

Days after Idaho's earthquake, experts seek answers about historic, unexpected event

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Credit: CC0 Public Domain

About half an hour before the ground began shaking last week, Glenn Thackray had fired off an email to a colleague about launching more research on the Sawtooth Fault, a tectonic plate boundary in Central Idaho that Thackray discovered a decade ago.

So when the earth began rumbling later that night, Thackray's first thought was that the Sawtooth Fault was moving.

"The first thing I heard was there was a (magnitude) 6.5 [earthquake](#) in the Stanley area, and my first assumption was it was the Sawtooth Fault," said Thackray, who has been teaching geosciences at Idaho State University for more than 25 years.

But in the days since the March 31 earthquake, Thackray has puzzled over whether his assumption was right. The earthquake, believed to be the second-strongest on record in Idaho, originated about 21 miles northwest of Stanley, according to data from the U.S. Geological Survey.

"It's in an odd location for the Sawtooth Fault itself, being up in that corner where Highway 21 makes the big loop," Thackray said.

When he learned the earthquake was caused by a strike-slip fault—one in which tectonic plates move past one another horizontally—rather than a normal fault that causes vertical movement, he had even more questions.

"When the first information came out about how (the earthquake)

moved, it didn't make sense for the Sawtooth Fault," Thackray said. "That's not to say the Sawtooth Fault wasn't involved in some way, but that's a detail that's of great interest to geologists." Where was epicenter of Idaho earthquake? Thackray said the geologic feature where the March 31 earthquake likely originated "appears to be a fault that cuts across the Sawtooth Fault west of Stanley." The U.S. Geological Survey said it doesn't appear there has been seismic activity in the immediate vicinity for more than 50 years.

"It's a fault that has been thought to possibly be still active," Thackray said. "We don't know a lot about that area." Thackray said two fairly [large earthquakes](#) likely occurred in a similar area in the 1940s, according to 1980s reanalysis of data from the initial events.

"Of course, now everybody is looking at those earlier earthquakes there and saying, 'Oh, maybe this is in the same fault system,' " Thackray said.

Lee Liberty, a seismologist at Boise State University, said he sees potential ties to the Sawtooth Fault.

"We don't really know the characteristics of the earthquake and the aftershock," Liberty said. "It sure looks like there's been motion on the Sawtooth Fault. We hope to have that nailed down." Unfortunately, multiple obstacles have hindered researchers from collecting more data on the quake: [heavy snow](#) in the area, a lack of cell phone reception and, of course, restrictions in place due to the coronavirus pandemic. Still, a small team of scientists from Boise State, including Liberty, has been able to visit the site and set up earthquake monitoring equipment.

"We've installed seismic stations but we haven't looked at the data," Liberty said in a phone interview. "There's no way to look at it in real time." The quake (and its 230 recorded aftershocks as of Tuesday morning) occurred in a remote part of Idaho near the aptly named Shake

Creek. That was both a blessing and a curse.

Liberty's team had to dig holes 4 feet into the snow, then another foot into the ground in order to set up the stations. But the lack of cell service in the area creates a conundrum for the researchers when it comes to relaying data. Liberty said his team plans to set up a telemetry system using equipment provided by the U.S. Geological Survey.

"We are fortunate in Idaho that some of our largest earthquake-potential faults are in very remote areas," Liberty said. "So we're very fortunate compared to something like a Seattle or a San Francisco or an L.A. where they have faults running right through downtown." Thackray said a notable earthquake on the Sawtooth Fault likely would cause the Sawtooth Mountains to rise several feet, while the Sawtooth Valley—and the towns in it—would drop.

"If the Sawtooth Fault moved, the epicenter would probably have been closer to Stanley," he said. "So just for that simple fact, it would probably have been more damaging." More data on quake will teach us about future Idaho earthquakes, researchers say.

Though Idaho has some of the highest rates of [seismic activity](#) in the country, its earthquake monitoring network is not as comprehensive as those in states like California, Alaska, Nevada and Utah, according to Liberty.

"We rely on really robust waveforms or seismic signals from stations (to get earthquake information)," Liberty said. "Anything less than a (magnitude) 2.5, we don't have stations close enough to assess that. There are earthquakes all the time, but we're not able to detect them." Liberty and Thackray are looking forward to the information that's to come from more research around the site where the March 31 earthquake originated. It could tell us about future

earthquakes—including aftershocks that both scientists said are likely to continue.

"One of the reasons ... (experts) are very focused on this is that we need to understand what has moved there and how it has moved, and one really important part of it is the aftershocks we see," Thackray said.

"Over the next month, we'll definitely know more about this [fault](#). The aftershocks are disturbing, especially for people in the area, but they do tell us a lot." The scientists said we could see aftershocks as large as magnitude 5.0—though the likelihood of another earthquake in the coming weeks that's as large as the initial quake is about 2%, Thackray said.

Thackray said he's still hoping to pursue the research he'd proposed just minutes ahead of the quake to learn more about the myriad faults in the area and when we might expect another earthquake to shake the state.

"There could be another one tomorrow or there might not be another one for 80 years," Thackray said.

Liberty said that unpredictability should serve as a warning to Idahoans to be ready for potential earthquakes in the future.

"It's important to emphasize to be prepared and expect ground shaking," Liberty said.

Idaho 21 reopens Idaho Transportation Department crews have cleared the tons of rock and snow that closed the Idaho 21 highway between Lowman and Stanley after last week's quake, which triggered several avalanches and landslides in Canyon Creek, an 11-mile corridor west of Stanley.

"I've been here 13 years and never seen so much rock and earth hit the

highway," said Bill Nicholson, who leads the Lowman avalanche crew, in a press release from ITD.

Maintenance crews from Lowman and Stanley attacked the cleanup from both sides, according to the release. In just four days, they removed an estimated 2,000 cubic yards of debris and patched the road, which had been damaged by falling rocks.

The highway is now open to traffic.

"The community of Stanley sees Highway 21 as an important connection," said Stanley shed foreman Brad Lynch. "It's the most direct route to Boise and the Treasure Valley."

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