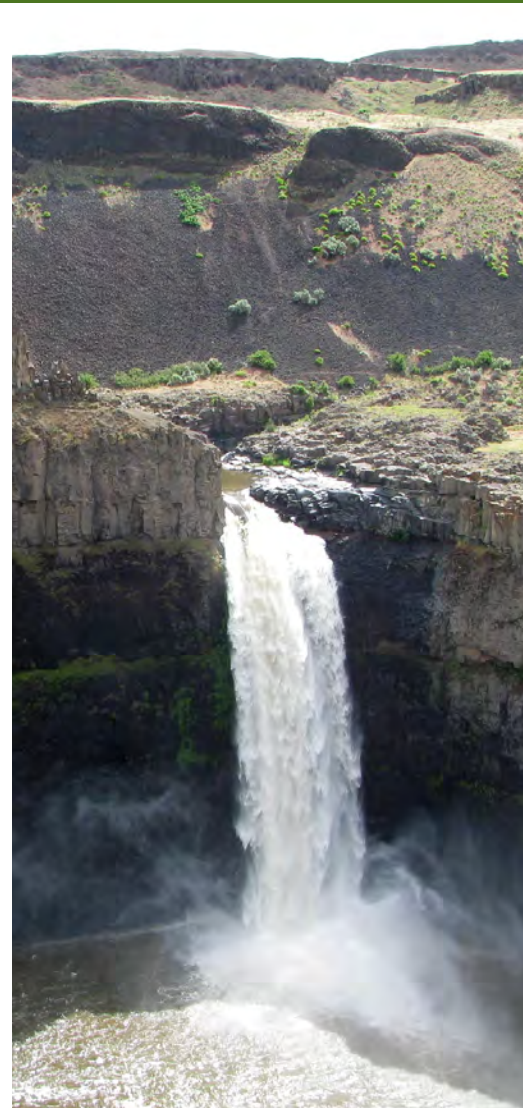


National Park Service
U.S. Department of the Interior

Ice Age Floods National Geologic Trail
Montana, Idaho, Washington, and Oregon



Foundation Document

Ice Age Floods National Geologic Trail



Purpose

The Ice Age Floods National Geologic Trail tells the stories of the cataclysmic Ice Age floods and invites people to discover and explore the resulting extraordinary landscapes and distinctive features. Interpretation, research, and stewardship are achieved through collaboration between public and private partners.

Interpretive Themes

Interpretive themes are the key concepts to be communicated to visitors to help them understand and appreciate the significance of the trail.

Geologic Setting. A remarkable alignment of past geologic forces, resulting terrain, and Ice Age conditions produced a series of some of the greatest floods on earth, dramatically sculpting 16,000 square miles of the northwestern United States and as much of the Pacific Ocean floor.

Cataclysmic versus Incremental. The Ice Age floods remind us that the slow, incremental processes shaping our earth can be punctuated by sudden, epic, cataclysmic events, and that such events are possible in our lifetimes.

Evidence that Remains. In the wake of the floods, a wide array of floods-formed features remained, just waiting for human curiosity to discover. Some features are gigantic – readily visible from space; others are subtle—only revealed and appreciated through close observation.

In Search of the Truth. Unraveling the mysteries of the Ice Age floods reveals the human, often subjective and sometimes contentious, side of the scientific method that arises when new evidence challenges prevailing paradigms.

Lives and Livelihoods. Just as the Ice Age floods left an enduring mark on the landscape of the northwestern United States, so too has that landscape profoundly shaped human history and culture across the region. The impact of the floods continues to this day.

Significance

Significance statements define what is most important about the trail's resources and values. They express why the trail and its resources are significant within a regional, national, and global context—focusing attention on those exceptional qualities that Congress felt were important to preserve and interpret.

Cataclysmic Ice Age Floods. Ice Age Floods National Geologic Trail represents the greatest floods on earth. Repeated cataclysmic releases of water exploding from glacially dammed Lake Missoula thundered across the landscape to the Pacific Ocean, carrying water, debris, rock, and ice with a discharge equal to 10 times the flow from all of today's rivers worldwide.

Distinctive Geologic Resources. The Ice Age floods sculpted extraordinary landscapes and left behind a variety of distinctive geologic features across a vast area of the northwestern United States. Gigantic basalt coulees, enormous dry falls, and flood ripples of immense proportion are just a few examples of the evidence that survives to illustrate the scale and power of the floods.

Science and Research. The discovery and investigation of the Channeled Scabland led to an understanding of cataclysmic origin that challenged prevailing geologic thought. Ongoing research has established the Ice Age floods as the quintessential example of megaflood landscapes throughout the world.

Human Settlement. The Ice Age floods transformed the environment of the northwestern United States, greatly influencing the use of the land and its resources from early native peoples to contemporary society.



Photo: Tom Foster

Fundamental Resources and Values

Fundamental resources and values are those features, systems, processes, experiences, stories, scenes, sounds, smells, or other attributes that are critical to achieving purpose and maintaining significance. That which is most important about the trail could be jeopardized if these resources and values are allowed to degrade.

Outstanding Floods-Related Geologic Resources. Numerous floods-related geologic features exist within this four-state area, but not all have been inventoried. Resources are categorized into seven types, including bedrock features, terrain features pre-existent to the floods, erosional landforms created by Ice Age floods, depositional landforms created by Ice Age floods, glacial features, lake features, and features deposited by wind.

Exceptional Scenery and Views. Vast landscapes and stunning scenery created by the floods are present at many places along the proposed trail routes. Views of natural and human-influenced scenery enable visitors to comprehend the scale of the floods, to appreciate the grandeur that the floods created, and to understand the impact of the floods on human settlement and on the natural world.

Scientific Knowledge and Research. Investigation of the Ice Age floods has greatly contributed—and continues to contribute—to the body of scientific knowledge. In bringing to light the story of the floods, J Harlen Bretz, Joseph Pardee, and other geologists yielded a new theory for the origin of many landforms in the northwest. Aided by new technologies, subsequent researchers built upon these early discoveries and further advanced our knowledge of the floods and landform features.

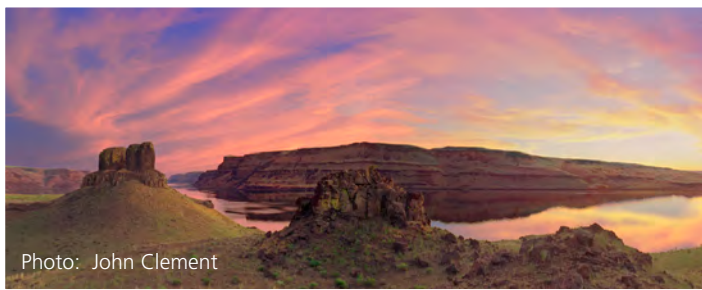


Photo: John Clement

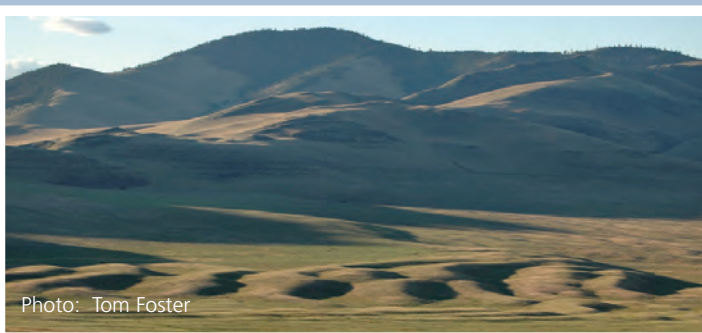


Photo: Tom Foster

Other Important Resources and Values

The identification of certain resources and values as fundamental is not meant to imply that other resources are not important. The National Park Service draws this distinction because it can help trails and other national park system units set priorities among competing management concerns.

Floods-Related Cultural Resources. Although geological resources are the primary focus of the national geologic trail, the human history of the region adds another dimension to the floods' story. The federal and state partners responsible for managing the trail also manage cultural resources in accordance with laws and regulations that mandate their protection. Cultural resources along the trail corridor convey thousands of years of human history and patterns of settlement across the numerous, varied landscapes shaped by Ice Age floods.

Access to Diverse Recreational and Educational Opportunities. Providing for enjoyment and understanding of resources is central to the mission of the National Park Service and to every park unit or trail that the agency administers. Through partnerships, the national geologic trail offers access to a variety of recreational and educational opportunities that enable visitors to learn about, appreciate, and experience the floods features.



DESCRIPTION OF ICE AGE FLOODS NATIONAL GEOLOGIC TRAIL

“At the end of the last Ice Age, some 12,000 to 17,000 years ago, a series of cataclysmic floods occurred in what is now the northwest region of the United States, leaving a lasting mark of dramatic and distinguishing features on the landscape of parts of the States of Montana, Idaho, Washington, and Oregon.”

Public Law 111-11, March 30, 2009

Today, evidence of the immense floods remains in many forms including high water lines, huge current dunes, boulders transported hundreds of miles, giant coulees and dry falls, and enormous gravel bars. These reminders of the floods exist on public and private lands across the four states of Montana, Idaho, Washington, and Oregon. Many of the most dramatic features are managed by federal, tribal, state, and local governments.

The national geologic trail will consist of a network of marked touring routes with interpretive opportunities distributed across this vast area. Existing roadways will link many of the region’s superb geologic resources by way of a long, central pathway and designated loops and spurs. In places, other types of foot and vehicle trails may also be a part of this network.



J Harlen Bretz, 1922



Photo: Melissa Rosin

