

Not My Fault: The elephant in the room isn't quakes, but fear of them

Lori Dengler/For the Times-Standard

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The coastal and offshore area of Humboldt County is the most seismically active area of the contiguous 48 states. This region accounts for just under half of the total amount of earthquake energy released in the US mainland. Most of our quakes occur on offshore faults – the Mendocino fault (the source of last Thursday's magnitude 5.8), and faults within the Gorda plate.

Back in 1992, I co-authored a paper on the sources of North Coast seismicity with colleagues at HSU. We identified possible offshore and onshore earthquake areas and summarized the significant quakes since 1850, when the first newspaper records from the area began to be published. We've had plenty of quakes in all the areas we identified except one – the Cascadia subduction zone.

The Cascadia subduction zone is the 700-mile long region that extends from Cape Mendocino about 30 miles south of Eureka to Vancouver Island, Canada. It is a convergent plate boundary marking the area where the oceanic Gorda and Juan de Fuca plates are being pulled by gravity (subducted) beneath the North American plate. Try to visualize what this zone looks like. It is a slanting plane or ramp that gently slopes to the east. It breaks the seafloor near the edge of the continental shelf and then deepens heading inland. Along the Humboldt coast in Eureka and Arcata, the interface is about eight miles deep. By Willow Creek, it's about 15 miles beneath the surface and reaches 60 miles beneath Mt. Shasta. Most of the time, the upper 50 or so miles of the interface from the continental shelf to a little east of Willow Creek is locked tightly by the weight of the overlying rock. But, like a conveyor belt, gravity keeps pulling the plates downward and eventually the strength of the interface is overcome. A rupture rips along the locked interface and the North American plate springs to the west, releasing the stored energy.

Last Friday marked 318 years since the last rupture of the Cascadia subduction zone. The best remembrance of that earthquake is play the mental experiment of imagining what would happen if that same earthquake were to happen right now and think about preparedness.

First, I have to acknowledge the elephant in the room. No it's not the Cascadia quake. It's the discomfort that so many people feel when talking about earthquakes. FEAR. Fear is a natural human reaction to perceived threats. We have a complex relationship with fear – from seeking it out in movies and amusement parks to avoidance when it comes too close to home. For many people, earthquakes fall into the latter category. The more subject is ignored, the bigger the elephant tends to grow. It needs to be faced head on and only by looking at what it is and what it isn't can we take action to minimize its impacts.

I'll start by saying you will survive this earthquake. This bears repeating. You will survive this earthquake. And you actually have quite a bit of control on how well you will survive and weather the hours and days afterwards. In even the largest of quakes, the safest thing to do while the ground is shaking is to stay put – get under a desk or table if one is nearby and stay put. Practice Drop, Cover and Hold On drills with your family. You can reduce the non-structural hazards in your home – all of the items that can fall from shelves and slide and break. Strap down the water heater and have your foundation inspected if you live in an older home. Contact your county or city building department to find out how to have the seismic safety of your home assessed.

You will survive. But you will be isolated from other parts of the community by landslides and road and bridge failures. Power and communications will be compromised. You may find yourself cutoff from family and home. It may take weeks or longer to fully clear debris and restore utilities. Be prepared to be on your own. That means food, water, medical and pet supplies. Think about all you need if you were cut off for a week or two weeks.

You will survive. The shaking will last for two or three minutes or perhaps a little longer. If you live on the coast in a tsunami zone, you should have no problem recognizing that this was what was meant by a "natural tsunami warning". As soon as the shaking diminishes enough to safely stand and move, head inland or to high ground. Practicing ahead of time makes a big difference – you will know what to do and where to go. The posted tsunami hazard zone signs and maps are all based on this worst-case Cascadia tsunami.

Get to know your neighbors and build a neighborhood resilience plan. Take a Red Cross first aid and CPR class. Find out how to become CERT trained (Community Emergency Response Team). Contact your County Office

of Emergency Services or Red Cross Office to find out how to sign up for the next CERT training.

Taking action will reduce that elephant down to size. It will also make you feel good – that you have done what you could to make your family safe, that you do have some control, and that you WILL survive.

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