



## Introduction

### Mission

The mission of the *Landscape Change Program* is to preserve, present, organize and make widely accessible, images of Vermont landscapes as they were and as they are. Our goal is to illustrate the complex interaction and feedbacks between people and the physical and biological landscapes on which they live. Using images and their interpretation, we seek to integrate science, history and the human experience. Through images and the information they contain, we strive to understand better, landscape function and change in response to both human and environmental forces.

The *Landscape Change Program* is a service of the University of Vermont and is based in the Geology Department. The core of the program is the website, a community archive containing thousands of images. As funding permits, we are committed to active community outreach including hands-on work with schools and in classrooms.

The *Landscape Change Program* website has many uses. Vermonters use the site to see their history. Geologists use the site to see the impact of storms and logging. Historical societies and museums use the site to make their collections available to anyone, anywhere, anytime. Town planners use the site for historical perspective. Teachers use the site to give their students a sense of place and of history by adopting or adapting the curricular modules we provide.

We partner with museums, historical societies, libraries, and citizens to obtain digital copies of original landscape images and host these images for public viewing. Low resolution images are available free of charge. High resolution originals are available directly from contributing organizations.

We provide the website as a public service. It is intended as a resource for both formal and informal science and history education. It is our hope that the images we collect and display will inform a variety of debates and decisions regarding land use and the environment of the Green Mountain State by providing primary data for research of all kinds



## History

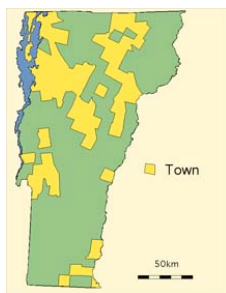


This document traces the development of the Landscape Change Program from its inception in 1999 to the present day (last update, January 2008).

### ***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](#)

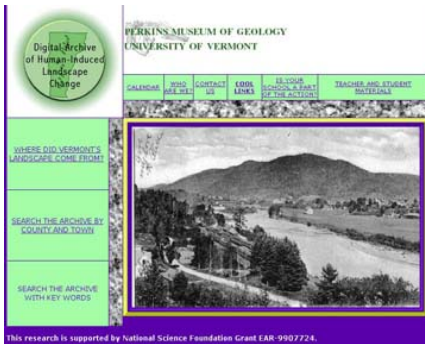
Web pages for each image pair were created manually in programs such as "Dreamweaver" and were initially searchable only by town. Later, through a bit of search engine gymnastics, images were also searchable using a uncontrolled set of keywords. Below are some examples of the web pages that existed during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



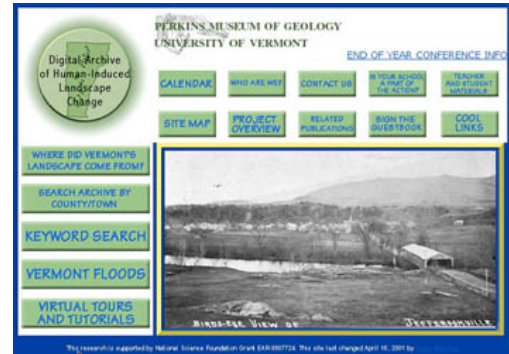
Photos in the original LCP site



Schools contributing to the first LCP site.



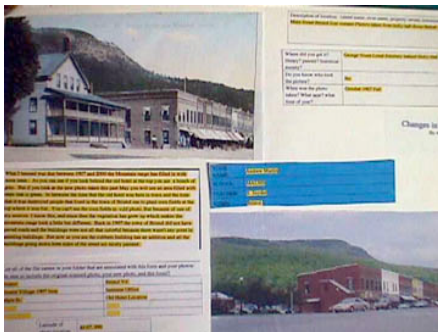
Early LCP home page



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 Program. Coincident with with the rapid advance of world wide web



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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



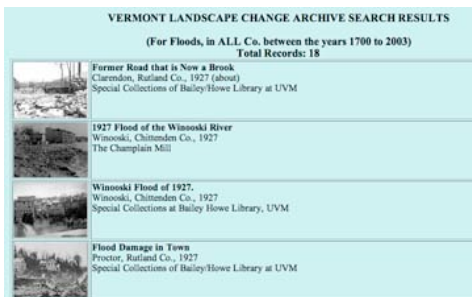
master image stored on the UVM servers and down-sampled to smaller images and thumbnails with each request made over the web. Newly acquired images were key-worded using a controlled, Library of Congress vocabulary but few images were cropped, rotated, or optimized for web viewing. Searching was improved 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.



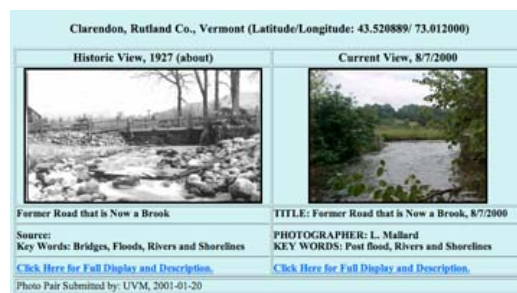
The next LCP home page, c. 2003



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

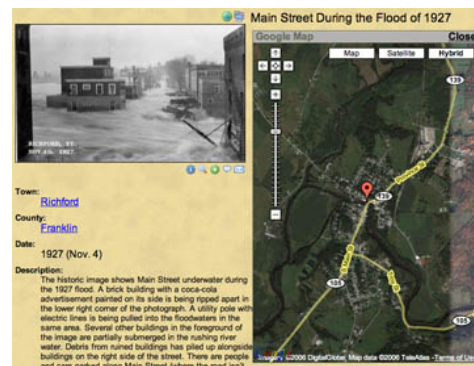


Image display page, 2006

## Branding

When the project began, we laid out several early web pages using simple html editing tools. The work, done by geologists and botanists with no graphics training was simple and there was little coherence between pages other than a similar color scheme. As the website evolved from hand-authored individual pages for each photo pair, to the first iteration of the database-driven site, there remained little consideration for interface design or a coherent look and feel for the web site.

The second round of support for the program from the National Science Foundation provided the catalyst for revamping the web interface and began a process of unifying the look and feel of the web site. We engaged a local design firm with experience in web site creation to design a landing page as well as a detailed site map page. The design firm worked with us to create headers and footers that were installed on all of the site's pages. The design process for all of these elements was iterative and involved multiple concept drafts traded back and forth between the designers and the project staff. Early on in this process, we settled on a look and feel for the web site including a consistent color palette and a feeling of antiquity for the design.

The color palette and graphical elements including the Landscape Change Program logo appear not only on the web site but also on a postcard we use for advertising. The cost for printing postcards has plummeted and so we distribute these cards freely at every event the program is part of.



**See your town as it was  
100 YEARS AGO!**

LANDSCAPE CHANGE PROGRAM

*Burlington's City Hall Park*

1919 1927

Marvel at the damage wrought by the 1927 flood. Find pictures of long-vanished farms. View the Green Mountain state clearcut for sheep farming. See landslides, ice jams, mines, and quarries. Visit our collection and search thousands of Vermont images by place, by date, by topic!

[www.uvm.edu/perkins/landscape](http://www.uvm.edu/perkins/landscape)

**Who uses  
OUR WEBSITE?**

Everyone! Vermonters use the site to see town landscapes as they once were. Geologists use the site to see the impact of storms and logging. Town Planners use the site to learn more about their town's rich history. Historical societies use the site to make their collections available to anyone, anywhere, anytime. Teachers use the site to give students a sense of place, a sense of history.

**Share your images with  
THE REST OF VERMONT!**

Visit our website and upload your own images of Vermont as it was they'll become part of the ever-expanding collection, a true community archive of our state's changing landscapes.

Email us at [glcp@uvm.edu](mailto:glcp@uvm.edu) or write us at the *Landscape Change Program*  
Geology Department, University of Vermont, Burlington, VT 05405



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The Landscape Change Program logo also appears on a poster that we distributed to all state offices, libraries, and schools.

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## See your town as it was 100 YEARS AGO!

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*Montpelier 1927*

*Rutland 1927*

*East Montpelier*

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**PERKINS MUSEUM OF GEOLOGY UNIVERSITY OF VERMONT**

Funded by grants from the National Science Foundation and the Linsley Foundation

Many thanks to the Shelburne Civil History Project, The University of Vermont Special Collections, and the Vermont Historical Society for donating images you see on the poster.

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### Do you have a large COLLECTION OF IMAGES?

We'd be happy to provide advice, scanning, and upload assistance to help get your images on-line. E-mail us at [glcp@uvm.edu](mailto:glcp@uvm.edu), call us at 802.656.4411, or write us at the Landscape Change Program, Perkins Museum of Geology, The University of Vermont, Burlington, VT 05405.

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By unifying the colors, themes and approaches between the website, posters and postcards, we have tried to create a recognizable and consistent look and feel for the program.