



Elkhorn Slough harbors the largest tract of tidal salt marsh in California.

■ **Elkhorn Slough** (Santa Cruz and Monterey County) — This is a kayaking, wildlife-viewing wonderland.

The seacliffs at Cove Beach in Año Nuevo State Park.



■ **Año Nuevo State Park** (San Mateo County) — Año Nuevo is host to large seasonal population of elephant seals and other marine mammals, and also has scenic beaches and access to coastal mountain hiking.



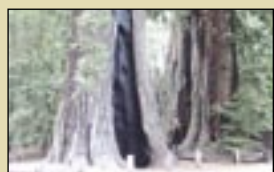
The rugged sea cliffs along the coast trail in Wilder Ranch State Park.

■ **Wilder Ranch State Park** (Santa Cruz County) — This park has many miles of hiking and riding trails, including trails along an undeveloped 4-mile stretch of sea cliffs.

The outcrops of limestone on the top of Black Mountain.



■ **Black Mountain** (Mid Peninsula Open Space Preserve, San Mateo County) — This is an exceptional hiking area within the central Santa Cruz Mountains.



Two large, fire-scorched Coastal Redwoods in Big Basin State Park.

■ **Big Basin State Park** (Santa Cruz County) — This has a relatively untouched stand of great coastal redwoods, but the park also has many miles of hiking trails that extend from the crest of the Santa Cruz Mountains, near Castle Rock State Park, to the coast at Año Nuevo.

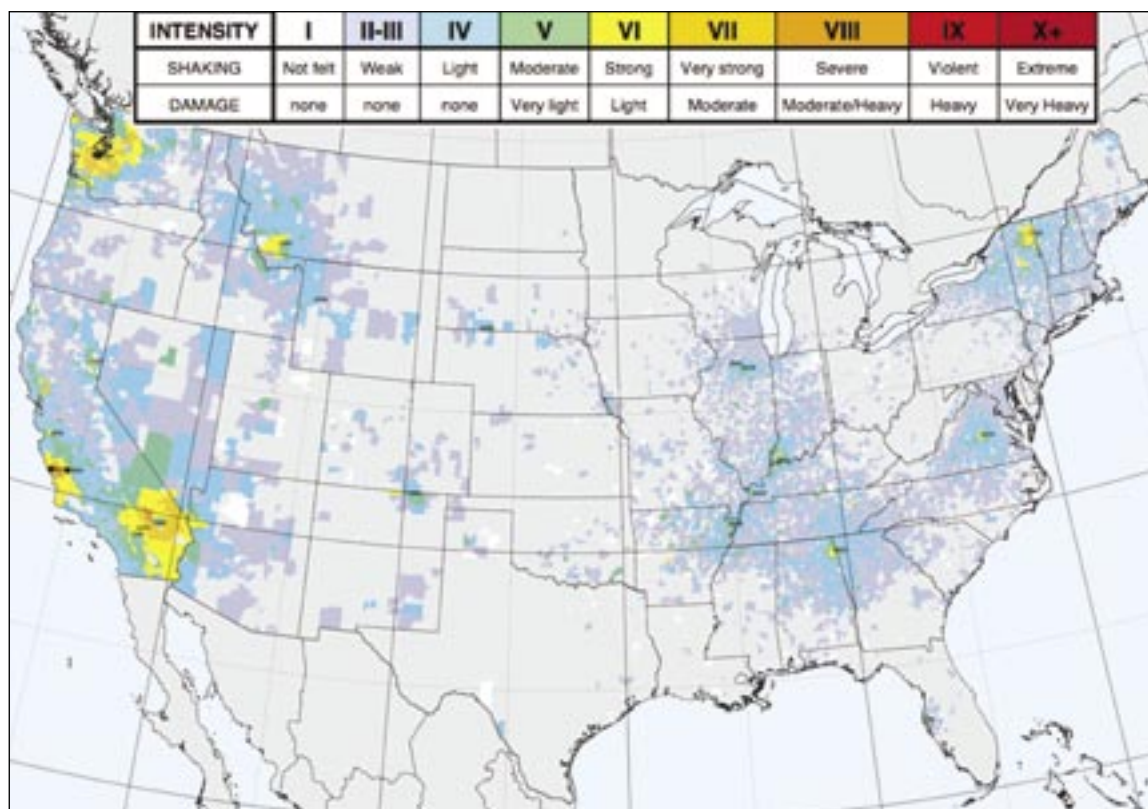
One of the unusual rock formations along the trail system at Castle Rock State Park.



■ **Castle Rock State Park** (Santa Clara and Santa Cruz Counties) — This park straddles the crest of Castle Rock Ridge in the central Santa Cruz Mountains and provides exceptional hiking and rock-climbing opportunities.

Did You Feel It?

Citizen Science Goes Seismic



This map shows responses for ZIP codes in the conterminous United States since Did You Feel It? started. More than 500,000 individual responses have been measured. Earthquakes have been felt in all 50 states and in the U.S. territories.

By Heidi Koontz and David Wald

Have you ever been through an earthquake? Did you know that reporting your experience during an earthquake can help save lives and property during future quakes?

As a result of work by USGS with the cooperation of various regional seismic networks, the world can log in on the Internet and tell USGS scientists what they felt during an earthquake.

By logging on to the USGS Earthquake Hazards Program Web site (<http://earthquake.usgs.gov>) and clicking on the “Did You Feel It?” link, the public can help provide information about the extent of shaking and damage during earthquakes. These “citizen scientists” may also provide specific details about how their area may respond to future earthquakes.

Did You Feel It? and ShakeMaps have revolutionized the way earthquakes are reported and how emergency responders take action.

USGS scientist David Wald knew these tools could help communicate post-earthquake information. But when he wrote a computer program on a whim in the late '90s, he had no idea how pivotal these instruments would become to citizens, a.k.a. Netizens, and emergency responders.

“We wanted to make the science tangible and allow the users to tell us in simple terms how the quake impacted them, so we could in turn create some-

As a result of work by USGS with the cooperation of various regional seismic networks, the world can log in on the Internet and tell USGS scientists what they felt during an earthquake.

thing user-friendly for emergency personnel to rely upon,” said Wald, who created the software along with Vincent Quitoriano and James Dewey.

Not too long ago, the first thing that most people did after feeling an earthquake was to turn on their television or radio for information. Recently, more and more people turn to the Internet instead, not only to obtain information, but also to share their experience of the earthquake.

Users enter their ZIP code and answer a list of questions, such as, “Did the earthquake wake you up?” and “Did objects fall off shelves?” These responses are compiled into a database, and within minutes, a map to take shape on the In-

ternet. In a couple of hours, with several thousand responses at times, a Community Internet Intensity Map shows where and how strongly the earthquake was felt and where damage has been reported.

The maps are then continuously updated as additional data are received. Did You Feel It? Summarizes the responses, and an intensity value is assigned to each ZIP code received. The intensity may change as more questionnaires are submitted, and the map reflects these modifications. ZIP code areas are color-coded according to the intensity scale that accompanies the map. From the user's perspective, Did You Feel It? is interactive, providing instantaneous feedback on the individual's intensity along with a link back to the maps.

During the past five years, more than 500,000 reports for earthquakes ranging from magnitude 2.0 (New Jersey, April 2004) to magnitude 7.9 (Alaska, December 2001) have been logged via the Did You Feel It? Web site. Events have been felt in every state in the nation, as well as in Puerto Rico, Guam, the Virgin Islands and other U.S. territories. What's more, other phenomena, often initially perceived as earthquakes, have been widely reported with Did You Feel It?, including sonic booms from the space shuttle, other supersonic aircraft and even meteors! Recently, the system went worldwide; and numerous responses for earthquakes felt around the globe, including reports within thousands of miles of the magnitude-9.1 2004 great Sumatra tsunami earthquake, were documented.