University of Bristol in England, and a Ph.D. from the University of Tennessee. She joined the faculty at Mines in 2018.

The overall goal of Dr. Keenan’s research is to explore the biological and geochemical processes responsible for bone preservation with the goal of better understanding the vertebrate fossil record. Dr. Keenan is planning to use samples from the Vore Site in her research. She noted, “The preservation and recovery of bones from the Vore Site from well-constrained time intervals provides a unique opportunity to address many questions about bone postmortem alteration. One of the ways I might use the bones in my research is to evaluate how they changed chemically and structurally over time.

Curation of Vore Lithics

This summer the VBJF funded a one-week internship focused on curation of the approximately 200 projectile points and tools that have been found in excavations at the Vore Site to date. University of Wyoming student Jolie Magelky and University of Wyoming Archaeological Repository (UWAR) Collections Manager Marieka Arksey cleaned and photographed each piece and entered data on each into the UWAR database. Dr. Arksey has also supervised one to three interns each semester for the past three semesters who are working to curate the Vore Site bone samples. These interns have earned academic credit for their efforts. The overall goal of this effort is to make the Vore Collection, which is the largest at the Repository, available to researchers.

Although significant progress has been made, the majority of bones from the site have not been properly curat-ed. The VBJF Board voted at the October meeting to establish a $1000 scholarship to support an intern during the spring semester to continue the effort. The scholarship will be awarded to a UW student with preference given to a student who graduated from a high school on a reservation. Minority groups, including Native Americans, are significantly under-represented in the archaeology field in the USA. By giving priority to a student who graduated from a reservation high school, the VBJF board hopes to facilitate entry into a career in archaeology for a Native American student. Both the UWAR and the VBJF board plan to seek grant funding to support curation efforts, which are expected to take several years. We would welcome donations to support this project.

Field Trips Reach over 800 Students

Despite Late Spring and Early Fall Snows

A spring snowstorm on May 22 resulted in school cancellations and postponement of a field trip by Gillette fourth graders to the fall, and inclement fall weather resulted in postponement of the Spearfish sixth graders until next spring. Despite this, the field trip program reached around 820 students during 2019. We hosted 4th graders from four Gillette schools, Moorcroft, Kaycee, Rozette, and Casper; 7th graders from Sturgis; 3rd graders from Lead-Deadwood; and middle school (Continued of Page 3)
(School Programs continued) girls came from St. Joe’s Indian School. In addition, we hosted a group from the Box Elder Job Corp and students and parents from the Northern Hills Homeschool Association.

The field trip program is made possible by a group of dedicated volunteers. For a typical field trip, around 50 students are rotated through stations. The students especially like the atlatl station (with Roy Bush as the volunteer for almost every field trip) and digging for souvenir arrow points (they also complete a worksheet to analyze their find!). Glen Wyatt was the volunteer in the tipi for every field trip this year; in the tipi, the students learn about how the hunters jumped the buffalo, the tribes who likely used the site, and their stone tools. In the sinkhole, one group hears some of the stories told by the bones found in the sinkhole and another discusses how hunting the bison made life on the Plains possible. The teachers also bring jerky for the kids to snack on while they listen to a story: usually we read The Buffalo Jump written by Peter Roop and illustrated by Bill Farnsworth.

Volunteers this year were Suzanne Boykin, Laura Brennan, Roy Bush, Ted Coleman, Katy Daves, John Davis, Zach Davis, Becky Easley, Dan Fairbanks, Barry Floyd, Bob Geroch, Betty Haiair, Beth Kreuter, Randy Leinen, Vicki O’Neil, Jena Rizzi, Linda Rogers, Alaina Schurr, Haley Vigil, Dennis Walkins, Julie Walkins, Susan Worthington, Glen Wyatt, TJ Wyatt, and Jackie Wyatt.

A version of a manual for our volunteers was used for the first time this year. The manual contains lesson plans for each station and supplementary background material. Contributors were Glen Wyatt, Gene Gade, Jena Rizzi, Ted Vore, Jo Powell, Chris Blain, Becky Easley, Kathy Wolff, and Jackie Wyatt.

In addition to our field trip outreach, two VBJF board members assisted with the Newcastle History Days in September. The two-day program hosted by the Anna Miller Museum reached about 450 elementary-age students from Newcastle and Upton. Glen Wyatt gave a presentation on the Vore Site, and Jackie Wyatt taught the students how to throw darts with an atlatl.

Careers and other info about Archaeology

VBJF board member Jena Rizzi is an Archaeological Technician with the United States Forest Service. Jena works from the Bearlodge Ranger District in Sundance where her duties include managing and conserving archaeological sites on the district for present and future generations. Archaeological resources are non-renewable resources, meaning if an archaeological site is destroyed then that piece of history is gone. Some of her duties include surveying the landscape for archaeological sites while using a compass and topographic maps for navigation, recording archaeological sites, conducting small scale excavations, writing and finalizing reports, public education, cataloging artifacts to be curated at the University of Wyoming Archaeological Repository (UWAR) for students, researches and the general public to learn and explore. Jena is secretary of the VBJF board, volunteers at field trips and public outreach events, and organizes and assists with maintenance of the excavation units at the site.

Here, Jena provides a list of online resources and organizations where you, or a family member, can learn more about a career in archaeology and how to volunteer or work on an archaeological project. We hope this helps everyone to either further their interest in archaeology or to assist them in looking into a career in archaeology!

Passport in Time (http://www.passportintime.com/)
Passport in Time (PIT) is an organization that works with the United States Forest Service and other federal agencies, like the Bureau of Land Management or National Park Service, to recruit volunteers to help with archaeological digs.
“The goal of PIT is to preserve the nation's past with the help of the public. As a PIT volunteer, you contribute to vital environmental and historical research on public lands. Your participation helps us not only to protect and conserve the sites, memories, and objects that chronicle our collective past, but also to understand the human story in North America and ensure that story is told to our children and grandchildren. We cannot do it without you!”

Society for American Archeology (SAA) (https://www.saa.org/)

The SAA has a lot of information about archaeology and careers in archaeology (more specifically a career in the US). Not only does it have a page that discusses what it takes for a career in archaeology, but they also publish a monthly journal, there are conferences, annual meetings, education and outreach, and they post field school opportunities in the US and abroad.

Archaeology Fieldwork (http://www.archaeologyfieldwork.com/AFW)

This website can be used to find temporary and permanent positions in archaeology. They also post information on field schools, and there is a chat room where you can talk about archaeology with professional archaeologists. The Discussions portal on the website is very useful, and this is where I chatted with professionals and asked for input on what university I should attend after high school.

Archaeological Institute of America (https://www.archaeological.org/programs/public/)

This is similar to the SAA and they also discuss opportunities in archaeology in the US and Abroad. This organization is also a great resource and they publish Archaeology Magazine, which anyone can subscribe to: https://www.archaeology.org/.

Applying to Government Positions (https://www.usajobs.gov/)

This is where people can go to apply for government positions with the Forest Service, the Bureau of Land Management, the National Park Service, the Bureau of Recreation, and so on. There are positions in archaeology, wildlife biology, hydrology, geology, and pretty much any “-ology” someone might be interested in within a government agency.

Local Organizations

Remember that for every state there is one, if not multiple, archaeological societies that you can reach out to.

Wyoming Archaeological Society: http://www.wyomingarchaeology.org/

Plains Anthropological Society: https://plainsanthropologicalsociety.org/

Social Media

There are numerous social media groups that you can follow for more information regarding archaeology. A lot of universities also have pages dedicated to their archaeology/anthropology departments as well. Here are a few suggestions of organizations/groups that you can follow on Facebook, Instagram, etc:

- Office of the Wyoming State Archaeologist
- Wyoming Archaeological Society & South Dakota Archaeological Society
- Plains Anthropology
- Archaeological Institute of America
- Society for American Archaeology
- The Archaeological Conservancy
- Archaeology Trowels and Tools – Past Horizons
- The Vore Buffalo Jump
- BAJR – British Archaeological Jobs and Resources

And the list goes on and on..... 😊
The small party of Native American hunters were excited when it discovered a herd of bison grazing on open high prairie near some large hills connected by a steep ridge. The experienced and opportunistic hunters quickly noted that the terrain favored them. Several arroyos, perhaps 30 feet deep and a hundred feet wide at their mouths, cut into the crumbly red sedimentary siltstone that formed the base of one hill. These erosion features looked like possible escape routes to the bison, but their channels narrowed quickly so that they essentially became small box canyons. The hunters recognized that, if they were to drive their prey into the gullies, the walls would be too steep for the bison to climb and the animals would have no room to maneuver. The hunters could then get close enough to the large beasts and dispatch them with atlatl darts while standing safely on the rim of the arroyo.

The Indians executed their plan, killed a number of bison and butchered them where they lay. The bones and projectile points were soon covered by mud and remained there for six thousand years until a cowboy discovered some of them protruding from the walls of the arroyo. The find was reported and was subsequently excavated by famed archaeologist George Frison and his crew from the University of Wyoming. The find was named the Hawken Site after the owner of the ranch on which it was located, about 25 miles west-southwest of the Vore Buffalo Jump.

It proved to be one of the most important sites for the period it represented, the so-called Mid-Holocene Warm Period (a.k.a. “altithermal”). The buffalo killed were of a species named *Bison occidentalis* that would become extinct fairly soon after the Hawken hunt. *B. occidentalis* was one of several bison species that died out, leaving only *Bison bison*, often called buffalo, in North America.

**The Bison Family Tree**

The ancestors of modern bison appeared in Asia about two million years ago. They roamed the “steppe”, a vast, flat, grassland that stretched across southeastern Europe and much of Siberia at the same time as the progenitors of mammoths. The modern buffalo are descendants of an older, larger species called “Steppe Bison” with the Latin name *Bison priscus*. Steppe Bison shared the Old World with several other bovine species, including the Aurochs that gave rise to modern domestic cattle and several species of Asian and European bison.

During the last Ice Age, so much of earth’s water was tied up in glaciers that sea level was almost 300 feet lower than it is now. Many continental shelf areas currently covered by shallow saltwater were exposed and became land between 240,000 and 220,000 years ago. One such region was the seafloor between Siberia and the Seward Peninsula of modern Alaska. Falling sea levels there resulted in a land bridge that connected Asia with North America. Animals were able to move both directions over this neck of land. Among other species, bison, mammoths, wolves and, later, humans and their dogs found their way into the Western Hemisphere. Horses and camels moved the opposite direction, evolving in the New World but finding new homes in Eurasia. Horses evolved in North America but died out here after they crossed the land bridge and established themselves on the Eurasian steppe. Horses were eventually domesticated and returned to their birth-continent with Spanish Conquistadors in the early 1500’s.

The bison family tree branched after it was established in North America. The Steppe Bison is thought to be the ancestor of three now-extinct bison species, and eventually, the modern buffalo. The extinct species were all larger than the today’s bison.
The largest individuals of *B. latifrons* had a shoulder height of 8.2 feet and weighed as much as 4,400 pounds (25% to 50% larger than biggest modern buffalo). Some individuals possessed relatively straight horns more than three times longer from tip to tip than today’s bison. *B. latifrons* lived in the warmer middle of North America grazing the grasslands and browsing in the forest. It became extinct between 21,000 and 30,000 years ago.

There is much conjecture about the possible role of human hunting in these extinctions. Most likely these species were already stressed and declining because of changes in climate and ecology, but hunting by Native American was probably a factor in the extinctions. The Hudson-Meng Site managed by the US Forest Service on the south end of the Black Hills (20 miles northwest of Crawford, Nebraska) is an excellent place to see *B. antiquus* bones. It is a large kill site apparently the work of Indians of the Alberta and Eden cultural complex.

The third species, *Bison occidentalis*, was the species found at the Hawken Site. It was descended from *B. antiquus* and was intermediate in size (6 feet tall and 2,200 pounds) between this ancient species and modern bison. *B. occidentalis* became extinct near the end of Mid-Holocene Warm Period about 5,000 years ago, but not before it gave rise to the modern *Bison bison* (6 feet tall and 2,000 pounds).

The abnormally warm period lasted from about 7,000 to 5,000 years ago and is thought to have been caused by slow and minute changes in the earth’s orbit. During this time, the Northern Hemisphere was both warmer in summer and colder in winter than at present. The result was that the Great Plains were drier and produced less forage for grazing animals like bison than it does now. Lower-elevation regions shifted toward desert-like conditions during the Mid-Holocene. Populations of both prey animals and humans fell. Animals were attracted to higher elevation ranges such as the Black Hills and Bighorn Mountains, which were cooler with more precipitation. There are fewer archaeological sites from the period, and most of them have been found at higher elevations. That may explain why the *B. occidentalis* killed at the Hawken Site and the *B. antiquus* at Hudson-Meng.

**Bison latifrons** — An extinct giant buffalo

A second species, *Bison antiquus*, is thought to have evolved from *B. latifrons*. *B. antiquus* was still massive (7 ½ feet and 3,500 pounds) with a more pronounced hump and less bulky hind quarters. Its curved horns also measured 3 feet from tip to tip. They also lived in the mid-continent but were extinct by about 10,000 years ago along with many other species of the so-called megafauna (including saber-tooth cats, dire wolves, short-faced bears, mammoths and giant sloths).

**Bison antiquus** — One of the “megafauna”
were near the well-watered Black Hills. (Another buffalo jump was partially excavated last summer on a ranch a few miles east of the Vore Site. The bison skulls found there appear to be *B. occidentalis*, though definitive carbon dates on the specimens are still pending). In any case, the more extreme conditions were probably a factor in the extinction of *B. antiquus* and *B. occidentalis*, and their replacement by the two subspecies of buffalo we know today.

The extant subspecies are the familiar Plains Buffalo (*Bison bison* subspecies *bison*) and the somewhat larger Wood Buffalo (*Bison bison* subspecies *athabascae*). The latter live in or near the boreal forest in Canada. There are some differences in body form, behavior, habitat and forage preferences between them. Their current ranges are separated by considerable distances. However, the subspecies can crossbreed and produce viable offspring. In fact, in the desperate days when modern bison were hanging by a thread over the abyss of extinction, bison from the Plains were interbred with somewhat larger Mountain Buffalo that hung on in Yellowstone. All of the buffalo killed at the Vore Site were Plains Buffalo, and the period in which the Vore Site hunts occurred was a colder, wetter time called the Little Ice Age.

Nature is dynamic. Change is constant. Living things must adapt or become extinct. As the post-glacial period brought drier conditions to their primary habitat, bison adapted genetically by reducing their body size and, thus, their forage requirement. Anyone who has spent time observing buffalo at close range is likely to be impressed by their size, power, speed, agility and general toughness. They are large, often unpredictable and potentially dangerous wild animals.

Modern bison are smaller than their extinct predecessors, but their population increased dramatically after the Holocene Warm Period. Before the intentional destruction of the great herds in the 1800’s, there were, conservatively, thirty to forty million buffalo on the Great Plains. In that environment, buffalo were so well adapted and abundant that the Native Americans of the region built their entire cultures around the great beasts.
Jennifer Womack Joins VBJF Board

After growing up in Sundance, Jen spent 10 years editing the Wyoming Livestock Roundup in Casper. She now owns Sagebrush Marketing in Newcastle, WY.

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Bonemidden Cleanup
USFS archaeologists Alaina Schurr (top) and Marissa Lee (bottom) remove dust and debris from the bonebed during the June 1 open house.

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