

Quakes don't completely shake China's environmental gains, thanks to conservation programs

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This is an area of the Wolong Nature Reserve after (September 2008) the Wenchuan earthquake. Credit: Michigan State University Center for Systems Integration and Sustainability

The impact of China's devastating 2008 earthquake was substantially lessened by environmental conservation programs for some of the country's most fragile habitats, according to research published in a journal of the Royal Swedish Academy of Science this week.

Analysis of [satellite imagery](#) and field data by scientists at Michigan State University and in [China](#) show the quake – and the resulting landslides – affected 10 percent of the forests covering the mountains that are home to endangered species, including the beloved giant panda.

But it could have been worse.

"Conservation programs and natural disasters such as earthquakes are widespread around the world, but little is known about how they affect each other," says Jianguo "Jack" Liu, director of the MSU Center for Systems Integration and Sustainability (CSIS) who holds the Rachel Carson Chair in Sustainability. "This analysis is the first effort to quantify how much natural disasters affect conservation outcomes and how conservation programs reduce natural disaster damage and lessen human impacts."

The analysis of Wenchuan County in the Sichuan Province, the quake's epicenter, shows that expansive national conservation programs appear to have spurred significant gains in forest cover by curbing damaging practices such as logging and farming in the area that includes the famous Wolong Nature Reserve which focuses on giant panda conservation. That gave the forests a bit of a buffer. Even though thousands of acres of forests and topsoil were mowed down by earthquake-triggered landslides, the area still has more forest cover than before the quake, said Andrés Viña, CSIS researcher.

"Eight years of conservation gains were turned around by the [earthquake](#) – it wiped out a lot of forest land," Viña said. "After the earthquake, 39 percent of Wenchuan County was covered by forest – but if it hadn't been for conservation, our analyses show it would only have been 33-percent covered."

Most people living in the Wolong Nature Reserve are ethnic minorities. Their way of life – which has included clearing delicate forests for farmland and chopping down trees for firewood and profitable logging – has been a challenge to a nation seeking to protect the area.

The most notable protection policies are the Natural Forest Conservation

Program, which bans logging and pays local farmers to help monitor the land to prevent illegal activities, and the Grain to Green Program, which encourages farmers to return steep hillside cropland to forest by providing cash, grain and tree seedlings. These programs are creating results the earthquake did not entirely succeed in shaking.

The quake's aftermath presents opportunities to encourage people living high in the mountains of the nature reserve to leave their damaged or stranded homes that are close to panda habitat by offering incentives to live closer to the main road.

"This provides an opportunity to further expand conservation efforts," said Zhiyun Ouyang, director and professor of the State Key Lab of Regional and Urban Ecology at the Chinese Academy of Sciences in Beijing. "People can be encouraged to move down from the mountain if the government doesn't support rebuilding in ecologically sensitive areas, but instead offers incentives to build in areas where people can be a part of forest restoration and ecotourism."

It is one chapter in the push and pull of environmental conservation as scientists across disciplines struggle to balance the needs of people who live in and around biodiversity-rich areas with the preservation of those valuable habitats.

Liu's group has been studying the complexities of the Wolong reserve for more than 15 years, making it a laboratory for issues playing out across the globe. [Conservation](#) is proving to be an important tool to soften the environmental blow of both natural disasters and human impacts.

Provided by Michigan State University

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