SCREENINGS

October 2016

The Oregon Archaeological Society Newsletter
Vol. 65 No. 10
ISSN: 1936-6361

Where Paleontology and Archaeology Meet in the Willamette Valley

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The Woodburn paleoarchaeological project began in 1995. Even today, the intent of our work is to investigate paleontological sites from an archaeological perspective. In other words, we are exploring ancient plant and animal sites, while employing the methods that need to be used in sites containing archaeological material. Happily, some of these areas do have it all, from plants and animals to naturally shed human hair. But there is another wonderful aspect to these projects. It is almost impossible to hurt anything. Whether volunteers are working on troweling techniques or documentation skills, these field opportunities provide a great environment in which to do this, and people manage to have fun in the process (**Figure 1**).

When we excavate sites such as these, which are contained far below the surface, we bring in commercial excavating equipment. This makes our field time much easier and safer. The more recent soils are mechanically stripped off and placed to one side. The older sediments are then removed, and placed apart from the recent layers. Then, before we begin inspecting the older deposits, the newer material is looked at and then put back in the trenches. This makes the trench area much more stable.

Figure 1 (Right): *OAS members working at a real paleontological site, honing their skill sets, and still having fun.*

Figure 2 (Above): *Each stratum has a distinct color, texture, and age. Any specimen removed from one of these layers can thus be assigned an approximate date.*

Our focus is upon the late Pleistocene (Ice Age) to the early Holocene (modern epoch) sediments and their contents. The job of volunteers is to trowel through the soils, looking primarily for ancient animals and hints of a human presence. Each soil type has its own color, texture, age, and depositional history. Thus, people know something about these distinct strata when they first start troweling (**Figure 2**). Because we have already documented the age of each stratum, or layer, we know the approximate date for anything that is uncovered, based upon the sediments from which the item emerges.

Once the soils are inspected initially, they are moved to the water screening table for further investigation (**Figure 3**). This is where our recovery of microfauna (tiny bones) increases tremendously. Thanks to the North American Research Group (NARG), specialized screening stations have been developed to aid in our recovery of these very small specimens. New OAS volunteers, working with NARG and other experienced field people, learn about water screening, as well as about minerals and other interesting parts of the natural world—what we oldies call natural history, of course.

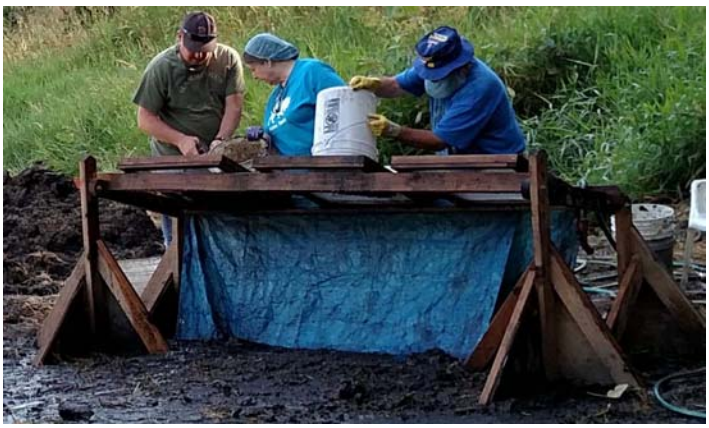

Figure 3. *After troweling, sediments are processed with water* ***(Left)****. This allows us to recover very small specimens (****Right****). The bone shown here is the partial mandible to a very small 12,000 year old minnow, about 1" (2.54 cm) in length. Fish photo provided by Joe Cantrell.*

The sites in Woodburn are particularly compelling. With their consistent stratigraphic sequences (layering of sediments), the depositional history of the last 16,000 years is available for us to inspect (**Figure 4**). The environment that changed so significantly over time, from bog to forest, is clearly portrayed. Because of this, we are often joined by other archaeologists, geologists, paleontologists, and botanists. Specialists from natural history museums, and from some tribal groups, also venture here when we are working, and they often share their expertise with us. This gets especially interesting, when we journey with them to one of the specimen repositories and see what else has emerged from the sediments during our years of working here (**Figure 5**).

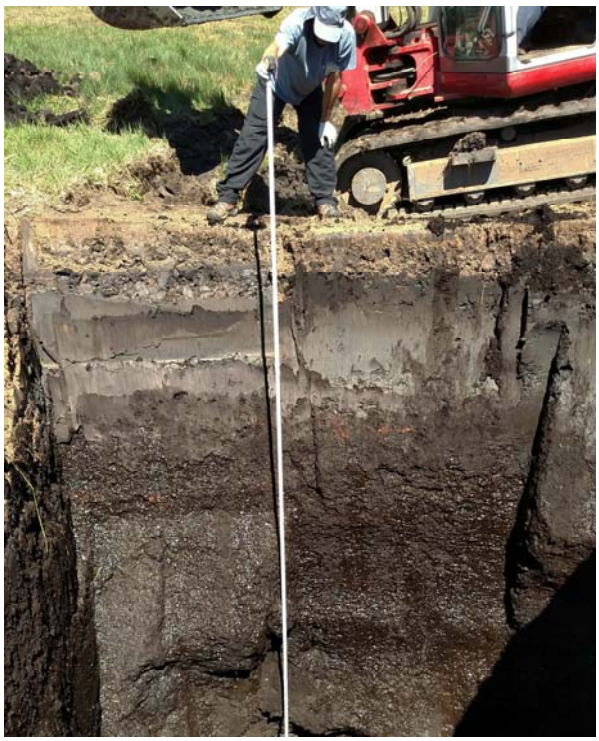

Figure 4 (Left): *Each independent layer of soil has its own characteristics, from color and texture to age.*

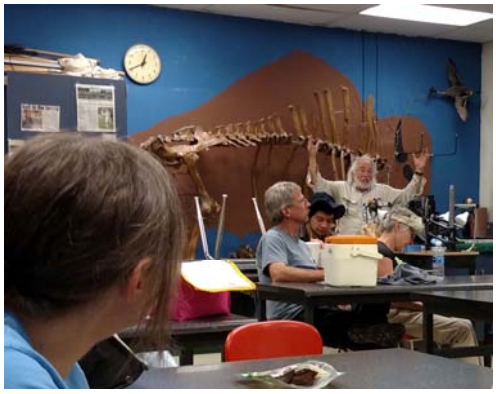

Figure 5 (Right): *Specialists from many disciplines, including some tribal groups, share their expertise with us. This is true in the field and during lunch breaks, making our days at work very special.*

To date, we have recovered the remains of over a dozen species of extinct Ice Age fauna (animals), as well as the remains of animal species that still exist today. The animals range in size from huge to tiny! The list includes giant bison, Pleistocene bear, mammoth, mastodon, ancient species of horse and camel, dire wolf, and giant ground sloth. Deer and elk, of the type that exist to this day, are also represented in the Ice Age deposits, along with coyote. Sometimes we see the animals represented by their skeletal remains, and sometimes by their teeth.

A lot of bird material is also evidenced, from extant species of ducks and geese to a giant predator bird called a teratorn that is long extinct. We also have mink, muskrat, squirrels, gopher, turtle, fish, frog, rattlesnake, and snails represented. Occasionally, too, we see flaked stone or cut animal bone, and naturally shed hair. Some of the hair is human, and some is from animals. There is never very much, but it is enough to keep us investigating.

The sediment layers change dramatically and quickly, over the fifteen hundred years that represent the ending of the Pleistocene. From the time before the very last Missoula Flood affected the Valley, just over 12,300 years ago, until the Pleistocene's end at 10,800 years ago, we see four stunning changes in the environment. Then, after the ending of the Ice Age, we see another three very different ecosystems represented. Thus, in total, our volunteers experience seven different ecologies. Their job for much of the project is to focus upon the oldest four.

One of the many fascinating things about this long term project is that the presence of Pleistocene animals and Ice Age humans terminates with the transition into the Holocene. At 10,800 years ago, these valley inhabitants completely drop out of the stratigraphic record. The early post-Ice Age here is archaeologically and paleontologically sterile. From our field work, we know that preservation is not the cause of this sudden absence of these population groups. The early Holocene sediments reflect the same neutral pH level as the layers from over 11,000 years ago. Therefore, as wood and teeth from the Pleistocene are remarkably well preserved (**Figure 6**), the same level of preservation should be reflected in the more recent sediments. This expectation is clearly supported by the early Holocene botanical materials that are excavated. But, animals and any evidence of a human presence have disappeared.

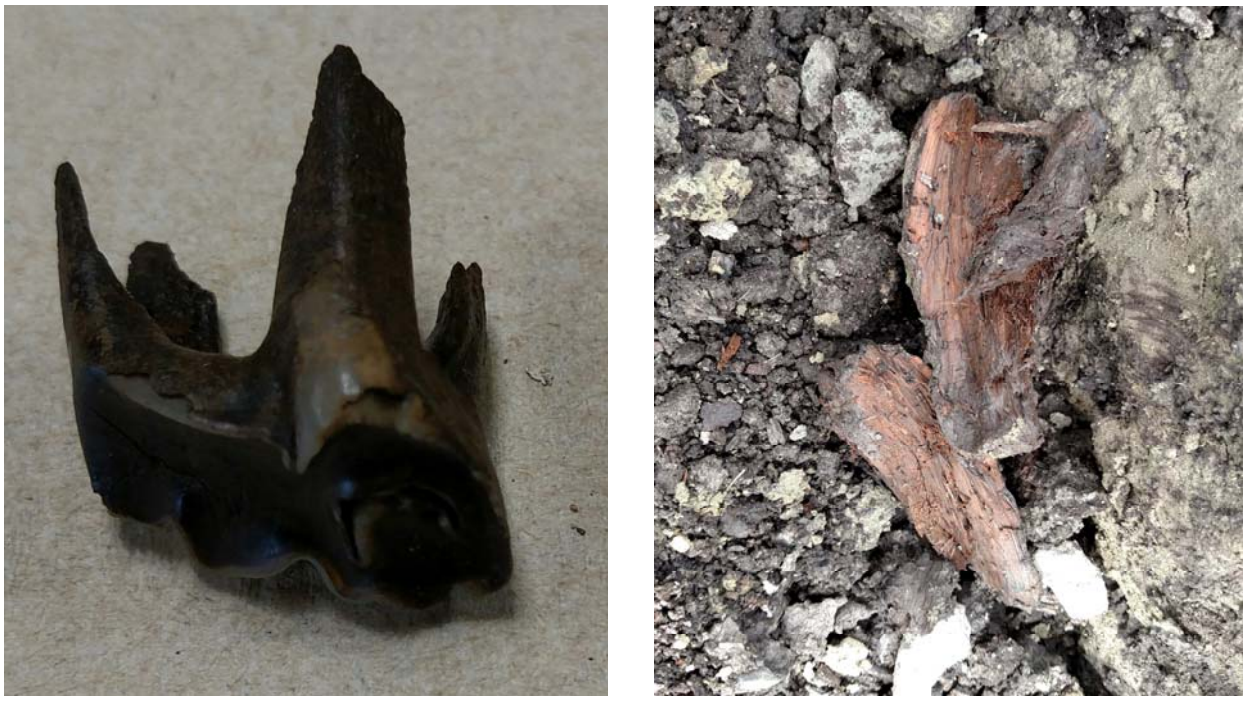

Figure 6. *Even after being left out in the sun for a week, wood is still remarkably preserved (**Right**). Teeth, too, come out of the Pleistocene sediments in an excellent state of preservation (**Left**).*

What happened to cause this change, leaving the valley floor remarkably barren? That question is part of what keeps us coming back.

Note: *All photos are provided by the author unless otherwise noted.*