

Snake River Plain Field Trip

7-9 October, 2016

Geologists of Jackson Hole field trip
led by Scott Hughes and Shannon
Kobs-Nowatniak, of Idaho St. Univ.

The field trip begins along The Great Rift

Our first stop was an overlook of the Wapi volcanics at the Great Rift (also known as the “Crystal Ice Cave” of past repute).



The field trip begins along The Great Rift

Scott and Shannon provide context and info about what we are seeing and about to walk about in.



Crystal Ice Cave

The tunnel to the right once led to Crystal Ice Cave where, as recently as the 1980s, massive columns of ice attracted thousands of visitors. Ice seems unusual in a formerly fiery volcanic fissure. In the heat of midsummer, the idea of ice here seems even more unlikely.

The key dynamics that lead to ice formation are precipitation, climate, and air flow. Here in the high desert, snow accumulates all winter. In spring, as meltwater drips into underground cavities that have reached below-freezing temperatures, it is cooled and crystallized into stalagmites and pillars of ice. Changes in the temperature and quantity of air flowing in and out of the caverns determine the amount of ice present.

The historic tour entrance is now closed for safety reasons. Falling rocks, unstable walls, and cracks hundreds of feet deep are all hazards found in this underground area.



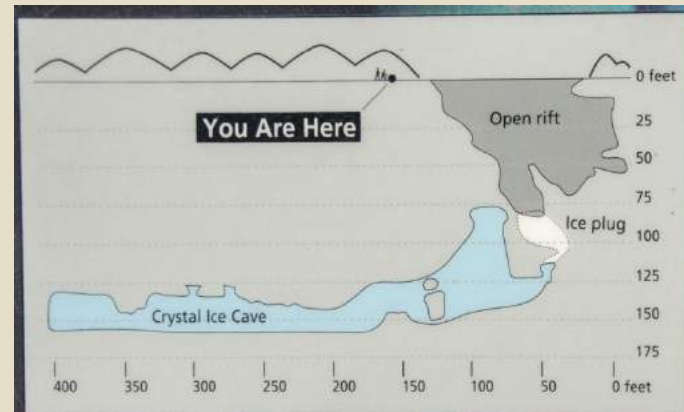
Crystal Ice Cave is technically not a cave but a volcanic fissure. The lava rock serves as a good insulator, but air moving in and out through cracks and openings greatly affects the inside temperatures.



At one time the ice formations were extensive and well defined. Today, many of these frozen features have changed, shrunk, or completely disappeared.

The Great Rift

We see and explore only the uppermost part of the rift system, but once a tourist attraction and far below is, still, the “Crystal Ice Cave”.



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The Great Rift

We are able to look down into frozen volcanic depths, and then turn towards the south and see the rift system extend for miles. Two thousand years ago fountains of lava played along this system.



The Great Rift



The rift “caves” are now closed due to very significant safety concerns - and looking down into the rift’s depths it is easy to understand why.

The Great Rift



Scott points out features that document that 2,000 years ago this was an active lava lake - which we then walk out across and explore. The lake's natural levee is the ridge in the distance.



The Great Rift



Exploring and understanding the lava lake's natural levee and its other features.

The Great Rift

One of the amazing features is the “field of mushrooms”.



These are places where projectiles from the rift penetrated the solidifying lava lake surface which caused lava to ooze up and “freeze” in mushroom shapes.



The Great Rift

Back over to the rift itself we look into the chasm that is “Kings Bowl”, a blowout feature in the rift trend.



Phil Hocker stands above the dike along which the magma was injected





The Great Rift

There is a trail down into the depths of Kings Bowl and part of the group, led by Scott Hughes, descends along the path.



Explosion Crater

The size and depth of the Kings Bowl crater indicate that a violent explosion occurred here. There is no mountain of debris, but you can deduce what happened from the surrounding evidence.

At one time, the dark lava flow on the far side of the crater was a lake of lava that welled up from a narrow volcanic fissure. Later, hot lava within the fissure came in contact with groundwater, which instantly flashed to steam. Like an exploding pressure cooker, the steam blew out the overlying rock, creating Kings Bowl. Ash and rock from the explosion still cover the area.

Kings Bowl underscores the sense of a hot planet, of dynamic forces beneath the calm surface. Like surgery, the explosion has revealed the anatomy of a fissure that reaches deep into the Earth's crust.



Layers of lava from earlier eruptions are visible in the crater walls. In some places, a combination of heat and water weakened the lava, setting it out.



To illustrate what happened here at the park, volcanologists study smaller events in active volcanoes, such as Mt. Iceland and Hawaii. This photo shows a recent eruption at Kilimanjaro, Hawaii.

The Great Rift

Craters of the Moon National Monument and Preserve

Bureau of Land Management / National Park Service
U.S. Department of the Interior

The Great Rift

The eruptive fissure that created Kings Bowl is only one small part of a much larger volcanic rift zone. If you travel toward the Pioneer Mountains 40 miles north, you can follow a long trail of open cracks, eruptive fissures, and cinder cones that make up the Great Rift. To the south, the rift extends for another ten miles.

The Great Rift results from stretching and faulting of the earth's crust, creating a system of cracks and weak spots where magma can rise. Here most of the volcanic activity consisted of a relatively quiet outpouring of lava. Unlike the centralized eruption of Mount St. Helens, these eruptions originate from an extensive series of fissures that underlie vast reaches of landscape.



Craters of the Moon National Monument and Preserve signs provide information about the Great Rift and Kings Bowl – though we have better info from our ISU guides!

The Great Rift



Explored by our group from below & atop along the edge.....



Good thing that the “Unsafe Caves Closed” sign faces away from our intrepid members!





Lunch by the Great Rift



On a glorious and cool Idaho day!

The afternoon is spent at the Wapi volcanics

Where a plethora of amazing volcanic features are so evident.



The afternoon is spent at the Wapi volcanics

Where a plethora of amazing volcanic features are so evident.





At Wapi we enjoy
companionship &
great food!

Snacks and libations go
well after exertions
atop the volcanics!





At Wapi we enjoy
companionship &
great food!

Our outstanding chef
makes his preparations
as the evening light
begins to fade.





At Wapi we enjoy
companionship &
great food!

A wonderful setting for
the potluck dinner of
the field trip.



At Wapi we enjoy
companionship &
great food!



Chef Weichman
begins his
magic.....



At Wapi we enjoy
companionship &
great food!

We witness his use of
his “tools of the
trade”, relishing the
magic he is creating.



At Wapi we enjoy
companionship &
great food!



And then we can
only await our bit
of carnivorous
heaven and
enjoy the results!





Wapi we enjoy
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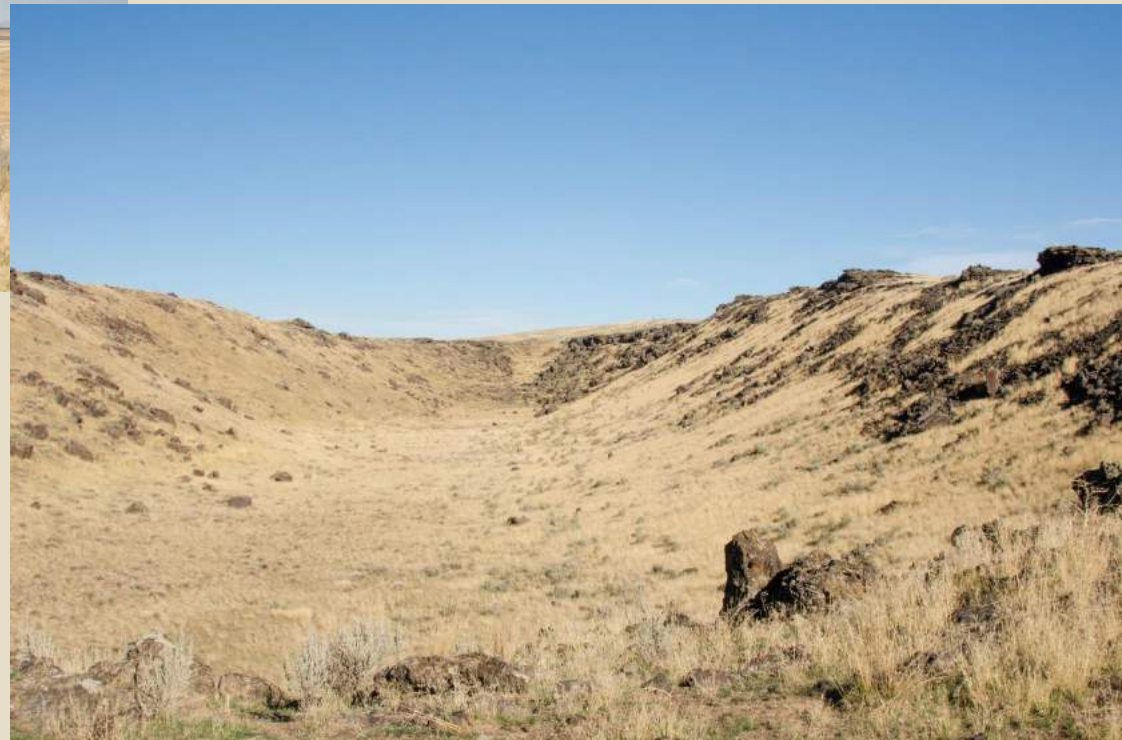


At Wapi we
enjoy
companionship
& great food!

And to augment the
evening mother
nature puts on her
own show.



Then north from
Wapi Park to other
features



“Cottrel’s Blowout” is
another, older rift
feature – perhaps
75,000 years old.

Then north
from Wapi
Park to other
features



With South Big Butte, a
rhyolite dome in the
background, we
examine North Robbers
Spatter Cone as our next
to last stop.



Then north
from Wapi Park
to other
features



Field trip members atop
the spatter cone, and a
close-up look at the
what was once molten
spatter, looking as fresh
as if it were erupted
just last week.





Then north
from Wapi
Park to other
features

Scott & Shannon explain the
origin & features of the
rhyolite domes and the
spatter cone that is North
Robbers.





But all
good
things
must
end...

And so with a view of Middle Butte & Eastern Butte in the distance (also rhyolite domes), we conclude an outstanding trip, say adieu', and begin our drives home.