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SUMMARY 2

Danielsen, F., Sørensen, M. K., Olwig, M. F., Selvam, V., Parish, F., Burgess, N. D. ... & Suryadiputra, N. (2005). The Asian tsunami: a protective role for coastal vegetation. *Science*, 310(5748), 643-643.

The Asian Tsunami: A Protective Role for Coastal Vegetation

The 2004, 26th Dec. tsunami at the Indian Ocean left significant impacts on coastal ecosystems and coastal communities. In recent decades, coastal vegetation, including the mangroves, have been degraded and cleared along several coastlines, which has escalated their vulnerability to tsunami and storm destruction. Study locations covered approximately 250 kilometers (nineteen locations) on the Sri Lanka southern coast, about 200 Kilometers (twenty-nine areas) on the Thailand's Andaman coast. This research explored the impacts of the coastal-vegetation on the damage of a tsunami based on field studies that were carried out after the 2004 Indian Ocean tsunami. First and foremost, the researchers assessed pre-tsunami vegetation covers employing remotely sensed information and categorized the vegetation as open, dense, or no tress. They then compared between three villages located at a same distances from the coastlines of the tsunami-hit areas. Unprotected villages in Sri Lanka north were also compared with several south towns that Casuarina partly covered.

Despite the study's many weaknesses, the survey data and results revealed that by planting or maintaining coastal forests, human beings increase the protection of areas on the coast against storms and tsunamis. The results suggested that *casuarina* and mangroves plantations significantly weakened the tsunami induced waves and shielded shorelines against severe damage because of their complex root structures. The vegetation also provided a soft landing soft for individuals washed up by the severe tsunami. Observations of the tropical cyclone effect further revealed the looming need to restore or maintain coastal forests, dunes, and wetlands, especially along the vulnerable subtropical and tropical coastlines.

The study on the protective function of this vegetation following the Asian tsunami is essential. It found out that mangroves and *Casuarina* vegetation that grows along the coast were useful in protecting storms and tsunami damage. Following this study, people may now safeguard or plant more coastal vegetation, which may later play a significant role in minimizing future tsunamis and storms. The authors partially accomplished their goals as they did not indicate what types of mangrove forests or trees as more suitable to withstand the devouring winds and tsunami when they hit.

Although Farid Dahdouh-Guebas and Nico Koedam had a pretty strong argument on *Danielsen et al. 2005* results on coastal vegetation's barrier function, I think Finn Danielsen et al. had the better argument. This is because, unlike Farid Dahdouh-Guebas and Nico Koedam, who base their argument on the several caveats not addressed by the authors as the reason for why the study wasn't reliable, *Danielsen et al.* goes a step further and tries to show that shielding function of coastal vegetation against waves can't be generalized to a tsunami. Although Farid and Nico were right to state that *Danielsen et al. 2005* analysis lacked to consider some parts, Danielsen et al. argument is more robust in the sense that yes, coastal vegetation may play a significant protective role but only during tsunamis as that is what the study only looked at, but other things such as storms and sea-level rise the vegetation may not be as helpful as they thought.

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