

The Effect of the Atomic Bomb on Trees

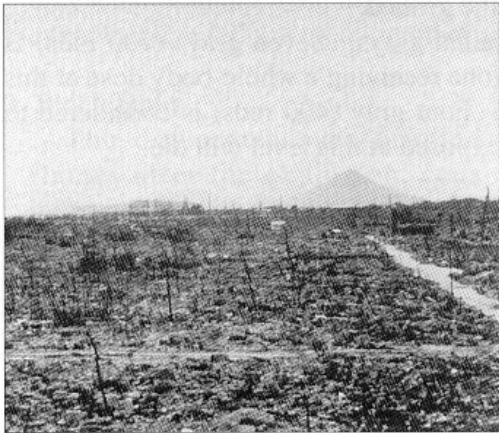
Dale Morris, McMaster University



On August 6, 1945, at 8:15am, the first atomic bomb was detonated on the the city of Hiroshima, Japan. The bomb was released 580 meters above the city and 160 meters northwest of the A-Bomb Dome building. The A-Bomb Dome has been historically preserved to its present day appearance.

Four main effects of atomic bomb detonation are responsible for the damage done to Hiroshima and the surrounding area. The blast shockwave, the heat rays, initial radiation, and residual radiation, were responsible for 50%, 35%, 5%, and 10% respectively, of the total bombs energy. Trees closest to the blast were mainly damaged by the blast wave. Unlike buildings, the

flexibility and structure of trees make them capable of withstanding strong winds from all directions; so many more of the trees remained standing after the blast then one might expect. As seen in the image above, the A-Bomb Dome was significantly damaged after the bombing. Many of the trees around the building remained standing, although they are dead.



The heat rays caused the most damage to the trees of Hiroshima. Temperatures from the explosion reached up to 4000°C on the ground, while wood ignites at 250°C. [Babrauskas, 2001] Most trees as far away as 2.5km from the hypocenter caught fire. The picture to the left is looking off of a building 1.21km from the hypocenter. All the trees in the area are burned, similar to what one would see after a forest fire, however many of the trunks remained standing.

Many trees that were further away from the blast were not exposed to the heat rays. These trees however were exposed to radiation and are still living to this day. These trees in the pictures below are located near the entrance to Hiroshima castle, which was completely destroyed by the atomic bomb. These trees are approximately 1 kilometer from the hypocenter, but because they were protected by the concrete walls around the castle they remained alive. The exact age of the trees are unknown, however estimating from the size of the trunks they are probably at least 80

years old. The people in the pictures below are; Matt in the white shirt, the host family we were staying with and me in the red shirt.



Later generations of tree seedlings from the atomic bomb site seem to be unaffected by the radiation, as they seem to have grown normally. Seen in the picture below is a transplanted maple tree from a tree that was exposed to radiation from the bomb. Although the tree doesn't look too healthy with wooden poles holding it up, there were many little seedlings coming up from this tree within the fenced area.



At first glance of the bombed area it seems completely recovered. The only remains of the bomb are the preserved A-Bomb Dome, and all the little artifacts in the museums. New buildings have been built, new trees have grown, and life seems to have returned to normal.



References

Babrauskas, V., Ignition of Wood: A Review of the State of the Art, pp. 71-88 in Interflam 2001, Interscience Communications Ltd., London (2001).

The Outline of Atomic Bomb Damage in Hiroshima booklet, Hiroshima Peace Memorial Museum, 2002

Figures

Figure 1. Hiroshima: A-bomb Photo Gallery, International Schools Cyber Fair 1998 Project, <http://www.hiroshima-is.ac.jp/Hiroshima/photogallery.htm>, 1998

Figure 2. The Outline of Atomic Bomb Damage in Hiroshima booklet, Hiroshima Peace Memorial Museum, 2002, page 17

Figures 3, 4, 5 and 6. Pictures taken by myself with my camera