

REPEAT PHOTOGRAPHY DOCUMENTS LANDSCAPE CHANGE 75 YEARS AFTER AN HORRENDOUS FLOOD

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Every year, floods change landscapes adjacent to rivers. In order to properly manage such landscapes, we need to know how riverine landscapes recover. Pairing historic and modern photographs of the same location provides a means of evaluating landscape change over time.

In Vermont, the 1927 flood dwarfs all others in recorded history. The flood occurred in November; storm rainfall ranged from 10 to >20 cm. The flood took out 1285 bridges, kilometers of roads and railroads, and countless buildings. Lt. Governor Jackson and 84 others died in the flood. Shortly after the flood, 68 oblique aerial photographs were taken, some of the earliest aerial photos of a major flood and the landscape change it caused. These images are a subset of the thousands available at uvm.edu/perkins/landscape.

We documented landscape change through re-photography of 1927 flood images. The aerial images represent four major rivers in Vermont, the Black, Lamoille, White and Winooski. To determine the flight lines of the original aerial photographs, we marked the four corner points of the image on topographic maps (1:24,000 scale), which created an image trapezoid. Once in the plane (a four seat Cessna), we oriented the camera by using landmarks, either man-made or natural, in the historic photograph. The most useful landmarks included bridges, roads, buildings, and the river itself. When pairing the historic and current aerial photos, it is important that the current photo not only show the same area as the historic photo, but that the angle from which both were taken is similar. One of the best indicators of such similarity were ridgelines, as these have not changed appreciably.

We considered each image pair in terms of landscape change over the past 75 years. Roughly 8% of images show changes in the river channel, 4% are unchanged or show very little change, 24% show road building, and 64% show suburban development. An interesting contrast is the relationship between reforestation and suburban development. It appears that the two are directly correlated, 85% of photos show reforestation and 75% of reforestation photos show suburban development.

This project demonstrates remarkable changes that have taken place since the 1927 flood throughout the state of Vermont. Re-photography of historic images allows us to document this landscape change.

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