

Hike

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first running predator in Oregon, *Daphonodon*, were more abundant in the period following the eruption.

Busy volcanoes create layered cake

Nick and I walked deeper still into the otherworldly badlands, on dry, dusty ground, crossing several small footbridges.

Below the ignimbrite, layers of pale multi-colored rock shot up before us — a layered cake of geology.

Before and after the Crooked River eruption, volcanism in Oregon was busy. Volcanoes east and west of John Day erupted frequently, spewing rhyolite ash that piled up and weathered into clay and silt, eventually hardening into siltstone and claystone.

The brown and tan layers of our geological cake are unaltered siltstone or claystone. Other layers tell a different story.

“Blue-green colored layers,” Nick explained, “is from a mineral called celadonite.” Celadonite forms when hot water chemically weathers volcanic soils before solidifying into rock.

White shelf-like layers are volcanic tuff—formed from the ejected ash from more explosive eruptions. Each layer represents only one eruptive event.

All this layering — or stratigraphy — allows paleontologists to divide time into subunits, characterized by their ashes and geological composition. Each layer of colorful rock represents a different time frame and different environment.

“The ashes are like page numbers,” Nick said. Each layer represents about 10,000 years.

All in all, at Blue Basin, there are 7 subunits — numbered B through F with some letters divided further.

It’s sedimentary, my dear

Nick directed me over to a spot where rocks were crumbling from the hillside. You could see material falling from the exposure — a perfect place to look for fossils!

John Day Fossil Beds National Monument, perhaps not too surprisingly, is known for its fossils.

Which raises the question — *Why? Why is John Day a hotbed for fossils?*



The Blue Basin Overlook Trail in John Day Fossil Beds National Monument features gorgeous views of volcanic ash that has turned to blue-green claystone, now exposed to the weather and carved into towering cliffs. The three-mile trail loops around the rock formation and up the hillsides of the surrounding John Day River Valley. THOMAS PATTERSON/STATESMAN JOURNAL

This can be answered in one word — *water*.

Though hard to imagine now, with the hot summer sun beating down on us in a dry, desert environment, Blue Basin was once a wide, river valley. A river valley that flooded frequently, depositing sediment along its banks and into its floodplains — sometimes burying the remains of dead animals or plants, and preserving them in sedimentary rock.

Collecting fossils

Now looking at the crumbly hillsides, it was easy to see how water was still at work — this time eroding away the layers of rock and exposing fossils.

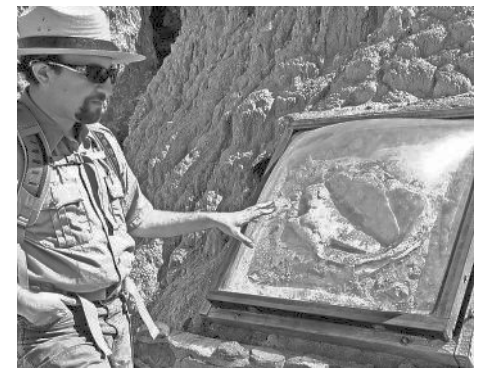
On any given day,” said Nick, “ten field collections might be extracted from this unit.”

Considering that Blue Basin has been studied for over 30 years, that is a lot of fossils!

According to Nick, “a collection” is a fossil “that can be identified to a fairly high level.” In other words, identifying that a fossil came from a mammal would not constitute a collection, but identifying the fossil came from a rhino, that would!

“What is most important is the context,” explained Nick. So, in addition to gathering the fossil, additional information is gathered.

Any specimen found loose, or “in float,” is put into a bag with any other material that is found within a three-meter area.



Travel through time at Blue Basin at John Day Fossil Beds National Monument. EMILY PARENT / STATESMAN JOURNAL

branches of the tree of life end in a dead end.

Small things

Next to the Oreodont fossil replica was a thick layer of sandstone jutting out toward us.

“This is a channel or river deposit,” Nick said pointing at the layer of rock.

He explained that river deposits are unique in that they produce a lot of small fossils, like rodents, that have small home ranges — telling us a lot about local conditions.

As Nick puts it, “smaller things tell us a lot more about the environment than bigger things.”

Nick elaborated, “Rodents are uniquely adapted to their environments.” Thus, when a species disappears in a region, for example, that can indicate a local environmental change.

Nick used the example of a small deer-like mammal, *Hypertragulus*, that disappeared from the Great Plains of North America, but persisted in the west for several millions of years more.

A specialist

Nick and I continued down the trail until we reached a final fossil replica. The replica was of a false saber-toothed cat — a nimravid.

Twenty-nine million years ago, three or four species of nimravid coexisted as specialized carnivores, each relying on a different food source for survival. This worked great for a time, as it reduced competition between species.

However, as the environment changed and food sources became scarce, being a specialist was not such a great thing. And eventually the entire nimravid family went extinct.

According to Nick, being a specialist was not easy in Oregon’s changing environment.

“Unless you are a bone crusher. There always seems to be enough bones...,” he smirked.

Amphitheater

Eventually, Nick and I reached the very end of the hike — a place known as the amphitheater. Here it is easy to see the many layers of colorful rock reaching back into the ages. The “pages of time” literally surround you.

Nick called out each layer: lower green is unit C, browns unit D, the ledge layers E1-E3, followed by the Blue Basin Tuff and unit F, with dark Picture Gorge ignimbrite capping it all.

Layers and layers of rock containing fossils of past life, telling a 29-million-year-old story.

Storytelling

After a few minutes taking in the amphitheater, Nick and I made our way back to the trailhead. As we walked, he said something that struck me:

“I tell students all the time that the most important thing, as a scientist, is that you have to be able to communicate what you have done to somebody else. Because if you can’t, what is the point of doing it in the first place?”

Paleontologists are storytellers. They take us back in time to better understand the future. Oregon’s story is dramatic—punctuated by fiery volcanic eruptions, changing climates, and a series of unique life forms — but it is also a lesson in understanding occurrences of change.

Life is a state of flux. And you don’t need a Flux Capacitor to see that.

The Hike

Trailhead: Blue Basin Parking Lot/Island in Time Trail

Distance: 1.2 miles

Elevation Gain: approximately 250 feet

Details: Restrooms at the trailhead. Plenty of parking available. No passes required for entry. Hike the 3.25-mile (750 elevation gain) trail for a birds-eye view of Blue Basin from the same parking lot.

Emily Parent is a science educator, freelance writer, self-professed nature nerd, and avid hiker. To read more of her writing about science and nature in the outdoors visit www.trailscholar.com

Nicholas Famoso (Nick) is the Paleontology Program Manager and Museum Curator for John Day Fossil Beds National Monument. Nick got his bachelor’s degree from South Dakota School of Mines and Technology where he studied fossil mammals and marine reptiles. He later went on to earn his master’s degree and Ph.D. from the University of Oregon in geological and earth sciences.

FORM ED-1 NOTICE OF BUDGET HEARING			
A public meeting of the Silver Falls School District 4J School Board will be held on June 13, 2022 at 7:00 pm at Silverton High School’s Library, 1456 Pine Street, Silverton, Oregon. There will also be a virtual option to join via Zoom. The link can be found at https://meetings.boardbook.org/public/organization/1569 . The purpose of this meeting is to discuss the budget for the fiscal year beginning July 1, 2022 as approved by the Silver Falls School District 4J Budget Committee. A summary of the budget is presented below. A copy of the budget will be available at https://silverfallschools.org . This budget is for an annual budget period and was prepared on a basis of accounting that is the same as the preceding year. Contact: Steve Nielsen - Business Manager Telephone: (503) 873-5303 Email: nielsen_steve@silverfalls.k12.or.us			
FINANCIAL SUMMARY - RESOURCES			
TOTAL OF ALL FUNDS	Actual Amount Last Year 2020-21	Adopted Budget This Year 2021-22	Approved Budget Next Year 2022-23
Beginning Fund Balance	\$3,586,474	\$5,892,733	\$4,147,452
Current Year Property Taxes, other than Local Option Taxes	12,869,903	13,438,800	13,960,870
Current Year Local Option Property Taxes	0	0	0
Other Revenue from Local Sources	3,048,695	7,227,250	6,373,934
Revenue from Intermediate Sources	1,034,091	1,200,000	1,165,000
Revenue from State Sources	38,884,410	42,920,186	42,953,530
Revenue from Federal Sources	3,610,734	4,355,000	5,098,100
Interfund Transfers	335,000	480,000	535,000
All Other Budget Resources	0	0	0
Total Resources	\$63,369,307	\$75,513,969	\$74,233,886
FINANCIAL SUMMARY - REQUIREMENTS BY OBJECT CLASSIFICATION			
Salaries	\$23,994,489	\$27,755,377	\$27,846,944
Other Associated Payroll Costs	16,644,631	17,757,505	17,243,981
Purchased Services	7,806,977	11,500,047	11,511,619
Supplies & Materials	2,923,236	3,889,362	3,638,886
Capital Outlay	492,195	1,288,270	1,247,603
Other Objects (except debt service & interfund transfers)	680,288	738,200	716,602
Debt Service*	6,268,812	8,445,000	8,559,100
Interfund Transfers*	335,000	480,000	505,000
Operating Contingency	0	1,328,216	1,394,360
Unappropriated Ending Fund Balance & Reserves	0	2,351,993	1,569,791
Total Requirements	\$59,145,629	\$75,513,969	\$74,233,886
FINANCIAL SUMMARY - REQUIREMENTS AND FULL-TIME EQUIVALENT EMPLOYEES (FTE) BY FUNCTION			
1000 Instruction	\$32,065,304	\$37,236,397	\$36,077,309
FTE	315.11	319.62	331.77
2000 Support Services	18,849,988	22,871,893	23,343,026
FTE	127.24	130.41	133.18
3000 Enterprise & Community Service	1,073,309	1,608,200	1,625,300
FTE	11.50	11.50	12.00
4000 Facility Acquisition & Construction	545,516	1,192,270	1,160,000
FTE	0.00	0.00	0.00
5000 Other Uses			
5100 Debt Service*	6,276,513	8,445,000	8,559,100
5200 Interfund Transfers*	335,000	480,000	505,000
6000 Contingency	0	1,328,216	1,394,360
7000 Unappropriated Ending Fund Balance	0	2,351,993	1,569,791
Total Requirements	\$59,145,629	\$75,513,969	\$74,233,886
Total FTE	453.85	461.53	476.95
* not included in total 5000 Other Uses. To be appropriated separately from other 5000 expenditures.			
PROPERTY TAX LEVIES			
	Rate or Amount Imposed	Rate or Amount Imposed	Rate or Amount Approved
Permanent Rate Levy (Rate Limit \$4,5458 per \$1,000)	\$4.5458	\$4.5458	\$4.5458
Local Option Levy			
Levy For General Obligation Bonds	\$4,217,938	\$4,309,278	\$4,457,176
STATEMENT OF INDEBTEDNESS			
LONG TERM DEBT	Estimated Debt Outstanding on July 1	Estimated Debt Authorized, But Not Incurred on July 1	
General Obligation Bonds	\$21,515,000		
Other Bonds	\$43,626,412		
Other Borrowings	\$2,610,102		
Total	\$67,751,514		

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All Legals Deadline @ 1:00 p.m. on all days listed below:
***All Deadlines are subject to change when there is a Holiday.

The Silverton Appeal Tribune is a one day a week (Wednesday) only publication

- Wednesday publication deadlines the Wednesday prior

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