The Bruneau Woodpile: An Unusual Fossil Deposit

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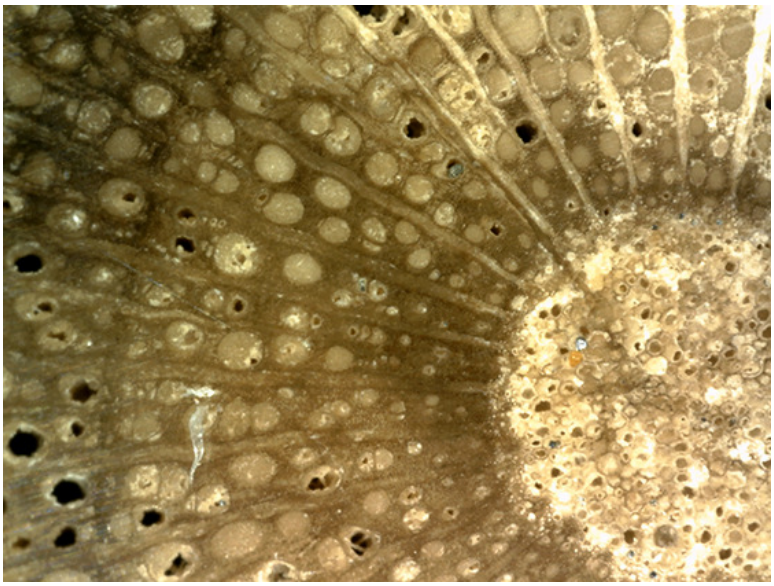

Vitis Grape-like wood 80x
Cenozoic; Neogene; Pliocene
Bruneau Woodpile, Idaho

Introduction

Rockhounds are familiar with many of the fossil wood deposits scattered across the Western United States. Protected areas such as Petrified Forest in Arizona, Florissant Fossil Beds National Monument in Colorado, and Ginkgo Petrified Forest State Park in Washington are popular vacation destinations. Fossil wood in the vast majority of these deposits is mineralized with various forms of silica including opal, chalcedony, and microgranular quartz. The preservation can be so fine that wood structure is replicated in silica to the cellular level. Fossil enthusiasts who are lucky enough to hunt for petrified wood in areas where collecting is allowed feel fortunate to find samples representing more than one type of wood.

Bruneau Petrified Wood

Petrified wood at the Bruneau Woodpile stands in stark contrast to many of the more famous deposits in its mineralization and its abundance of specimens exhibiting a surprising diversity of species. Bruneau petrified wood is described as being mineralized primarily with calcium carbonate $CaCO_3$ and calcium sulfate $CaSO_4$ (Root, 1971, p. 36). Recent analyses performed at the Western Washington University Geology Department using X-ray spectroscopy indicates that fossil wood from the Bruneau Woodpile is actually composed of apatite $Ca_5(PO_4)_3(OH,F,Cl)$ (Mustoe, 2014). If you spend time digging for this phosphate wood at Bruneau you are likely to find several wood types or more among your finds including both hardwoods and conifers.

Glenns Ferry Formation

The Bruneau Woodpile lies in unit Ti of the Miocene/Pliocene Idaho Group Sediments (Jenks et al., 1998). Fish fossils collected near the Bruneau Woodpile vicinity are found in the Pliocene-aged Glenns Ferry Formation of the Idaho Group (Smith et al., 1982, p. 522). The Glenns Ferry Formation is an assemblage of lacustrine (lake) and fluvial (river) deposits interbedded with lava flows and ash beds covering several thousand square miles in the Western Snake River Plain (Malde, 1972, p. 7). Starting around 9 million years ago a series of lakes formed and then dried up. Eventually a single enormous lake known as Lake Idaho formed stretching over 200 miles from present day Weiser to Twin Falls. Over a period of 6.5 million years thousands of feet of sediment accumulated within the lake from nearby mountain ranges. Between 2 to 4 million years ago glaciers were melting and Lake Idaho overflowed draining to the west and

carving out the deepest canyon in North America known at Hell's Canyon (BLM, 2013).

Hagerman Fossil Beds

River deposits in the Glenns Ferry Formation representing an ancient flood plain are responsible for the Hagerman Fossil Beds. This national monument is home to over 200 species of fossil plants and animals including sabertooth cats, ground sloths, and mastodons. The site is most famous for fossils of *Equus simplicidens*, the first true horse and Idaho's state fossil (National Park Service, 2014). It is within Pliocene lake and river deposits that Bruneau phosphate wood is found.

Digging at Bruneau

Success at Bruneau depends on bringing the right tools. We suggest the following: shovels, pickaxe, rock hammers, small crowbars, handheld sledgehammer, and chisels (we found wider chisels the most useful). Chisels are a must! You will notice that people before you have tried to tunnel to extract the wood but patience and hard work pay big dividends. It is best, in our opinion, to prepare an area that is approximately 6 feet square, which will take at least half a day. Here is what to expect. A shovel will be used to remove soil. A pickaxe will quickly remove layers of shale. You will be happy at this point, Figure 1.

Figure 1 Mary Klass removes overburden and shale

Next, a sandy layer lies on top of a sandstone/siltstone. Chisels and hammers must be used to remove the sandstone/siltstone layers. You will be tempted to try and use your pickaxe but it will rebound making only small dents. You can find cracks and weaknesses in the sandstone layers, just keep working them. You will feel despair; however, remember each little bit you remove gets you closer to the fossil wood. Once you remove these layers you will find full rounds and river tumbled specimens cemented in a sandy matrix, Figure 2.

Figure 2 Bruneau Limb in Sandy Matrix

You can work the rest of the day and the next day removing these fossil wood specimens, Figure 3. The sharp end of a rock hammer and tools to gently pry up the fossils are most helpful in the wood layer, which is about 6 inches in thickness. At this point you feel energized and rewarded for your hard work. Chiseling through the sandstone/siltstone layer was the most difficult digging I have experienced but you will find fossil wood below.

Figure 3 Mike Viney Extracts Fossil Limbs

Most of the specimens are solid although you will find some that are falling apart. Most full rounds will be approximately an inch or less in diameter. You will find both hardwoods and conifers. Some of the wood you may find that can be identified include but are not limited to: Ash, elm, hickory, catalpa, willow, poplar, birch, maple, oak, grape, pine, larch, and more, Figure 4, (Hoadley, 1990). Some people think the variety of fossil woods represents ancient hardwood forests near the lake and along river environments with coniferous forests growing at higher elevations (Root, 1971, p. 37).

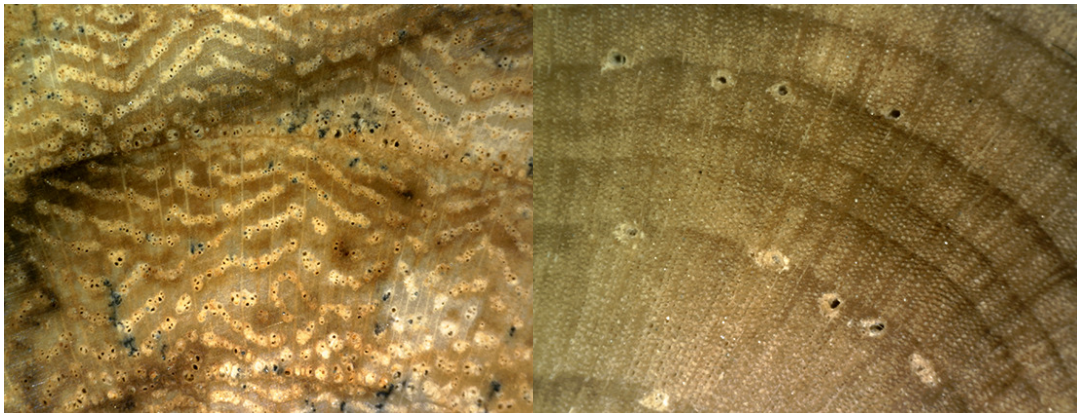

Figure 4 Left *Ulmus* (elm); Right *Pinus* (pine) at 80x

Directions to the Bruneau Woodpile

The Bruneau Woodpile is located in south central Idaho close to Interstate 80. From the town of Bruneau travel 1 to 2 miles west on Highway 78 until you reach the junction of Highway 78 and Highway 51. Turn south on Highway 51 and travel 9.1 miles until you pass mile marker 61. On the left is a gravel road that takes you into the dig area. Walk around a little and you will find outcrops where others have dug. GPS coordinates (lat, long) $42^{0}45'49.37''$N, $115^{0}53'29.45''$W (Bruneau Woodpile, 2010).

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Mary Klass and Mike Viney Selfie at the Bruneau Woodpile
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