

Trees won't stop tsunamis, scientists warn

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Claims that coastal tree barriers can halt the might of a tsunami are false and dangerous, a team of international marine scientists said today.

There are many reasons for preserving the world's dwindling stocks of mangroves, but protecting people from tsunamis is not one of them, they say.

On the eve of the anniversary of the devastating 2004 Boxing Day Tsunami, which claimed nearly a quarter of a million lives around the eastern Indian Ocean, researchers have issued a strong warning against coastal communities and governments putting their trust in mangrove and tree barriers erected as a means of protection from earthquake-driven tidal waves.

"Following the Boxing Day Tsunami scientific studies were released which claimed that the damage to coastal communities had been less in places where there was a barrier of trees or coastal vegetation," explains Dr Andrew Baird of the ARC Centre of Excellence for Coral Reef Studies and James Cook University.

"As a result there has been a lot of tree planting in coastal areas affected by the tsunami, in the hope it will protect coastal communities in future from such events.

"However these studies looked only at the presence or absence of vegetation and the extent of damage - and did not take account of other important variables, like the distance of a village from the shore, the

height of the village above sea level or the shape of the seabed in concentrating the tsunami's power."

The study by Dr Alexander Kerr of the University of Guam, Dr Baird, Ravi Bhalla and V. Srinivas of the Foundation for Ecological Research, Advocacy and Learning India concludes there is, as yet, no evidence that coastal tree belts can provide meaningful protection against a tsunami or, for that matter storm surges produced by cyclones, such as the surge that followed Cyclone Nargis in Myanmar early this year which killed over 150,000 people.

As a result it would be extremely dangerous to rely on tree planting alone to shield coastal communities in the event of future tsunami or storm surges, they warn - and doing so could lead to further tragedies.

The team's analysis of the pattern of damage of the Boxing Day 2004 tsunami shows that many variables were at work in determining how the force of the water affected people and structures on land, and these all need to be taken into account - not just a few of them.

The findings have major implications for civil defence and emergency planning, the cost of restoring affected regions and in minimizing the death and destruction suffered by some of the poorest communities in the world, the team says.

"The idea that planting 'green belts' can both protect coastal communities and enhance their environment has been widely accepted," Dr Baird explains. "As a result a number of governments, aid agencies and scientists have been promoting it enthusiastically.

"However this could place the communities shielded in this way at future risk. Mangroves should be protected for their conservation value, and for the goods and services they provide to people even if they don't protect

coastal dwellers from extreme events."

"In my own visits to the tsunami-ravaged areas, I saw places where quite heavy vegetation had provided absolutely no protection at all against the force of the ocean, and this led us to investigate the assumption more deeply. It turns out it was not well founded."

To fully explore what drives the flooding following tsunami like the Boxing Day Tsunami, and storm surges, like those that could accompany any of the many cyclones that hit northern Australia each year, an extensive, statistically-sound analysis needs to be carried out of all the factors which may act on the force of the waves driving inland.

These include the height of the settlement above the sea, its distance, the shape of the sea bottom and local land uses. These make the difficulty of accurately predicting tsunami damage much harder - and a problem requiring rigorous analysis for multiple factors and their interaction.

In the meantime, there is much that can be done to limit the loss of life in future tsunami, in particular, early warning systems need to be installed, the population must be educated to recognise the signs of an imminent tsunami and evacuation plans need to be put in place and practised. All these preparations are current in Japan, and should serve as an example to the rest of the world.

Their research report Roles of coastal bio-shields and their putative role in protecting coasts from large weather related disturbance events is soon to be published by the United Nations Environment Program.

Source: ARC Centre of Excellence in Coral Reef Studies

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