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President  
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Testimony before the Committee on Resources, Subcommittee on National Parks  
United States House of Representatives

Hearing on H.R. 383  
Ice Age Floods National Geologic Trail Designation Act of 2005

July 13, 2006

Thank you, Mr. Chairman, for holding this hearing and for the opportunity to testify.

I would also like to thank Congressman Hastings for sponsoring H.R. 383. I am Gary Kleinknecht, president of the Ice Age Floods Institute. I offer this testimony in support of H.R. 383, the Ice Age Floods National Geologic Trail Designation Act of 2005. My testimony will exceed the time limit today, so I would like to submit the unspoken portion of my testimony for the record. I also have several letters and documents of support that I would like to submit as testimony, if I may.

About a century ago a young high school biology teacher in Seattle, Washington became fascinated with the geology of the state. He became so interested in the topic that he enrolled in the University of Chicago and earned a PhD in Geology. With his new career he began a life-long relationship with eastern Washington and the shrub-steppe of the Columbia Plateau. He spent summers hiking across this arid region, cataloging its geology. He found what appeared to be river channels carved into the native volcanic basalt bedrock, but the channels were dry or had vastly undersized creeks flowing through them. He crossed broad areas of exposed basalt that were bordered by thick deposits of windblown topsoil, appearing as if some gigantic force had swept away the topsoil from the bedrock. He discovered a huge dry cataract, 400 feet high and over three miles across, with a series of plunge pool lakes stretching twenty miles downstream. He also recorded large angular boulders resting on hillsides hundreds of feet above dry valley floors. These were granite and other rock types, some weighing over 100 tons. The nearest possible source for such rocks is over 100 miles away!

To geologist J Harlen Bretz only one thing could explain these features. That thing is fast flowing water, an unimaginable amount of water.

Bretz and other geologists have determined that during the final millennia of the latest glacial cycle huge lakes were formed behind glacial dams in the mountain valleys of western Montana. The largest of these glacial lakes contained 500 cubic miles of water, the equivalent of Lakes Erie and Ontario combined. Bretz's evidence was the result of outburst floods resulting from the tremendous pressure exerted by a lake that reached a maximum depth of 2000 feet. Originally, Bretz wrote of one flood and called it the Spokane Flood. Today we refer these phenomena as the Missoula floods or the Ice Age floods. There is evidence suggesting that as many as 100 floods burst from behind successive ice dams, reshaping the landscape of much of the Pacific Northwest as recently as 13,000 years ago.

Over the past eight decades many other geologists have examined and reexamined Bretz's evidence. And they have found more evidence of floods. But the conclusion remains essentially the same. The Pacific Northwest was the scene of the greatest series of cataclysmic outburst floods known to science. To be sure, other flooding occurred as continental ice melted, but nowhere else is there such dramatic evidence of repeated floods of this magnitude. Only in recent decades have those of us outside the realm of geologic academia been exposed to this amazing story.

In 1994 the Ice Age Floods Institute was organized as an educational not for profit 501 (C)(3), dedicated to bringing the story of the Ice Age Floods to the public. For the past decade the Institute has conducted public field trips and programs on the floods and worked to make the public aware of this fascinating legacy of natural history. Our membership extends throughout the region of the floods from western Montana to the mouth of the Columbia River.

In 1999 a number of Ice Age Floods Institute volunteers as well as other interested individuals participated in the Ice Age Floods Study of Alternatives and Environmental Assessment, a special resource study undertaken by the National Park Service.

The report on the study, which was published in 2001, recommends the establishment of an Ice Age Floods National Geologic Trail. H.R. 383 is the product of this cooperative effort. Due in part to the efforts of Ice Age Floods Institute members, numerous state and local government officials, as well as other community organizations, have voiced their support of the trail concept in written statements. In fact the Washington State Legislature unanimously passed Senate Joint Memorial 8000 in 2005.

The memorial asks Congress to pass legislation creating the Ice Age Floods National Geologic Trail.

The National Park Service is often referred to as our nation's "story teller". It has broad experience and expertise in the management of other trail systems such as the Lewis and Clark Trail, Oregon Trail and Selma to Montgomery Trail. We in the Ice Age Floods Institute are confident that the National Park Service will do an excellent job of coordinating and partnering with the many federal, state, local, tribal and private groups throughout the trail region to interpret these truly amazing events.

The benefits of the Ice Age Floods National Geologic Trail to the citizens of the Pacific Northwest in particular and to the American public in general are several.

The development of tourism will boost local, in large part rural, economies. Establishment of interpretive centers will attract tourists from within and outside the four Northwest states. A study conducted for the Ice Age Floods Institute's Glacial Lake Missoula Chapter in 2002 by the Small Business Institute in the School of Business at the University of Montana examined the potential impact of an Ice Age Floods interpretive center located in Missoula, Montana. A conservative estimate of money generated by such an interpretive center by tourists from out of the state was over \$2,000,000 per year. Missoula is an eastern gateway of the trail. Many hundreds of miles of trail and numerous small towns and cities with restaurants, hotels and campgrounds lie to the west in Idaho, Washington and Oregon.

Another related project provides similar information. Plans for the Hanford Reach Heritage Center in Richland, Washington are nearing completion. The center, which is working with several partners, will dedicate a significant portion of its display area to the topic of the Ice Age floods and could become an interpretive anchor for the floods trail. An economic study conducted for the planning of the center estimates between \$5,000,000 and \$11,000,000 per year will be generated by that facility.

The Reach, as the Heritage Center is known, is being funded by numerous public and private entities, including, but not limited to, the State of Washington for up to \$7 million, U.S. Fish and Wildlife for \$3 million, the Audubon Society for \$30,000, Battelle Northwest for \$1 million, City of Richland for \$1 million plus \$4 million in land, Richland Public Facilities District for \$7 million, Federal Highways Administration for \$3.78 million, Atomic Heritage Foundation for \$500,000 and private donations currently totaling \$1 million. This is an excellent example of the kind of partnering that will make the trail a success.

Existing tourism will also be benefited by the creation of the National Geologic Trail. Much of the floods region sustains agriculture has its own tourism industry and will benefit from the new visitors traveling on the Trail. Washington's and Oregon's wine industries are successful, in part, due to the soils that were deposited by the floods in the Yakima, Walla Walla and Willamette Valleys.

The National Geologic Trail will also provide educational benefits. Fifty years ago only a handful of geologists knew about these floods. Today the floods story is part of mainstream geology and the general public is becoming aware of this fascinating topic. A trail will provide a vehicle to reach more and more people, not only through tourism, but also as destinations for school field trips and potential environmental centers. The Reach planners project that 30,000 K-12 school children will visit the facility annually, as well as 100,000 adults. Interpretive programs will be developed to reach citizens of all ages.

The trail will also make it more likely that producers of educational television programs and videos and travel book authors will address the topic of the Ice Age Floods. The limited exposure that the floods topic has received has resulted in a NOVA one-hour science program aired in September of 2005. Several videos on the floods are currently available and a tour-guide book of the floods in the Mid-Columbia Region was published earlier this year. As more people learn about the floods, the market for such educational programs and materials will grow.

Early in the effort to promote the designation of the trail there was concern about private property rights. Land acquisition and violation of property owner rights are not what this legislation is about. This bill limits the amount of land that may be acquired by the Secretary of the Interior to a total of 25 acres for administrative and public information purposes. Any land so acquired must also be from a willing seller. The bill also states that trail designation creates no new liability for property owners. The Senate version of this bill, S. 206, was passed in 2005 and makes no mention of property acquisition.

Another issue that concerns some westerners is the amount of federally owned land in western states that is not on the local tax rolls. The trail concept uses public land to generate tourism trade. This is another way to put public land to work for the public.

For the above stated reasons, I and the Ice Age Floods Institute urge the United States Congress to pass H.R. 383, the Ice Age Floods National Geologic Trail Designation Act of 2005.

