

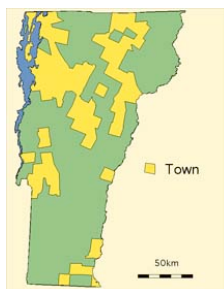
## History

This document traces the development of the Landscape Change Program from its inception in 1999 to the present day (last update, January 2008).

### ***The First Site (1999-2002)***

The Landscape Change Program was started in 1999 by Christine Massey and Paul Bierman, both at the University of Vermont. The program was initially funded by a National Science Foundation grant (GeoScience Education Program, EAR-9907724) entitled *Human-Induced Landscape Change -- A Digital Image Archive Created by Students*. This grant provided support for outreach to more than a dozen high schools in the state and allowed for the creation of the first web archive of images. By the end of the project, a web site was in place with over 400 pairs of images, most scanned and submitted by high school students under the supervision of staff member, Laura Mallard. Laura had help from two summer interns, Lyman Persico, a UVM undergraduate, and a high school student, Naimi Lawrence. They were assisted by Shelley Snyder, a local high school teacher. During this phase of the project, several allied projects were created including a web module [detailing the landscape history of the town of Shelburne](#)

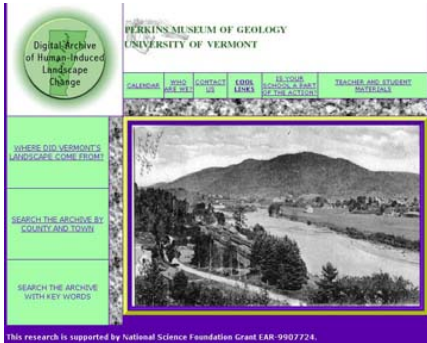
Web pages for each image pair were created manually in programs such as "Dreamweaver" and were initially searchable only by town. Later, through a bit of search engine gymnastics, images were also searchable using a uncontrolled set of keywords. Below are some examples of the web pages that existed during the early days of the Landscape Change Program.



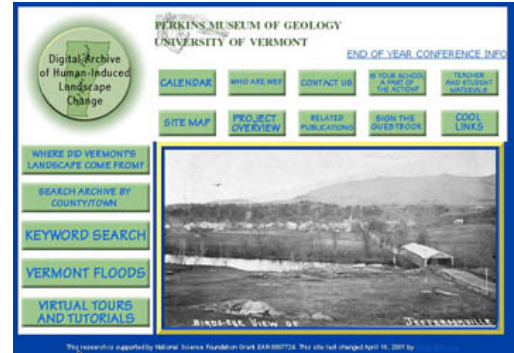
Photos in the original LCP site



Schools contributing to the first LCP site.



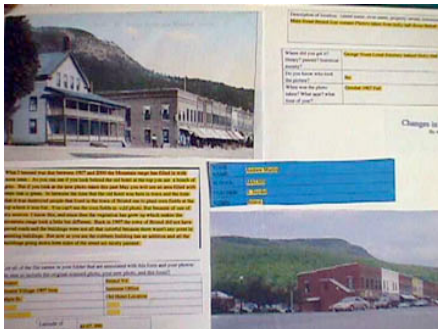
Early LCP home page



Later iteration of LCP home page



High school students locating and re-photographing a historic image.



Poster comparing then and now prepared by a high school student for presentation.

## ***The Second, Database-Driven, Site (2003-2006)***

We soon realized that manual creation of web pages was not going to be an efficient or supportable means of continuing the Landscape Change



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Program. Coincident with with the rapid advance of world wide web technology and the concurrent development of the *Perkins Museum digital archive* supported by the Institute for Museum and Library Sciences, we applied for and received additional funding from the National Science Foundation to expand the Landscape Change Archive and build a new back end that was database driven and resided on University servers. Under this same grant, entitled *Looking Forward -- Scaling Up The Digital Image Archive of Landscape Change* we hired a local professional design firm, New Breed Marketing, to create a new graphical interface for the Landscape Change web site. This second NSF grant allowed us to hire Jens Hilke as a staff person who helped bring the archive to nearly 10,000 images and supervised four summer interns who scanned nearly 9,000 images. The interns were in part supported by an *NSF REU supplement grant* submitted and funded in 2004. In 2005, the program received a grant entitled *Bringing Environmentally Relevant Images into the Public Eye* from the Lintilhac Foundation targeted at student support and the collection of historic and modern images showing road construction, build out of urban areas, ski areas, and the development areas now considered to be affected by sprawl. In 2005, NSF awarded the program a small grant entitled *Landscape Change Imagery: preparing a DLESE-ready and easily searchable resource* to develop and user-test finding aids as well as to standardize metadata and clean up every image in the database so that searching could be done more efficiently, so that information could more easily be shared with other archives and found by search engines, such as Goggle, and so that images looked as good as possible to those viewing them over the web.

While all this tedious back-end work was being completed, images in the Landscape Change Program archive were now being used for an exciting variety of applications including: quantifying landscape change over time in refereed journal publications as *Old landscape images record landscape change through time*, illustrating web based teaching modules such as those we developed for *Learning Landscapes* under an NSF Educational Materials Development grant entitled *Bringing Relevance to Earth Science Introductory Curricula through Images Showing Human/Landscape Interaction*, and teaching an [on-line course](#) through UVM's continuing education division. This course is still taught at least once a year and work from the students is presented as scrapbooks on the Landscape Change Program web site.

During this second phase of the Landscape Change Program, web pages

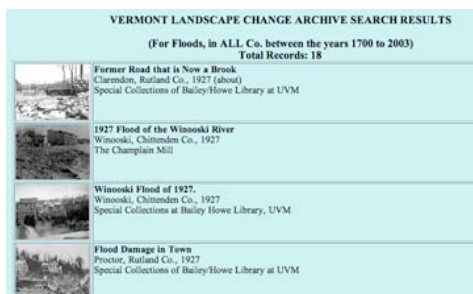
for each image and image pair were created "on the fly" from a large master image stored on the UVM servers and down-sampled to smaller images and thumbnails with each request made over the web. Newly acquired images were key-worded using a controlled, Library of Congress vocabulary but few images were cropped, rotated, or optimized for web viewing. Searching was improved with text searches of descriptions now possible in addition to map and town searches. Below are selected images and screen shots from these, the maturing years of the Landscape Change Program.



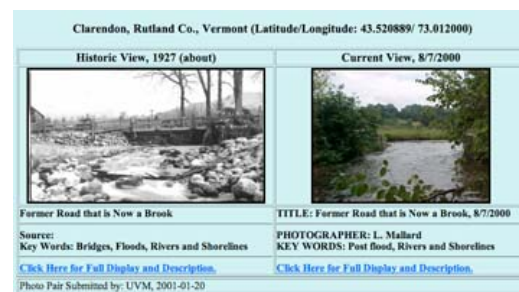
The next LCP home page, c. 2003



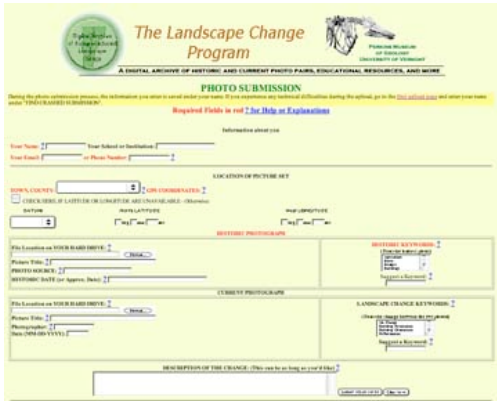
Thanks to faculty member Jon Erikson, the original LCP computers have been re-used and are now in the Dominican Republic as part of a UVM outreach and education program.



Search results page c.2003



Paired image display, c. 2003



Public upload page, c. 2003



The search page, c. 2003



The new homepage, c. 2005



The map search page, c. 2005

## Developing the Current Site (2006-present)

In May, 2005, Bierman was named by the director of the National Science Foundation as a *Distinguished Teaching Scholar* and awarded, a large four year grant to support the work of the Landscape Change Program. The grant, entitled *Landscape Imagery: a catalyst for formal and informal science education* was specifically designed to continue development of the archive, demonstrate ways in which images could be used for education, evaluate and alter the website and its user interface, and disseminate what we have learned to the broader community of image users, educators and archivists. educational materials and ideas. At the core of the grant is the idea that students, teachers, faculty, and the broader community are key to the development of the Landscape Change Program.

The last several years have brought many very exciting changes the Landscape Change Program. Work by a UVM computer science undergraduate and MS student, completely changed the web site interface and created a whole new search engine, image display system, and on-the-fly statistical analysis of the image collection. Restructuring of the database by Wes Wright, a UVM programmer, greatly sped the delivery of images over the web and allowed full text searching of every field in the database. All of the website renovation was proceeded by and followed with user-group evaluations to understand how people used the web interface and what they needed in terms of an interface to help them find images and information. Every image in the database has now been given a date range using historical clues and thousands of community comments enrich the archive. We have been working hard with area teachers in numerous workshops to develop curriculum that can be downloaded by others for use in K-12 classrooms. The Landscape Change Program web site now includes a growing series of tutorials, student-created topical image modules, downloadable powerpoints, links to press coverage and publications about the Program and its images.



Curriculum development workshop, 2006

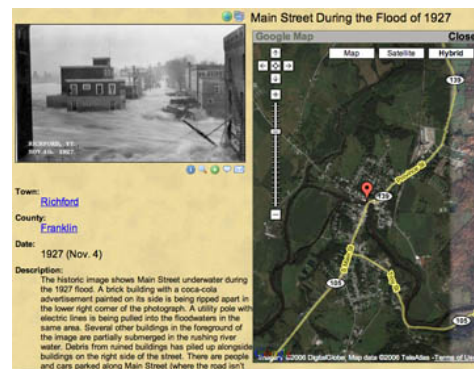


Image display page, 2006