

Northwest residents should channel fear of earthquake into pragmatic action

July 24 2015



A national news article suggesting that everything in Oregon west of Interstate-5 "would be toast" in a major Cascadia Subduction Zone earthquake certainly drew attention to the seismic reality facing the Pacific Northwest.

The concern, though, is that people are focusing on the most draconian or extreme scenarios, experts say, which can lead to a sense of fatalism. The reaction illustrates the state of [earthquake](#) and tsunami preparedness – or lack thereof – in the United States, said Patrick Corcoran, a Sea

Grant education and outreach specialist at Oregon State University who works with coastal communities on disaster preparedness.

It's a matter of feast or famine.

"The Cascadia Subduction Zone has shifted from a science project to a social studies project," Corcoran said. "We need to find a sweet spot between fear and action. What I try to do is temper the tendency of people to toggle between the poles of 'it won't happen here' and 'it will be so bad that there's no use worrying about it.'"

Oregon has been taking some of the first serious steps toward earthquake mitigation, said Scott Ashford, dean of OSU's College of Engineering and chair of governor-appointed task force on preparation. Recent legislation has resulted in a large increase in funding for K-12 and emergency facility seismic retro-fitting, as well as the creation of a new position – the state's first Chief Resilience Officer.

Oregon is also working on some of the first tsunami building codes, which likely will be implemented over the next few years.

Oregon State University scientists have been warning Pacific Northwest citizens for more than a quarter of a century about the potential of a major earthquake in the Cascadia Subduction Zone. The subduction of a tectonic plate beneath North America has the potential to trigger an earthquake ranging from magnitude 8.0, as happened in Chile in 2010, to 9.0 (or greater), which took place in Japan in 2011.

Scientists believe that a magnitude 9.0-plus earthquake, which Corcoran calls "the largest of the large," would likely trigger a tsunami that could devastate coastal communities, while the earthquake could destroy infrastructure throughout western Oregon and Washington, including roads, bridges, water and sewer lines, and the power grid.

However, he added, the more probable scenario is an earthquake on "the average side of large," where the damage is less. The best response isn't necessarily to flee the region, Corcoran said, but to become pro-active in preparing for a disaster.

As residents in Japan, Nepal, Chile and other countries have done, Northwesterners need to learn to live with the realistic threat of an earthquake and tsunami – not ignore the threat and hope they don't happen.



Scott Ashford measures ground upheaval in Japan.

The best approach, Corcoran says, is to prepare for the "most likely next event" – and that doesn't necessarily mean the destruction of western Oregon as we know it.

"We don't insist on the worst-case scenario with driving vehicles," Corcoran said. "We don't have a zero-tolerance for car fatalities. We try to do our best to identify and mitigate the risks, but we assume a great deal of risk. We don't require that all cars be able to hit a brick wall at 100 miles per hour and have passengers unharmed. That's impractical. We need to consider a similar approach with earthquakes."

Chris Goldfinger, a professor in OSU's College of Earth, Ocean, and Atmospheric Sciences and a leading expert on the Cascadia Subduction Zone, estimates that the chances of a major earthquake off the coast from northern California to just south of Astoria are about 24 percent in the next 50 years. "South of Cape Blanco, Ore., the chances increase to about 37 percent," he added.

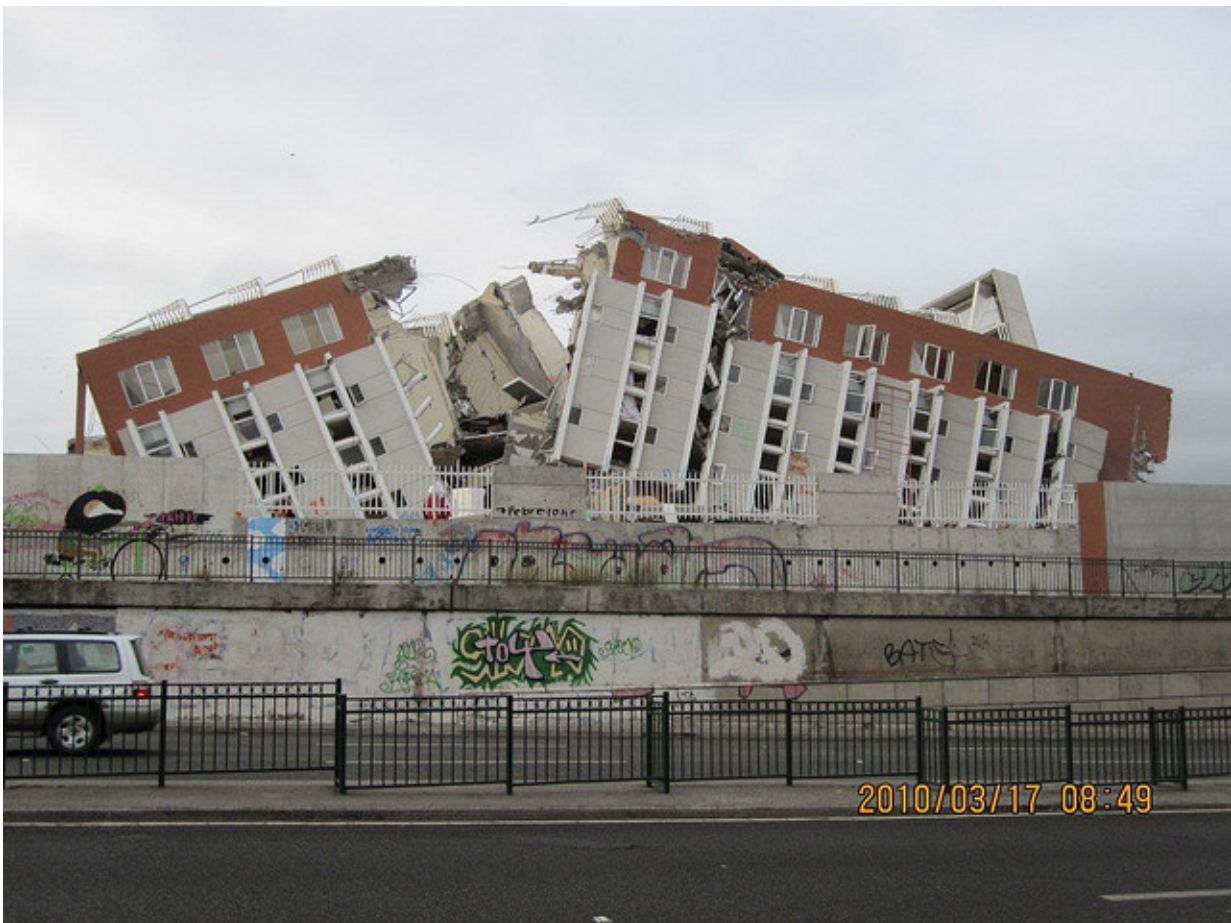
Goldfinger said the furor in news reports and on social media about western Oregon becoming "toast" have been misconstrued. The Federal Emergency Management Agency has to prepare for a worst-case scenario as the starting point for its planning, he said, but that doesn't mean that experts think western Oregon will be destroyed.

So, how big will the next Northwest earthquake be? No one knows. Thus outreach specialists like Corcoran say the prudent thing to do is plan for a range of events. "Discussing the range and likelihood of the next event can bring some air into the room."

Corcoran said preparation helped save 90 percent of the 200,000 people in the inundation zone during Japan's 2011 earthquake and tsunami. The Northwest has a much smaller coastal population, he added. On the other hand, Japan was much more prepared for disaster.

"We have to prepare commensurate with the risk," Corcoran said. "Our society tends to be dismissive of preparation, especially evacuation drills. They are silly, they are embarrassing and it's usually raining. The only people who actually do drills are high schools and hospitals because they are required to. But drills save lives, as they learned in Japan."

Communities and individuals can prepare for natural disasters by understanding that they eventually will happen. Once you accept that and actually expect it, Corcoran said, preparation becomes second nature. Strap down water heaters, learn where the shutoff valve for natural gas may be in your house, and have several days of food and water available, he added.



An earthquake-topped building in Chile.

People on the coast living in inundation zones should identify areas of high ground near their homes, work and recreation areas. "Work locally to make them accessible," Corcoran said, "then conduct practice drills on how to get to them."

OSU engineering dean Ashford is spearheading an initiative called the Cascadia Lifeline Project that is organizing public utilities, transportation agencies, and others to begin work on how to prepare for life after a major earthquake. Communities need to think about restoring vital services after an earthquake, including power, water, sewer and others.

Ashford testified to Congress in May about the need for public agencies, private businesses and individuals to develop the resilience to withstand an earthquake. He urged Congress to support three federal initiatives:

- Invest in more resilient transportation networks that will be critical to rescue, relief and recovery efforts following a natural disaster;
- Partner with states to require seismic resilience of federally regulated utilities that transport liquid fuel through pipelines and supply the majority of a state's population, such as in Oregon;
- Invest in applied research to improve earthquake resilience.



Patrick Corcoran works with coastal communities.

"It will take 50 years for us to fully prepare for this impending earthquake," Ashford said. "We can't simply go out and replace all of our existing infrastructure. But we can start now, and we can begin to find ways to better retro-fit, replace or repair things after an earthquake."

Corcoran said most people are not tuned into long-term threats like 300-year earthquake cycles. Since people in the Pacific Northwest only recently learned about this major recurring natural disaster, it is natural for some to feel blindsided by the knowledge and not fully embrace it, he added.

Recent media attention has wakened some people to the idea of an earthquake, but it is critical to channel that awareness into positive action, he said.

"As good as our local emergency officials are, they will be overwhelmed by the sheer magnitude of the circumstances when a major earthquake takes place," Corcoran said. "Preparation must begin with the individual, then focus on mutual aid among neighbors, and finally on public aid and assistance. Businesses, too, must support the safety of their employees and customers."

Provided by Oregon State University

Citation: Northwest residents should channel fear of earthquake into pragmatic action (2015, July 24) retrieved 25 April 2024 from <https://phys.org/news/2015-07-northwest-residents-channel-earthquake-pragmatic.html>

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