

THE PLEISTOCENE POST

Quarterly Newsletter of the Ice Age Floods Institute



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See our website for more information
<http://www.iafi.org>

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PRESIDENT'S MESSAGE

It's June already, which should mean that summer is just around the corner. This has been an unusually cool spring for the Pacific Northwest with April snow in the Puget Sound area, late frosts in fruit country and ski resorts still open in the mountains. My first planting of tomatoes is looking pretty weak with the cool temperatures and spring wind in eastern Washington. And it's a presidential election year. There are plenty of things to write about these days, but I'd rather update Pleistocene Post readers about the important stuff like what's up with IAFI.

Spring bus and hiking field trips have been going on for the past few weeks in spite of the weather. The IAFI Board of Directors met in mid-April in the Tri-Cities and heard several positive reports. There are now nine official IAFI chapters with the addition of the Ellensburg Chapter, and the Seattle-based Puget Lobe Chapter is expected to become official later this year. We have obtained the electronic data from the US Forest Service for the Jeff Silkwood map of the Northwest at the time of the Ice Age Floods. An IAFI project to produce a new map is being organized. The IAFI store is working on producing several clothing items that will sport our new logo. They're looking good.

We are still working to get Congress to designate the Ice Age Floods National Geologic Trail. It's becoming evident to me that the greatest check built into our federal government is having two houses in Congress.

Montana Senator Jon Tester is the most recent cosponsor to sign on to S 268, the Senate's Trail bill. A big thank you goes to the Glacial Lake Missoula Chapter for their efforts with the senator. Mark Buser is heading up the Ice Age Floods Governmental Agencies Task Force that is reaching out to the tourism industry for Trail bill support. Initial indicators suggest that there is lots of support in the tourism industry for the bills.

--- Gary Kleinknecht

EDITORS' NOTE

The Institute has a new logo and the newsletter has a new look. We hope you like them! Our new design better suits a growing Institute, which has gone from four to ten chapters in the last three years. Besides the graphical design changes, we have decided to omit most of the calendar information from the newsletter. The website (iafi.org/calendar.html) is the most up-to-date source of information about events. You will notice that it will also soon change to reflect the new logo and include other improvements. We will still announce major upcoming events, such as the Annual Meeting and Field Trip, in the newsletter. We'll continue to try to provide you with a technical or special interest article each newsletter, in addition to reporting on the exciting things happening within the Institute. If you have any ideas or contributions, please feel free to send them to newsletter@iafi.org.

-- Signe Wurstner and Scott Waichler

BRETZ, J HARLEN (1882-1981)

Part 2 of HistoryLink.org Essay 8382

by Cassandra Tate
(continued from March Issue)

Cassandra Tate is a staff historian for <http://www.historylink.org>, the online encyclopedia of Washington State history. Her article, originally published on Historylink, is reprinted with permission.

"Outrageous Hypothesis"

Bretz had built a modest reputation as an expert on stream and glacial erosion by the time he turned his attention to the scablands. He quickly became convinced that neither kind of erosion could account for what he saw there: huge, dry channels; great chunks of prairie stripped down to bare basalt; massive boulders of granite scattered in places far from any natural source of granite; circular divots in the earth that were so big, cattle could be hidden in them; cataracts -- one five times as wide as Niagara -- that had once clearly been waterfalls, in an area that gets less rainfall in a year than Seattle does in a month. The depth of the channels, the fact that the channel bottoms were filled with coarse gravel carried in from outside the area, the scouring of the basalt bedrock: to Bretz, all this suggested a sudden, violent flood.

Bretz introduced his flood theory in a paper published in late 1923. He included a detailed geomorphic map of what he called "the Channeled Scabland," showing a network of branching and interconnecting channels that he concluded could only have been carved by a fast and furious inundation. "All other hypotheses meet fatal objections," he wrote. "These remarkable records of running water on the Columbia Plateau and in the valleys of the Snake and Columbia Rivers cannot be interpreted in terms of ordinary river action and ordinary valley development." He concluded with a simple statement: "It was a debacle which swept the Columbia Plateau" (Bretz, 1923, pp. 621, 649).

The reaction from the geologic community was, in a word, glacial. Since the 1790s, the science of geology had been framed by the principle of "uniformitarianism": the idea that geologic change in the past resulted from the same slow, steady processes at work today. Bretz's

flood, with elements that suggested the Biblical story of Noah, seemed like a reversion to a pre-scientific era. It was, said one critic, an "outrageous hypothesis."

Bretz was invited to defend his theory at a meeting sponsored by the Geological Society of Washington D.C., in 1927. Six other geologists presented opposing points of view. Bretz disdainfully referred to the group as the "challenging elders." He was nearly 45 years old at the time, a tenured professor at the University of Chicago, and supremely self-confident. He seemed to relish his self-definition as a lonely avatar of scientific truth. "Understanding the Scablands involves imagination and courageous departure from accepted views," he once wrote, implying that his detractors were unimaginative cowards (Bretz, 1959, p 10).

As paleontologist Stephen Jay Gould (1941-2002) has pointed out, Bretz's critics were not "benighted dogmatists." They had good reasons to doubt the plausibility of catastrophic flooding, based on his original arguments. For one thing, he had ignored the crucial question of where the water for the flood could have come from. In a later paper, he suggested the source might have been a melting glacier somewhere near the present-day city of Spokane, but he offered no reasonable explanation for how that much ice could melt that fast.

In fact, the primary source of Bretz's flood had already been identified, by a geologist named Joseph Thomas Pardee (1871-1960). It was Glacial Lake Missoula, created when the toe of an advancing glacier blocked the Clark Fork River in Idaho. The lake, named after the present-day city where it had been deepest, covered much of western Montana during the last Ice Age.

-- continued on page 3

... Bretz - continued from page 2

Pardee described it in detail in a 1910 paper. He did not make any connection between the lake and the scablands until many years later.

In 1925, however, Pardee wrote to Bretz and suggested that a collapse of the ice dam holding back Lake Missoula would have unleashed a mighty flood. Bretz briefly mentioned the possibility in a 1933 paper but did not otherwise pursue the suggestion. He "seemed singularly uninterested in finding the missing piece that would render his story coherent," says Gould. Instead, he doggedly continued to amass evidence about the effects, rather than the source, of the flood. He "stayed in the scablands, while the answer sat in western Montana" (Gould, p. 200).

Vindication

The pieces of the puzzle did not begin to fall into place until June 18, 1940, at a meeting of the American Association for the Advancement of Science, in Seattle. The topic was the "Quaternary Geology of the Pacific" ("Quaternary" referring to the last 1.6 million years). Bretz was invited to attend both the meeting and a post-meeting field trip, during which Yale University geologist Richard Foster Flint planned to demonstrate why the scablands were not cataclysmic in origin. He declined the invitation, saying all his ideas were already on the record and the field evidence could speak for itself.

The last speaker was Joseph Pardee, soon to retire from a long career with the Geological Survey. As mild-mannered as Bretz was forceful, Pardee spoke in a quiet voice, delivering a paper titled "Ripple Marks (?) in Glacial Lake Missoula." He had measured current ripples in northwestern Montana that were as high as 50 feet and spaced as far apart as 500 feet. The ripples -- created by surges of moving sediment -- had been left behind by the sudden draining of the lake. Reviving his old theory, he speculated that the lake had eventually become deep enough to lift up the ice that had dammed it. Some 500 cubic miles of water burst through the remnants of the ice barrier with almost unfathomable

force. The only place for it to go was out over the scablands.

Additional evidence in support of the flood theory came from aerial photographs taken by the Bureau of Reclamation in 1950, in connection with the Columbia Basin irrigation project. They were intriguing enough that Bretz -- then nearly 70 years old and officially retired -- returned to the scablands for new field studies in 1952. He found still more giant current ripples, so big and widely spaced that their significance could not be discerned from the ground. In all, he documented fifteen "ripple fields." Reviewing all the new data in 1959, Bretz concluded that there was now "adequate field evidence" to show that there had been several floods in the scablands, not just one, and that their source had been the repeated damming and draining of Glacial Lake Missoula. "The flood theory was without a plausible cause for some years," he noted. "Then the addition of two and two to make four occurred, a simple addition that should have been made much earlier" (Bretz, 1959, p. 52).

The final confirmation came from satellite images taken in 1974. "A half century ago J. Harlen Bretz, a University of Chicago geologist, suggested that the barren, heavily scarred region of eastern Washington had been made that way by a flood of phenomenal dimensions," The New York Times reported. "While his proposal was long controversial, a photograph made from an earth satellite some 570 miles overhead has now provided clear evidence for the scope and nature of this prehistoric catastrophe."

Father of "Neo-Catastrophism"

Bretz's work on the scablands led to a new intellectual framework for the science of geology. Uniformitarianism gave way to what is sometimes dubbed "neo-catastrophism" -- the principle that some landscapes may experience incremental, ordinary change over long periods of time but then undergo an episode of rapid, profound change. The new paradigm was in place by

-- continued on page 4

1965, when the International Association for Quaternary Research met in Boulder, Colorado. Among several field excursions organized for the meeting was one to the Columbia Basin. Bretz was unable to attend because of poor health. But the next day, the party sent him a telegram which ended with this comment: "We are all now catastrophists" (quoted in Gould, p. 202).

A new generation of geologists has since shown that there were perhaps a hundred, and possibly more Ice Age Floods, most from Glacial Lake Missoula but a few from glacial reservoirs in British Columbia. Evidence of similar "outburst floods" has been found around the world and even beyond it: from Utah to Swedish Lapland to the Chuja Valley in south-central Siberia, as well as on Mars.

Bretz went on to other topics after he completed his original studies of the scablands in the 1920s. He studied Glacial Lake Chicago, a predecessor of modern Lake Michigan. He participated in a 1933 expedition to Greenland, financed and led by Louise A. Boyd (1887-1975), a wealthy amateur photographer, under the auspices of the American Geographical Society. In the late 1930s, he began studying the origin of limestone caves in Missouri. He eventually investigated more than 100 caves in 17 states, Mexico, and Bermuda. His work provides much of the scientific basis for speleology (the study and exploration of caves) today.

He retired from the University of Chicago in 1947, but he was nearly as productive as a professor emeritus as he had been while a member of the active faculty. His post-retirement body of work includes *Geology of the Chicago Region* (1955), *The Caves of Missouri* (1956), *Washington's Channeled Scabland* (1959), *Caves of Illinois* (1961), and *Geomorphic History of the Ozarks* (1965) -- in addition to his 1949 *Incomplete Genealogy of the Family of John Bretz Of Fairfield Co., Ohio*, with a *Partial History of One Line of Descent in this Family*. Even in his family genealogy, Bretz remained the ever-observant geologist. "The landscape," he wrote, describing a family cemetery, "is a pleasing mature topography, pre-Illinoian in age, only 10 to 20 miles south of the margin of glaciated southern Ohio. Valley trains fill the major valleys but there is no outwash in the valley near the cemetery" (p. 10).

Bretz died at age 98, on February 3, 1981, at his home in Homewood, Illinois. Survivors included a son, Rudolf

C. Bretz, of Malibu, California, and a daughter, Rhoda Bretz Riley, of Homewood. His wife, Fanny, had died in 1972.

He had achieved iconic status long before his death, an image solidified when the Geological Society of America awarded him the Penrose Medal in 1979. Since then, he's been almost deified. He's been the subject of books, television specials, and countless articles, most depicting him as a visionary who stood fast against the dogmatism of his era. It was an image Bretz himself promoted. "Ideas without precedent are generally looked upon with disfavor and men are shocked if their conceptions of an orderly world are challenged," he wrote in 1928. The quote has been inscribed on a plaque at the visitors center at Dry Falls State Park, near the remnants of what was once the largest waterfall known to have existed on earth.

No doubt he would have been highly irritated to have been identified as "Jerry H. Bretz" in his obituary in the *New York Times*.

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CHAPTER NEWS

Cheney-Spokane Chapter - Spokane, WA

Chapter President: Dave Daugharty
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The Cheney-Spokane Chapter has its website available at www.iceagefloodsewa.org. It contains the latest Chapter information and much more, including a gallery of photos with captions of numerous Ice Age Floods features.

In March, a public lecture at Spokane Community College, "Erratica: Exotic Boulders of Eastern Washington", was presented by Bruce Bjornstad. His lecture described a wide variety of ice-rafted erratics, their characteristics, and how they can be used to decipher the great, cataclysmic Ice Age floods.

In May, a lecture and membership meeting was held. Dr. Gene Kiver, geology professor emeritus of Eastern Washington University presented "Geology of Grand Coulee: Washington's Grand Canyon." Dr. Kiver spoke on how one of Washington State's most scenic features formed and how giant floods of lava about 15 million years old were later gouged deeply by one of the largest floods of water known in the geologic record.

A deluxe tour bus full of interested individuals participated in the May 10 "Fieldtrip to Mars" led by Dr. Gene Kiver and Bruce Bjornstad. The Missoula Floods story was explored as recorded in the remarkable landforms and sediments in the Grand Coulee. This area is the Mars analog that was used by NASA to plan the highly successful mission that placed two rover vehicles on Mars. Rover 1 and 2 continue to explore the planet's surface.

-- Melanie Bell

Columbia River Gorge Chapter - The Dalles, OR

Chapter President: Terry Hurd
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Our chapter membership has grown to 46, most of whom are current in their dues. We've come a long way from our 12 founding members in September 2006.

On March 29th Dr. Scott Burns of Portland State University visited us at Syncline Wines in Lyle, WA. His presentation was titled "The Mystique of Terroir in the Pacific Northwest: the Relationship of Geology, Soils, and Wine." I found it interesting to learn that in Washington 95% of vineyards are on Missoula Flood sediments while in Oregon only 10% are. We had about 50 attendees, a mixture of wine aficionados and Ice Age Flood enthusiasts. Several came from as far away as Portland. We found his talk very informative, the winery made money on wine sales and I, a confirmed micro-brew drinker, enjoyed the samples. I also made a new media contact, the news editor at the Goldendale Sentinel. I will probably be giving a presentation in Goldendale sometime this summer.

A couple of months ago I learned that Alan Busacca was going to be in the area and contacted him about visiting us.

It turns out that Columbia Gorge Community College had beaten me to the punch by a few days so I contacted the Adult Education Coordinator of the college and she agreed to make his presentation a joint venture with us. Alan's talk, "Wine Education Seminar: Gorge Geologic History and Wine" was about 75% geology and 25% terroir. Following the presentation we had the pleasure of sampling six new wines and a discussion with Robert Smasne of Prosser Wine Company. When these become available for sale I have a feeling I may become a wine drinker. Until these recent tastings I thought there were only two wines: Thunderbird and MD 20-20, which I remember from my college days. The seminar had about 50 attendees, most of whom are connected with the wine industry.

I continue to teach Ice Age Floods 101 every quarter through Hood River Community Ed. Each time we pick up a new member or two or three.

-- Terry Hurd

Ellensburg Chapter - Ellensburg, WA

Chapter President: Nick Zentner
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The Ellensburg Chapter is the newest addition to the IAFI Chapter family - made official at the April, 2008 IAFI Board Meeting. We are pleased to be joining the scene here and hope to continue for years to come. We've met regularly since February, 2007 and have enjoyed solid crowds for our evening lectures and our Sunday afternoon field trips. We've averaged 100 people per lecture and 50 participants per field trip. Clearly, there are interested folks here in the Kittitas Valley - plus some regulars from the Yakima area. Our public lectures are offered on the first Wednesday evening of every other month on the campus of Central Washington University. Our Sunday afternoon field trips are offered in April, June, and October. Feel free to join us! Since we are located at the margin of the scablands, we occasionally feature non-flood geology topics. Hope that doesn't get us kicked out of the Institute!

-- Nick Zentner

Lower Columbia Gorge Chapter - West Linn, OR

Chapter President: Mark Buser
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Chapter President Mark Buser led two hikes organized by the Friends of the Columbia Gorge. The Friends are a non-profit organization charged with protecting and enhancing the Columbia Gorge National Scenic Area. The two mile hike to Tom McCall preserve at Rowena Crest was a leisurely hike across classic scabland topography featuring a large pot-hole nearly 30 feet across. The second hike explored new property acquired by Friends of the Columbia Gorge atop Cape Horn. The 8-mile hike featured breath-taking views and a beautiful cascade of water over basalt that we hiked behind. Stay tuned for our upcoming fall field trip, hikes and lectures.

-- Mark Buser

CHAPTER NEWS

Lake Lewis Chapter - Tri-Cities, WA

Chapter President: George Last
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We have had a pretty busy Spring so far this year. Our main event was the Spring field trip "Influence of Ice Age Floods on the Terroirs of the Yakima Valley Wine Country" led by myself, Alan Busacca, and Bruce Bjornstad. A brief summary of this trip will be provided separately. Our only other chapter event was our March chapter meeting with Bruce Bjornstad presenting "'Erratica: Exotic Boulders of Eastern Washington". Chapter members were also quite active with community events, including January and April presentations on "Exploring Our Ice Age Floods" at the main branch of the Mid-Columbia Library in Kennewick by both Bruce Bjornstad and myself. In February I presented "Mammoths and Mastodons" to the Lakeside Gem and Mineral Club, and we set up a booth and participated in the E3 Washington Summit held in Pasco, WA. In March we set up and manned a booth at the Sandhill Crane Festival, and in April, Connie Estep set up and manned a booth at the Yakima Gem and Mineral show. We have also been providing geologic support to the Friends of Badger, the Open Space Coalition, and E3 Washington. As for our special projects, we worked with Eagle Scout candidate, Kurt Imhoff, to landscape around the kiosk we built last year at the foot of Badger Mountain, and we completed and mounted the two geologic display panels on the kiosk. A brief summary about the kiosk will be provided separately. We also worked with Jeanne Newton to develop a draft display for the Corps of Engineers' Ice Harbor Dam visitors center, and initiate work to revise the road guide "Ice Age Floods Features Near Richland, Washington."

-- George Last

Puget Lobe Chapter - Seattle, WA

Chapter President: Mark Sundquist
 wonderseeker@aol.com

The March 10 meeting of the Puget Lobe Chapter was held at the Shoreline Historical Museum just north of Seattle. Ralph Haugerud, who is with the USGS and the University of Washington Department of Earth and Space Sciences, gave an outstanding presentation on lidar imagery and the deglaciation of the Puget Sound region. The lidar images were stunning. Landscape features that previous generations of aerial photography could reveal only hazily or not at all, stood out in crisp detail. Previously unknown faults, glacial striations, depressions, and other details were plainly visible. The stages of the de-glaciation of the region were explored in detail and included some small outburst floods.

The May 5 meeting of the Puget Lobe chapter was held at the Shoreline Historical Museum. Jon Riedel, Park Geologist for the North Cascades National Park, spoke on "The Ice Age

Glacial and Environmental History of Skagit Valley, Washington and British Columbia." The Skagit valley contains important information about the ice ages, and unlike the rest of the Cascade Range to the south, has undergone intensive, repeated continental glaciation. Northward drainage patterns established in the Tertiary in the North Cascades were reorganized to accommodate southern drainage of Cordilleran Ice Sheet meltwater. Repeated continental glaciation rendered the Skagit an interconnected valley, with meltwater routes opening it to the Fraser and Okanogan watersheds, and linking it to a drainage system around the east and southern margins of the Puget lobe of the ice sheet, discharging to the Pacific Ocean via the Chehalis River. The key event in the establishment of this system was breaching of the North Cascades crest at Skagit Gorge. Alpine glaciers have also taken their turn shaping the North Cascades, but the record of their activity is fragmentary in the Skagit valley when compared to valleys farther south that were not inundated by the ice sheet. While difficult to discover, alpine deposits provide evidence of local and regional climatic conditions during the beginning and end of the last ice age.

Beginning with our September meeting, the Puget Lobe chapter will gather in the large meeting room of the senior center on the waterfront in Edmonds, one block south of the ferry dock.

-- Mark Sundquist

Wenatchee Valley Erratics Chapter - Wenatchee, WA

Chapter President: Susan Lacy
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Our February meeting was one of our most unusual and best attended meetings ever. Twelve year-old Tristan Cunderla, son of our President, presented "Glaciers of South-Central Alaska." We left flyers at all 5th and 6th grade classes in the greater Wenatchee area which resulted in over 20 young people attending for a total attendance of 103! This was followed in April by Dr. John Balla and "Gold Deposits of the Russian Far East." His insight to both the politics of Russia and the economics of the goldfields was fascinating. May 3rd was our Sanpoil Field Trip from Wenatchee to Keller, conducted by Brian Atwater and Brent Cunderla. The day before, Brian, Brent, our Houston member Bud Tyner, Ken Lacy, and associates of Brian all visited the stops and actually dug out steps and placed flags so the foresets, varves and deposits of sandy high-density turbidity currents could be easily viewed by both those adventurous enough to climb up to them, and the rest of us content with viewing them through binoculars! Be sure to check the IAFI calendar for our upcoming June, August, and October meeting. We have some very interesting and unusual programs planned.

-- Susan Lacy

INFORMATION KIOSK COMPLETED AT BADGER MOUNTAIN TRAILHEAD

- A LAKE LEWIS CHAPTER PROJECT -

The Lake Lewis Chapter of the Ice Age Floods Institute with lots of help and financial support by Team Battelle, the City of Richland, Team Depot, an Eagle Scout project, Friends of Badger Mountain, and others put the finishing touches on an information kiosk built at the foot of Badger Mountain. The kiosk is located near the Shockley Road (Canyon Trail) trailhead, south of Richland (<http://www.friendsofbadger.org/access.html>), and includes two information panels on the geology and Ice Age flood features of the area.

The kiosk was constructed last Spring on an alluvial fan, with excavation of the footings unearthing a thick layer of volcanic ash from Mount Mazama (Crater Lake) deposited about 7,700 years ago (Figure 1). Lots of volunteers helped to construct the kiosk over a six and a half week period (Figure 2). Work then began on landscaping and the development of interpretive materials to place on the display boards. A large erratic, disturbed by recent development, was moved next the kiosk and an eagle scout project led by Kurt Imhoff finished off the landscaping. Completion of the two geology information display panels coincided with the Institute's Spring board meeting held in Kennewick, Washington. After the meeting, a few of the board members helped to install the geology display panels (Figure 3) and celebrated this final step in completing the kiosk with a hike up the mountain.



Figure 1. Mount Mazama ash encountered in excavation for concrete footings.

Sponsors and Partnering Organizations:

Battelle Memorial Institute (Team Battelle)
City of Richland, Department of Parks and Recreation
Home Depot (Team Depot)
Ice Age Floods Institute, Lake Lewis Chapter
Benton County Parks
Friends of Badger
Native Plant Society
Audubon Society



Figure 2. The frame and panels are nearly complete.



Figure 3. Institute board members celebrate the completion of the information kiosk at Badger Mountain with the mounting of geology information panels. From left to right are George Last, Mark Sundquist, Brent Cunderla, Dale Middleton, Gary Kleinknecht, and Susan Lacy. Scott Waichler took the photo.

Volunteers (In alphabetical order)

Cesar Arias	Ivar Husa
Vicki Bergum	Kurt Imhoff
Bruce Bjornstad	Gary Kleinknecht
Mickie Chamness	George Last
Janelle Downs	Rob Mackley
Gary Fetterolf	Tim Minor
John Friley	Hoyt Mitchell
Adam Fyall	Phil Penard
Byron Gessel	David Pesel
Ron Grant	John Roberts
Sharon Grant	Joe Swanson
Kyla Gregoire	Kelsey Winsor
Randy Hoenshell	Rick Wright
Duane Horton	Mero Valenzuela

INFLUENCE OF ICE AGE FLOODS ON THE TERROIRS OF THE YAKIMA VALLEY WINE COUNTRY FIELD TRIP

The Lake Lewis Chapter's 2008 Spring field trip, led by George Last, Alan Busacca, and Bruce Bjornstad, explored the relationship between Ice Age flood deposits and the terroirs of vineyards in the Yakima Valley Wine Country in Washington. This field trip examined local geologic features created by Ice Age Floods, and the related soils underlying some of Washington's best vineyards and wineries within the Red Mountain, Yakima Valley, and Rattlesnake Hills wine-growing regions. We had a rather small, but enthusiastic group of 38, with 2 others joining us along the route. Among the sites we explored were: the Yakima Bluffs, west of Richland, where early and middle Pleistocene flood deposits are exposed; the Olsen Erratic, one of the largest in the area and located in their Chandler Reach vineyard (Figure 1); Washington State University's Irrigated Agriculture Research and Extension Center, near Prosser, WA, birth place of Washington's modern wine industry; an exposure of late Pleistocene rhythmites near Granger WA, featured in the video "Mystery of the Megaflood."

We then explored the influence that terroirs of three different American Viticultural Areas (AVA), the Rattlesnake Hills, the Yakima Valley, and Red Mountain, have on the taste of wine (Figure 2).

-- George Last



Figure 1. *Larry Olsen and Alan Busacca talk about dividing vineyards into blocks with similar soil characteristics to facilitate use of uniform viticultural practices.*



Figure 2. *Scott Williams of Kiona Vineyards and Winery uses a wine thief (pipette) to pour a sample of Cabernet from the barrel.*

IAFI ANNUAL MEETING AND FIELD TRIP

The 2008 IAFI Annual Meeting and Field Trip will be held Friday and Saturday, September 26-27 in Polson, MT. Plan now to join us for this great weekend under beautiful fall weather! The meeting place and field trip starting point will be the Best Western Kwa Taq Nuk Resort (<http://www.kwataqnuk.com>) in Polson, Montana, a community located on the southwestern shore of scenic Flathead Lake.

The Annual Meeting and pre-field trip presentation will take place at the Resort on Friday evening, 9/26. The Saturday, 9/27 field trip will be an around-the-lake excursion with viewing of various lake, flood and glacial features associated with the Flathead Lobe of the Cordilleran Ice Sheet and the northern arm of Glacial Lake Missoula. Trip leaders will be Larry Smith, geologist with the Montana Bureau of Mines and Geology; Marc Hendrix, professor of geology at the University of

Montana; and Lex Blood, retired geology instructor from Flathead Community College.

The cost of the field trip will be approximately \$55 for IAFI-members and \$75 for non-members. To help with bus reservations, please email Norm Smyers at normsmyers@aol.com if you are planning to attend. Please do not send any payment at this time. Formal registration and payment will be requested later in the summer. Should the trip be over-booked, those who send notification will receive priority seating. The complete registration packet will be available in the next issue of the Pleistocene Post and online at iafi.org.

For lodging, a block of rooms is being held by Kwa Taq Nuk Resort. The nightly rate is \$73.99 and is good for the nights of 9/25, 9/26, and 9/27. Reservations can be made by calling 406-883-3636. Please make your reservations early to ensure a room at that rate.

FOOLS RUSH IN...

"Geological & Glacial Status Report on the Okanogan," the August 12th program for the Wenatchee Valley Erratics, will be an excellent example of just what people with an interest in geology can do! Friends of the Okanogan Lobe (FOOLS) Jack Holden, retired paleontologist and teacher; Don Hruska, retired mining geologist; Gary Munding, retired book store owner; and John Whitecar, retired real estate appraiser; will report on their on-going geological investigations in the Okanogan area, including (1) the discovery of large erratic boulders that could extend the northwest boundary of the Grande Ronde basalt lava flow as far as ten miles; (2) the unearthing at two sites of pulmonate gastropods; (3) the evidence for a glacial outburst flood north of Omak; (4) their study of the work of previous geological investigators; and (5) an on-going mapping

project of glacial features in Okanogan County. The FOOLS will also report on the confusions, disagreements, and frustrations that come with the wonder of the Okanogan rocks. This formidable retired foursome view geology as a hobby with a passion and have taken their interest to a much higher level! We feel this presentation will be an excellent example of what many of our Wenatchee Valley Erratics have done with this passion....Charles Mason with his book "The Geological History of the Wenatchee Valley and Adjacent Vicinity", Marv McCamey and his recent article "The Floods Noah Had Nothing to Do With" to name a few. So please join the Erratics and FOOLS for this highly unusual program!

-- Susan Lacy

THE ICE AGE FLOODS GOVERNMENTAL AFFAIRS TASK FORCE (IAFGATF)

The Ice Age Floods Governmental Affairs Task Force (IAFGATF), formed by the Ice Age Floods Institute, is charged with aligning convergent interests into one voice asking Congress to act on behalf of the Ice Age Floods National Geologic Trail Legislation that is pending.

Benefits of the Trail legislation are:

1. Economic Development

-The recommended route includes 13 Gateway Cities across four states - ID, MT, OR, & WA. The route will include at least 51 towns and cities, many of them rural and economically distressed.

-Geotourism is tourism that celebrates and enhances the geographical character of a place - its environment, heritage, aesthetics, culture, and the well-being of its residents. The Ice Age Floods National Geologic Trail product will cater to the Geotourist, a fast growing segment of the travel and tourism industry.

-The National Park System generates \$4 for every \$1 appropriated for its budget. In a 2005 NPS economic analysis, gateway economies within a 50 mile radius of National Parks created \$11.9 billion in combined visitor spending and NPS spending on payroll and benefits. It created 246,400 local jobs (including NPS jobs) and generated \$5.6 billion in local wages and salaries.

2. Science Education

-Unusual landscape features from the Ice Age Floods phenomenon provide an exciting framework for engaging the public in environmental science education on existing public lands across four states.

3. Recreation

-Ice Age Floods features are of such massive scale that fully seeing and understanding them is best accomplished by walking or hiking to scenic vistas, biking, kayaking, rock-climbing, and even flying. Taking admission to one of several natural history museums along the four-state route to illustrate the Ice Age Floods will give visitor's the necessary overview to better understand the local features that they are likely to visit.

-Several scientists and laypersons have published books that offer easy to understand geology with self-guided tours that cross the spectrum of recreational boundaries.

The Bills

H.R.450 (House of Representatives) Title: To designate the Ice Age Floods National Geologic Trail, and for other purposes. Sponsor: Rep. Doc Hastings [WA-4] (introduced 1/12/2007) Cosponsors (13) Latest Major Action: 2/7/2007 Referred to House subcommittee. Status: Referred to the Subcommittee on National Parks, Forests, and Public Lands.

S.268 (Senate) Title: A bill to designate the Ice Age Floods National Geologic Trail, and for other purposes. Sponsor: Sen. Maria Cantwell [WA] (introduced 1/11/2007) Cosponsors(6) Latest Major Action: 2/15/2007 Placed on Senate Legislative Calendar under General Orders. Calendar No. 40.

The proposed legislation was suggested by the National Park Service (NPS) study: "Ice Age Floods Study of Alternatives and Environmental Assessment" (Jones & Jones, 2001). Please consider writing a letter of support to your Representatives and Senators in Congress. Every voice counts!

-- Mark Buser, Chair IAFIGATF

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