

# UNIVERSITY of NEW HAMPSHIRE

## *“Excellence in Outreach Scholarship”*

### *Outreach Scholars Academy*

#### Project Information

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#### 1. PROJECT TITLE: Building a PicturePost Network to take Citizen Science to a New Level:

#### 2. PROJECT DESCRIPTION

I am currently participating in a NASA-funded education project, *Measuring Vegetation Health*, a collaboration of seven institutions led by the Museum of Science in Boston. The PicturePost system was developed as part of that project, which is ending in 2009.

PicturePost enables the taking of photographs repeatedly from the same location and sharing them over the Internet. The concept has generated a lot of enthusiasm among citizen groups, schools, researchers and informal science centers. PicturePost can provide a wealth of information and data to monitor changing environmental conditions, which is critical for a society grappling with the effects of climate change.

My Outreach Scholarship project will build on the PicturePost concept by pilot-testing a post at the Seacoast Science Center in Rye, NH. Lessons learned from the pilot will inform the growth and development of a national, or possibly global, PicturePost Network. We envision that the Network will take citizen science to a new level. It will empower citizens to observe and understand changes in their local environment and offer them a social network over the Internet that fosters the communication and knowledge that leads to action.

My project connects to the outreach mission of UNH by bringing together scientists and informal educators in a joint effort to increase scientific literacy in the public and serves the greater good by engaging citizens in an accessible and interesting science-based activity that serves important Earth system science research and connects them to a larger community through the Internet.

#### 3. BACKGROUND INFORMATION

Scientists recognize that climate change is altering the environment in complex ways, often with unexpected consequences. Recent trends in trees budding earlier than usual in the spring causes migrating birds to mistime their migration and egg laying, threatening the survival of their offspring, which has ripple effects through the ecosystem. Similar changes in species interacting with their environment are taking place everywhere. Citizens may notice some changes in their local environment but often don't have a strong understanding of the magnitude of change or how change may affect them. Citizens often feel powerless to take action. PicturePost is a simple system for citizens to take digital photos for monitoring their environment and by sharing them with others over the Internet, to participate in a growing virtual community. The PicturePost Network will be a made up of citizens as well as nature

centers, researchers, and government agencies, that together can offer solutions to pressing problems associated with climate change and beyond.

#### 4. PROJECT DETAILS

##### Goals and Objectives

The overarching goal of the project is to create a national PicturePost Network for citizens to monitor change-over-time. The Network will serve as a meeting place where interested individuals and groups, researchers and government agencies can all go to learn more about the effects of climate change on their local and regional areas and share their experiences to affect change in their community. As a step towards achieving that objective, the goal of this project is to seed the development of the network by installing and testing PicturePost as an activity at nature centers.

##### Target Population/Audience

The initial target audience is visitors to the Seacoast Science Center. The broader audience includes citizens interested in environmental issues, outdoor enthusiasts, municipalities, schools, and groups that work with children outdoors such as Scouts, other informal science venues, and basically anyone who wishes to better understand change-over-time in a meaningful way and to take part in a monitoring network.

##### Methods

1). *Install the PicturePost.*

We will build and install a PicturePost on the grounds of the Seacoast Science Center.

2). *Create supporting materials.*

We will set up the PicturePost as a hands-on exhibit with the opportunity for visitors to try out taking their own photos and uploading them to the web. We will create a flipbook of laminated photos taken weekly by Center staff at the post so visitors can view the changes to the landscape and quickly become engaged in how to use the post. We will create materials describing how photos of the landscape are used by scientists to monitor vegetation health and change-over-time and also provide instructions on how to build a post at home.

3). *Interact with visitors at SSC and collect visitor metrics.*

We will advertise the activity so that visitors can bring their own cameras or else borrow one from the Center. Most likely, the Center will advertise special “PicturePost Days” to bring visitors in specifically to try out the post. We will talk with visitors and ask them to fill out a brief survey about their experience that will include questions about environmental change and citizen involvement in environmental decision-making.

4). *Follow-up with visitors.*

We will follow-up with visitors who are interested in joining the PicturePost network themselves. We will assist them in setting up a post at their location of interest and in taking and uploading photos.

5). *Evaluate and report.* The surveys and follow-up conversations will be collected and used to determine how to best incorporate PicturePost into the activities of nature centers. We will write up a report for other centers to use in planning their own PicturePost exhibits.



### **Evidence of External Collaboration and Partnership**

New partners will be the Seacoast Science Center (Wendy Lull, Todd Kent) and the National Phenology Network (Ellen Denny, Jake Weltzin). I will continue to collaborate with my *Measuring Vegetation Health* partners at the Museum of Science (Brian Rogan) and Worcester Polytechnic Institute (Fabio Carrera). We have been given some additional funds by NASA to build a new PicturePost website for sharing photos. Currently, the system uses a commercial site, Smugmug that needs to be replaced if we are to support a vibrant on-line community. The new site will have links to satellite imagery that users can view along with their photos. UNH researchers Xiangming Xiao and Barry Rock will provide informative materials about research topics such as changing phenology and using remote sensing for studying vegetation using the photos taken at SSC for demonstration purposes.

*The Seacoast Science Center* will install and maintain the post, which will be designed by both partners and built by UNH. We will collaborate on developing and administering the visitor survey. UNH will manage the web component, including the URL of the site that photos are uploaded to. This collaboration will benefit UNH by providing a wealth of information for designing several components of the proposed Network along with a set of photos from an environmentally sensitive area that can be used for research. The Seacoast Science Center will benefit from testing a new activity for their visitors that fits nicely with their mission to “create connections to nature through personal experience”. PicturePost builds on their GeoActivities program that was designed to get people outdoors and to view their surroundings in new ways.

*The Museum of Science and Worcester Polytechnic Institute* will continue to promote PicturePosts at schools, parks and urban areas in and around Boston. Both will collaborate on the website development. This pilot project will provide valuable information for these ongoing efforts and for future proposals. We plan to seek additional funding for the technical and networking aspects of PicturePost and for training workshops.

*The National Phenology Network*, which has come online this year as a national citizen monitoring initiative, will assist during the planning stage to define what needs to be included in photos that are intended for phenology monitoring. NPN has protocols for their participants to enter phenological data into a web-based form, but not photographs. This project will provide a test case for including digital photographs in their future data collections. Connecting the PicturePost Network with the NPN will greatly enhance the contributions of both to global change research without duplicating effort.

### **Expected Impact**

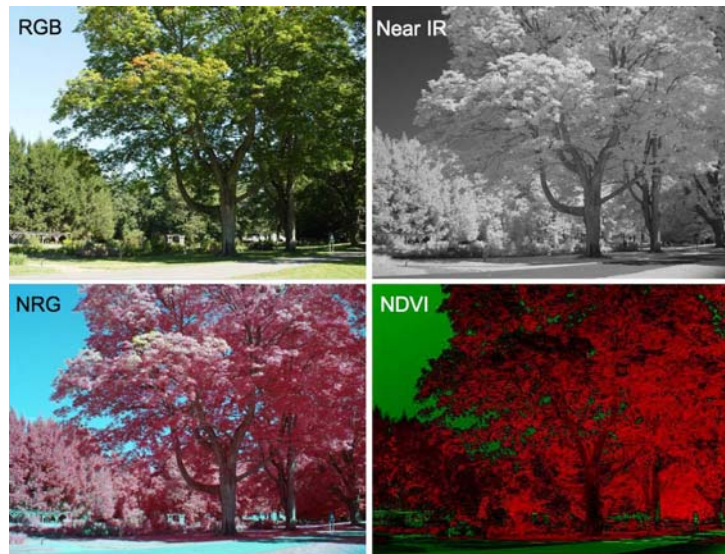
The potential impact of this project is considerable for citizen science, informal science education and global change research. Participating citizens will feel confident that they can contribute to understanding and decision-making on climate change issues where they live. The Seacoast Science Center will promote PicturePost to its peer science centers regionally and nationally as a unique and exciting new type of exhibit. Small science centers are anxious to offer programs that can bring visitors to two or more centers for similar activities that have a local or regional flavor. PicturePost fits that vision very well. The on-line social network sets the stage for creating a loyal following of center visitors across the nation interested in the latest photos and learning more. There is a potentially important impact on global change research as the Network grows and provides a comprehensive photographic

record of change-over-time on the landscape. Similarly, municipalities can benefit from a photographic record of the health of urban trees or ornamental plants. We have only scratched the surface of the potential uses of a digital library of photographs taken repeatedly at the same locations.

### Scholarly Connection

My project combines a simple and fun activity, taking digital photographs, with scientific inquiry into change-over-time and technology in the form of developing an Internet-based social networking site, to engage citizens in viewing their environment in new ways and to empower them to take action on pressing climate change issues that are facing society. Areas of scholarly inquiry are in examining the effectiveness of using these techniques for improving scientific literacy of the public and for affecting behavior change. Although a pilot project is not comprehensive enough to answer these questions, data gathered will be useful towards directing the development of a national citizen monitoring network.

By working closely with an informal science center, I plan to learn more about how citizens view environmental issues and how scientists can better communicate their research to public audiences. I have not yet written journal articles in the area of outreach scholarship, but I expect that this project will yield important insights that can contribute to the literature.



### 5. EVALUATION PLAN

We will interview and survey visitors at the SSC PicturePost to collect metrics regarding their understanding and attitude towards local effects of global

Using photos to monitor vegetation health. False color (NRG) highlights areas (less pink) where leaves are stressed. NDVI is a measure of greenness and has been used to show early onset of spring in boreal forests.

change, their experience using the PicturePost, and their willingness to take and share photographs from their home. We will consult with RMC Research in Portland, ME, an evaluation group that has an ongoing relationship with SSC. One reason that we are excited about placing PicturePost at nature centers came from an assessment carried out last year by students at WPI. They found that unattended posts suffered from vandalism and without a dedicated individual or group to take pictures on a regular basis, do not generate the excitement or intended photo library. Placing posts at nature centers solves both of those problems because staff will maintain the post and take and share photos at regular intervals. This project will help us understand what is needed to engage visitors to use the post at the Center and to join the PicturePost Network themselves.