

# I SURVIVED A TSUNAMI

A Japanese teen lives to tell a tale of tragedy and courage

**DEADLY WAVE:** The 2011 tsunami hits the city of Miyako on Japan's eastern coast.

©MANCHU SHIMBUN/REUTERS/LANDOV (TOP); JOHN SHEER/GETTY IMAGES (BOTTOM); BEYOND TOMORROW (RIGHT)

**WASHED ASHORE:** The wave carried this boat and other debris inland in Masahiro's hometown, Rikuzentakata.

The bell rang on March 11, 2011. Seventeen-year-old Masahiro Kikuchi gathered his books and headed down the hall. As he said goodbye to friends who were staying for after-school activities, he didn't know that this was the last day anyone would walk these halls—or the last time he'd see some of his friends.

Soon after, Masahiro arrived at his house in Rikuzentakata, Japan (see map, p. 15). His parents were at work, and his grandmother was shopping. He hadn't seen his parents before leaving that morning—something that hadn't seemed like a big deal, but that would haunt him later.

No one knew it just yet, but disaster was about to strike the Tohoku region of Japan, leveling towns and leaving 24,000 people dead or missing.

## SWALLOWED UP

Alone at home, Masahiro fixed a late lunch. Suddenly, the house began to shake. The furniture rattled, and a glass bottle crashed to the floor. Masahiro wasn't too surprised because Japan lies in an earthquake-prone part of the world, and buildings are designed



MASAHIRO KIKUCHI

to withstand serious shaking. The rumbling continued for six minutes, but the only obvious damage was the fallen bottle. "Other than that, things were fine," says Masahiro, "so I didn't think it was a huge-scale disaster." But a second phase of the catastrophe was sweeping toward the coast.

Masahiro's grandmother got home as sirens blared, warning of an approaching *tsunami*—a series of fast-moving waves that can sweep far inland. "Tsunami alarms go off quite often in my area, so people are used to hearing them," says Masahiro.

The waves are usually small, but this time, loudspeakers warned that the tsunami could be up to 3 meters (9.8 feet) high. Masahiro wasn't

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worried since his house sat on higher ground, but he was curious. He pedaled his bike up the mountain that overlooked the town to get a better view.

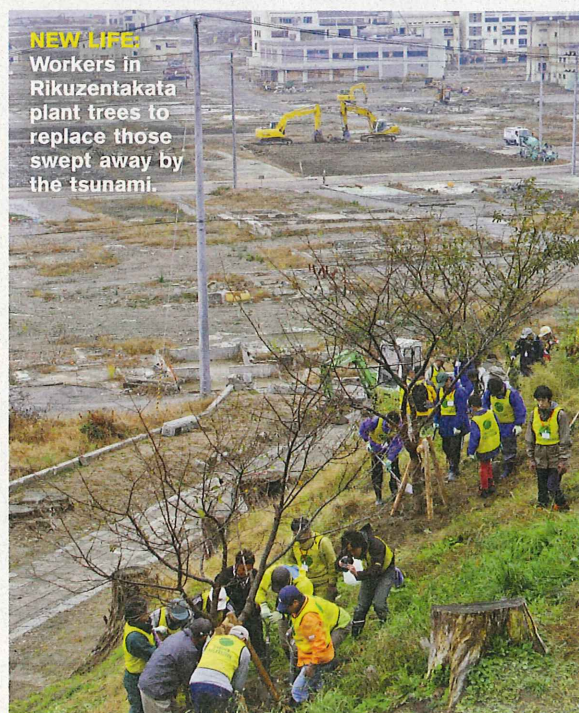
He didn't know yet that this earthquake was one of the five most powerful ever recorded. Under the ocean, it had ruptured a 400 kilometer (250 mile) stretch of *fault*—the boundary between two sections of Earth's crust—thrusting a huge section of seafloor upward. The movement generated a series of monster waves (see *How a Tsunami Forms*, right). And because the earthquake struck only 130 km (80 mi) from land, the fast-moving tsunami gave people little time to react.

From the mountain, Masahiro looked past the pine trees that had been planted along the coast, out to the seawall designed to block tsunamis—and his curiosity turned to fear. This was no 3 meter tsunami. Nine meter (30 foot) waves came pouring over the seawall.

The pine trees dropped like

loose twigs. Screams filled the air as the tsunami swallowed the town. The water swept up buildings and carried them along like bathtub toys, until they crashed and splintered.

People ran up the mountain. Cries arose from a class of elementary school students as their carefully practiced disaster drill fell apart in their panic to outrun the water. One of Masahiro's friends got up the hill, her pants soaked from her narrow escape. She said, "The tsunami



was so high that your house must have been destroyed!" Masahiro panicked—his grandmother was alone in the house.

### DEVASTATION AND DESPAIR

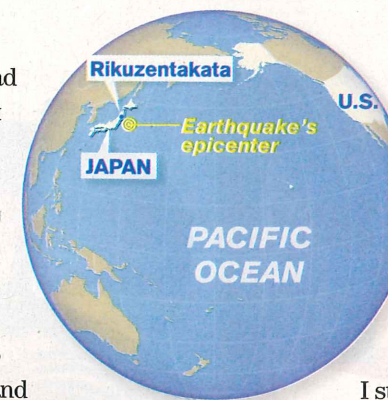
When he thought it was safe, Masahiro hurried home. His neighbors' houses sat in the middle of the street, preventing rescue vehicles from getting through. Farther up the hill, he found his house intact, his grandmother safely inside. With no electricity or running water, they waited by candlelight for his parents to return. No one came.

The next morning, Masahiro walked out into the cold, late-winter air. He ran into a friend who said their high school had been destroyed, but students had evacuated to the hill above it. Masahiro grabbed some food from his house and tried to reach them. Debris blocked the roads, so he hiked up through a bamboo forest. His classmates, still in their school uniforms, huddled around a bonfire. They hadn't eaten since the day before.

"Thinking that I had a home to go back to, I realized how privileged I was," says Masahiro.

Clinging to the hope that his parents had escaped, Masahiro went to a shelter and scanned the list of evacuees. The vast number of names threw him into despair. Throughout the day, he learned about missing friends. One classmate had been fleeing with her parents when the tsunami overtook them, tearing her from their grasp. Her parents survived, but she was swept away.

After a couple of days, Masahiro began searching for his parents among the recovered bodies. Identifying the victims was difficult because they were bruised, injured, and swollen from the water. A couple of times he thought he'd found his



parents, but then he realized he was wrong. At first, the sight of the bodies horrified him. "After seeing so many, I started getting used to it," he says. "And I hated the fact that I started getting used to seeing so many dead bodies."

In the coming days, Masahiro struggled through daily life. To get water, he rode his bike to a mountain stream several times each day. He continued searching for his parents among the dead. At the end of March, he found them. A wave of sadness that seemed bigger than any tsunami swept over him, but he couldn't allow it to overwhelm him for long. "My father was someone the family depended on," he says. "Now that my father was gone, I decided that I had to be the one for the family to count on."

### LONG WAY TO GO

Today, Rikuzentakata is still littered with huge piles of debris. Evacuees still live in shelters. Some businesses have reopened, but the main part of town remains desolate.

Relatives in another town invited Masahiro to live with them, but he and his grandmother decided to stay.

He's in college now and is involved with BEYOND Tomorrow, a program that provides college scholarships and leadership training to young people who were affected by the disaster in Japan. Masahiro dreams of becoming a local government leader so he can help his town recover. His friends plan to work with him. The teenage survivors are determined to make sure their town survives, too. ✨

—Jacqueline Adams

### CORE QUESTION

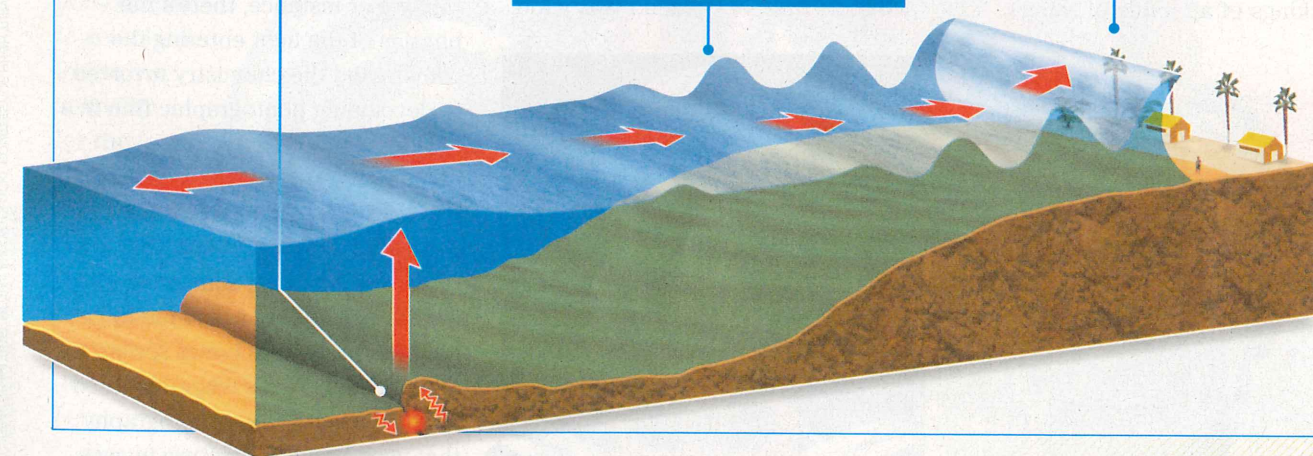
In what ways did Masahiro exhibit courage?

## HOW A TSUNAMI FORMS

**1** An underwater earthquake occurs; the seafloor snaps up, lifting a column of water above it. Gravity pulls the water back down, fanning waves outward.

**2** Individual waves in a tsunami are spread out: The distance between two wave peaks, called the *wavelength*, can be hundreds of kilometers long. Each wave's *amplitude*, or height, is rarely more than 0.9 meters (3 feet) at first.

**3** As waves meet the continental slope and shallower water, wavelength decreases and wave amplitude rises.



Science World would like to thank Masahiro Kikuchi for sharing his story, Minami Tsubouchi of the Global Fund for Education Assistance for acting as his interpreter, and geophysicist Jian Lin of Woods Hole Oceanographic Institution in Massachusetts for answering scientific questions about the disaster.