



MEETING REVIEW

Mount St. Helens 2025 Science Pulse

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Introduction

In July 2025, 73 scientists, students, managers, and educators from 23 institutions gathered to “take the pulse” of ecological responses and change in the aftermath of the 1980 eruption of Mount St. Helens. The Mount St. Helens National Volcanic Monument, located in the Gifford Pinchot National Forest, was established in 1982 to support research, education, and recreation around the volcano while letting the blast zone recover with minimal human intervention (Public Law 97-243). Mount St. Helens is now the most well-studied volcano in the world for ecological research (Swanson and Crisafulli 2018). The idea of scientific pulses at Mount St. Helens was originated by Jerry Franklin in 1981 and has occurred at 5-year intervals since the 1990s (except for 2020 due to the COVID-19 pandemic). Pulses are organized by the USDA Forest Service Pacific Northwest Research Station, with the most recent Pulse hosted by a nonprofit partner, the Mount St. Helens Institute.

Brown, D. J., V. H. Dale, K. Queen, S. Claeson, J. E. Gawel and T. Chestnut 2026. Mount St. Helens 2025 Science Pulse. *Bull Ecol Soc Am* 107(2):e70068. <https://doi.org/10.1002/bes2.70068>

Program summary

The 2025 Pulse began with a welcome by Bald Eagle Woman, Suzanne Donaldson, a citizen of the Cowlitz Indian Tribe. In 2023, Lawetlat'la (Mount St. Helens) was designated as a Traditional Cultural Property for its cultural significance to the Cowlitz Indian Tribe and the Confederated Tribes and Bands of the Yakama Nation and listed in the National Register of Historic Places (Property ID 13000748). Traditional cultural properties in the region are recognized by and based on government-to-government relationships and agreements to protect the lands and resources. Suzanne explained that Lawetlat'la has spiritual energy that provides guidance to the Cowlitz people, and the 1980 eruption was a way for the mountain to release that energy.

The Pulse included four field trips led by Mount St. Helens researchers, including hiking trips in the debris avalanche and pyroclastic flow disturbance zones, a roadside tour of the blowdown forest, standing dead forest, and tephra fall disturbance zones, and a tour of management areas in one of the lahar zones (North Fork Toutle River basin), with a focus on sediment retention efforts, anadromous fish management, and beaver reintroductions. Field trip attendees learned about investigations of primary and secondary plant succession, initial influences of the eruption and spatiotemporal changes in terrestrial and aquatic systems over the last 45 years, effects of secondary disturbances and biotic interactions, and outcomes of human management activities.

The value of observational studies as well as experiments was made clear by several examples presented at the Pulse. Some key learnings from studies at the volcano to date are that (1) different types and intensities of disturbances that occurred with the 1980 eruption have influenced rates and trajectories of ecological responses, (2) conditions prior to the eruption affected ecological responses in areas experiencing secondary succession, (3) complex patterns of succession across the landscape have resulted in a mosaic of ecosystems, (4) introduced nonnative species and human interventions have influenced ecological trajectories, and (5) the landscape is still changing 45 years after the eruption (see Dale and Crisafulli 2018). In addition, several ongoing and proposed management actions were discussed at the Pulse, such as sediment retention strategies and anadromous fish reintroduction efforts, providing an opportunity for face-to-face input from the scientific community.

While long-term research efforts are still going strong 45 years after the eruption, many of the original researchers have retired. Recruitment of scientists and students to continue these long-term studies and initiate new research is critical to maintain a vibrant scientific community at Mount St. Helens. The 2025 Pulse promoted research engagement through a networking event that connected new and established researchers and workshop sessions that focused on determining research barriers and identifying opportunities for new research avenues and collaborations. Established researchers gave presentations to share the current state of knowledge and led discussion groups to identify new directions and possible collaborations. Challenges with long-term research and monitoring at Mount St. Helens include turnover of scientists, funding, changes in methodology and technology, data sharing and storage needs, and management actions.

The 2025 Pulse was held at the Mount St. Helens Science and Learning Center, an ideal location for scientists and managers to engage with educators from the Mount St. Helens Institute. This unique opportunity for science communication through direct engagement and dialogue promoted an increased

understanding of the ecological processes observed in the past 45 years and discussion of potential management implications. Additional information on research at Mount St. Helens as well as the event program and photographs from the 2025 Pulse are available through the USDA Forest Service Pacific Northwest Research Station (<https://research.fs.usda.gov/pnw/projects/mountsthelens>).

The next pulse

The 50th anniversary Science Pulse will occur in the summer of 2030. That event will be a new opportunity to learn about the forces of nature shaping ecological changes around Mount St. Helens, to initiate new research, and to continue ongoing research into the second part of the century. The 50th anniversary Pulse will invite scientists and their students as well as visual, written, and verbal artists to participate. If you are interested in attending, please contact Donald Brown (donald.brown2@usda.gov).

Open research statement

No data were collected for this study (i.e., theoretical, review, opinion, editorial papers).

Literature Cited

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