

# Citizen scientists saving lives around deadly 'Throat of Fire' volcano

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Citizen scientists are saving the lives of people living in the shadow of deadly volcanoes according to new research from the University of East Anglia.

A new report published today reveals the success of a volunteer group set up to safeguard communities around the 'Throat of Fire' Tungurahua volcano in the Ecuadorian Andes.

More than 600 million people live close to active volcanoes worldwide. The research shows that living safely in these dangerous areas can depend on effective communication and collaboration between

volcanologists, risk managers and vulnerable communities.

It is hoped that the research will help inform similar community engagement in volcanic and other disaster risk reduction projects around the world.

The report looks at a 35-strong network of volunteers called 'vigías', which was set up 14 years ago in the wake of renewed activity at a historically deadly volcano. The eruptions led to a military evacuation of around 25,000 people from Baños and the surrounding area. But leaving homes, land and livelihoods was hard, and the community rallied together to over-run checkpoints and re-occupy the town.

Lead researcher Jonathan Stone from UEA's school of Environmental Sciences said: "This pattern of re-occupation is common in volcanic areas and after other natural disasters. The people of Baños wanted to go home even though it wasn't safe.

"The volcano's activity has varied from small explosions with ash emissions to violent eruptions with fast-moving pyroclastic flows. Living close by is a real risk, and so the vigía network was set up to help monitor the volcano and protect the community.

"It was initially a compromise between the community and civil protection agencies who were attempting to ensure their safety."

The Spanish word 'vigía' means watchman, guard, sentinel or lookout - but the research shows that the role extends beyond that which the name suggests and that of the normal citizen scientist.

"The vigías are members of the community who help scientists collect data about volcanic activity, are part of a vital early warning system for eruptions, and facilitate evacuations of the community during a crisis.

"The network enables citizens to continue to live and work in a hazardous area by enhancing their capacity to respond quickly to escalating threats. The ideal risk reduction scenario would be to move people out of the way of the volcano permanently, but clearly this is not always practical - people often want to live and work in particular locations for a number of reasons, and anyway - there are few places that you can move in the Ecuadorian Andes that aren't threatened by one or several volcanoes!

"Community based monitoring has the potential to reduce risk by providing useful data, fostering collaboration between scientists and communities, and providing a way in which citizens are empowered to take actions to preserve lives and livelihoods."

The report reveals how one particular eruption in August 2006 was pivotal, with many lives saved in the Juive Grande area thanks to the vigía network. And when further eruptions took place in 2013 and as recently as February and April this year, scientists and responding agencies attributed in part the zero loss of life and injury to the quick actions of the volunteers.

The research team interviewed vigías, other people in the community and scientists to discover why the network was such a success.

Jonathan Stone said: "The area is potentially becoming more dangerous with villages and grazing lands around the volcano's base particularly at risk. One of the reasons why the vigías network really works is because they have a vested interest to be ready for the next eruptive event. They want to work with the authorities to help their communities.

"Scientists are considered friends and colleagues, which also has a big impact on the success of the network. The vigías act as a bridge between the community and the scientists. The [communities](#) are able to more

rapidly trust and act upon advice from the scientists and authorities, because of the vigías.

Prof Jenni Barclay from UEA's school of Environmental Sciences leads the Strengthening Resilience in Volcanic Areas (STREVA) project and contributed to the research. She said: "This kind of research is very important because by examining cases like this, we can learn lessons about the potential of community-based disaster risk reduction in other contexts. It provides valuable evidence for how to reduce volcanic risk in practice, which is a critical step in finding ways of increasing society's resilience to events of this nature."

**More information:** "Risk reduction through community-based monitoring: the vigías of Tungurahua, Ecuador." Jonathan Stone, et al. *Journal of Applied Volcanology* 2014, 3:11 [DOI: 10.1186/s13617-014-0011-9](https://doi.org/10.1186/s13617-014-0011-9)

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