



# EREN

ECOLOGICAL RESEARCH AS EDUCATION NETWORK

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**Newsletter #4**

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## I. Greetings from the EREN Coordinator's Office

Hello EREN Members – I hope you had a relaxing and productive summer. Over the past months, the EREN Founders worked on developing pilot research projects using the EREN collaborative model, and three such projects were introduced at our workshop at the Ecological Society of America Annual Meeting in August, 2011 in Austin, TX. You should have recently received an e-mail invitation to join the Permanent Forest Plot Project, and information will be circulated soon about the TurtlePop Project and the Aquatic and Terrestrial Leaf Decomposition Project. You can read more about these new projects below and on our web page at [www.erenweb.org](http://www.erenweb.org). The Stream Temperature Project is already underway!

Now that we have specific research platforms, we invite the project participants, and all EREN members, to join us in building the curricular components of these projects, as well as improving methods and protocols as needed. We also would like all EREN members to consider using the network to develop their own projects. We are hoping EREN members will generate grant proposals that involve cross-institution collaboration, engage undergraduates, and advance science. Contact EREN at [erenteam@gmail.com](mailto:erenteam@gmail.com) to discuss how to get your idea off the ground. Contact Lead Scientists directly to get involved in a particular project – see the “Research” link at [www.erenweb.org](http://www.erenweb.org) for project descriptions and contacts.

Finally, save the date of **June 27-29, 2012** on your calendar for the **EREN All Members Meeting, Meredith College, Raleigh, NC**. Travel funds will be available and more details will be coming late in 2011. Thank you so much for your continued interest in EREN. We look forward to productive work together!

Laurie Anderson

## II. Report on ESA Meeting Activities

EREN sponsored a workshop for its members titled “Developing Collaborative Research Projects in the Ecological Research as Education Network (EREN)” on Sunday August 7th, 10:00AM-3:00PM. There were 16 attendees, including both EREN Founders and Members, and the main focus of the workshop was to introduce new EREN pilot projects for feedback, discussion, and recruitment purposes. After overviews of all projects, participants broke into small groups to learn more about the projects they were most interested in. Informal networking occurred during the lunch break. All participants filled out a post-workshop assessment that is currently being analyzed by Institutional Research Consultants, an independent evaluation firm employed by EREN. From the perspective of the EREN Founders, it was a very successful event, and we appreciate those who took the time to organize and attend the workshop!

## III. New Pilot Projects

We hope that all EREN Members will be interested in joining one or more of our EREN pilot projects, designed to test the EREN vision of collaborative research among PUIs that advances science while engaging students. The projects are designed to be very inexpensive and feasible for smaller institutions, and so can likely be done with internal resources, but EREN can provide some financial support for its pilot projects, depending on participant numbers and needs. Contact the Lead Scientists of each project for more information, and watch for formal e-mail invitations to join TurtlePop and Aquatic and Terrestrial Decomposition. The Permanent Forest Plot Project sent out an invitation on August 29 – thanks if you have already joined!

### a. Permanent Forest Plot Project for EREN

Lead Scientists: Karen Kuers, [kkuers@sewanee.edu](mailto:kkuers@sewanee.edu), Sewanee: University of the South, TN, and Erin Lindquist, [erinlind@meredith.edu](mailto:erinlind@meredith.edu), Meredith College, NC

The goal of this project is to establish a set of permanent research plots throughout the United States that will allow faculty and students to address questions related to tree biomass, carbon accumulation, invasive species, and disturbance across a range of sites and ecoregions. Project participants will establish one or more permanent, 400 m<sup>2</sup> plots (20 x 20 meters) in forested areas at or near their home institutions. The protocols have been designed with the goal that work can be conducted as part of a normal class laboratory or as part of student independent research projects.

Data will be entered in an online database that will then be accessible to all participants. One or more educational modules will be developed for use with the database so that faculty can utilize the dataset with students in their classes. Key to the success of this project is that all researchers will use the same protocols so that all data are comparable. Anyone who is interested in following the protocol and adhering to EREN's Data Sharing Policy is encouraged to participate in this collaborative project by setting up their own sites and contributing to the online database. Protocols are posted at [www.erenweb.org](http://www.erenweb.org).

### b. TURTLEPOP: Population Structure of Freshwater Turtles along an Urbanization Gradient

Lead Scientist: David R. Bowne. [bowned@etown.edu](mailto:bowned@etown.edu), Elizabethown College PA

How many of us have stopped to help a turtle cross a road? The answer is probably quite a few; people appear to have an inherent fondness for turtles. The question then of what impact roads have on turtle populations is one that interests many people and one that had not been adequately studied. In this project, EREN members will investigate how population structure of turtles varies along an urbanization gradient.

We will test the following primary hypotheses: (1) The secondary sex ratio of turtles will be more male-biased as urbanization increases. (2) The population age distribution will be more biased towards adults as urbanization increases. Faculty and students will collect data at their home institutions as either part of a class or as independent research. Data collection will primarily consist of a two-year mark-recapture study of aquatic turtles. This project will provide the first large-scale examination of the effects of urbanization on freshwater turtles.

### c. Aquatic and Terrestrial Leaf Decomposition

Lead Scientists: Carolyn L. Thomas, [cthomas@ferrum.edu](mailto:cthomas@ferrum.edu), Ferrum College, VA, and Tracy Gartner, [tgartner@carthage.edu](mailto:tgartner@carthage.edu) Carthage College, WI

Leaf decomposition in aquatic and terrestrial ecosystems is a critical ecosystem level process. We propose to evaluate leaf decomposition rates in paired terrestrial and aquatic systems and compare native and invasive plant species decomposition rates in different climatic conditions and geographic locations.

The goals of this study are to (1) develop and test integrative protocols that will unite aquatic and terrestrial decomposition, and (2) identify the threshold of invasive plant abundance necessary to affect ecosystem processes (as defined by mass loss/decomposition, and changes in C, N, P, and Ca dynamics). Studying decomposition dynamics across a range of sites representing climatic gradients may provide insight into climate change effects on decomposition.

## IV. EREN Response to Year Members Survey

Thank you to the 44 members of EREN who responded to our Year 1 survey on the effectiveness of EREN as an organization and how we are meeting our member's interests and needs. The survey results were discussed at the EREN Founders meeting in Boulder, Colorado at the end of June, 2011 and here we share a few of the highlights of that discussion, and EREN responses to issues raised in the survey.

- The survey showed a generally positive view of EREN, and good enthusiasm about EREN's focus on developing collaborative research projects among PUIs that both advance both teaching and research. The EREN Founders were excited that the EREN members are eager to participate in this important work, and that many members stated that they wanted to lead their own projects, as well as join EREN pilot projects.
- There was some confusion about how to propose new projects to EREN – this has been addressed by adding a “Proposing New Projects” link under the “Research” tab on our web page.
- There was some concern about communicating the status of projects and manuscripts in preparation within EREN, and a request to provide contact information for the people in leadership roles on these endeavors. The EREN web page has been expanded to include much more complete information on these items, and the EREN authorship policy has been revised to advise public posting of manuscript lead authors for particular projects.
- E-mail was strongly preferred as the mode of communication from EREN to its members, so EREN has been sending more e-mail updates since June 2011.

- The survey showed good representation of all faculty ranks in the EREN membership, but very small representation of minorities. To increase our visibility to underrepresented groups, EREN is co-sponsoring a workshop in October 2011 with The Rocky Mountain Sustainability and Science Network (RMSSN). The two day workshop will be an opportunity for RCNs to work together to address broader impacts and engage underrepresented audiences and institutions. We also plan to apply for display table space at the SEEDS (Strategies for Ecology Education, Diversity and Sustainability) banquet at the 2012 Ecological Society of America meeting, and to send invitations to HBCU (Historically Black Colleges and Universities) institutions, inviting them to send representatives to the EREN All-Members Meeting at Meredith College in June 2012.
- There was interest in having EREN reach out to colleagues at R1 institutions for their feedback on pilot projects. As a first step, EREN sent an e-mail to the leaders of other RCNs with a strong research focus, inviting them to use EREN as way to engage colleagues at PUIs in teaching and research collaborations.
- There was recognition that the time constraints of faculty at PUIs are significant challenges for projects like those EREN is promoting. The EREN Founders are sensitive to these challenges and will continue to focus on projects that benefit both teaching and research, and pay special attention to project feasibility, as our research platforms develop.

## V. Featured Network Partner – The National Phenology Network

One of EREN's missions is to facilitate the involvement of PUI scientists and students in other research networks. Therefore, we regularly publicize other networks in our newsletter and on our web page. Our featured network partner in this issue is the National Phenology Network.

The USA National Phenology Network brings together citizen scientists, government agencies, non-profit groups, educators and students of all ages to monitor the impacts of climate change on plants and animals in the United States. The network harnesses the power of people and the Internet to collect and share information, providing researchers with far more data than they could collect alone.

The USA-NPN can serve as a resource for documenting how plants and animals and ecosystems are responding to climate change. Specific resources include:

- curriculum materials:  
[www.usanpn.org/education/clearinghouse](http://www.usanpn.org/education/clearinghouse); additional materials specific to Nature's Notebook are in development
- training materials specific to Nature's Notebook:  
<http://www.usanpn.org/resources/resources>, included scripted powerpoint presentations that could be used by instructors
- raw data available for analysis and interpretation:  
<http://www.usanpn.org/results/data>
- online data visualization tool:  
<http://www.usanpn.org/results/visualizations>

Several undergraduate professors and instructors that have used Nature's Notebook as part of their teaching curriculum. The National Phenology Network is happy to support such efforts and is available to assist - please contact NPN at [nco@usanpn.org](mailto:nco@usanpn.org).

EREN would like to feature “tricks of the trade” that may be of interest to its members. If you have a teaching or research technique that helps you communicate an ecological concept or accomplish an ecological research task particularly well, please send a one paragraph description to [erenteam@gmail.com](mailto:erenteam@gmail.com). For this newsletter issue, we share a method for estimating percent cover submitted by Diane Husic at Moravian College, PA.

### **Total Cover Analysis (% Vegetative Cover)**

*Diane Husic, Moravian College, Dan Kunkle, Lehigh Gap Nature Center; Jennifer Lansing, Arcadis BBL*

In restoration projects, percent vegetative cover is often determined by environmental consulting firms using infrared imagery or an apparatus involving a 10 meter board with 20 holes, a pair of tripods, and laser pointers. For the later, randomly selected sites within test plots or a study area are chosen to do the analysis and the board is set up on the tripods. A laser pointer was turned on and inserted into each hole in the board such that the laser beam pointed toward the ground. For each of the 20 lasers, observations are made of what the beam hits first and this is recorded on a data sheet.

A simple, low cost version of this type of analysis can easily be done. Ideally, you work in teams of 4 to perform the total cover analysis. Randomly select a point to start do your first trial in your “test plot”, then the other two points will be at the points of an equilateral triangle that is approximately 10 meters on a side. Starting at the first point, two team members stretch the rope that simulates the board and lasers, so that the knots simulate the spots where the laser beams would have first touched something. A third team member should “read” the data of the knots to the fourth team member, the recorder.

A third team member should “read” the data of the knots to the fourth team member, the recorder. (If there are 3 members of a group, then the data “reader” must also record the results.) The reader must tell the recorder the number of the knot and whatever it touches first on the way to the ground. For instance, in an area being restored as a grassland, the choices might be: standing grass (dead or alive), plant litter (dead grass, dead leaves, dead plants,), compost, dead wood, rock <2” or soil (bare ground or pebbles/stones up to 2 inches long), and rock >2” (including boulders). In a more established area, instead of just grass, the vegetation might include forbs, shrubs, or small trees, or a succession plot analysis (see below) might be more appropriate.

As the “reader” reads the information (point 1 - standing grass; point 2 – rock >2”, etc.) the recorder checks the appropriate box on the data sheet. The group then moves to the next point and records a second set of checkmarks on the next section of the data sheet. Repeat this at the third point. You should have 3 sets of 20 check marks when finished.

After completing the measurements, count the number of checkmarks under each column for each group of 20. Then add up the 60 checkmarks and place those numbers on the data sheet. Finally, do the calculations to determine the % cover of each of the 6 types of cover, and of the combinations listed.

For more information on this protocol, we have posted a pdf file at <http://erenweb.org/resources/ecologists-toolbox/>.

*Note: These protocols were developed for the Lehigh Gap Wildlife Refuge – a restoration project being conducted at the largest Superfund site east of the Mississippi. You can learn more about the project @ <http://lgnc.org/conservation>. A number of undergraduate students and faculty members from Moravian College (Bethlehem, PA) have conducted research at the site. The protocols can easily be adapted for a variety of research and monitoring purposes.*