The Ecological Research as Education Network

EREN

A new research coordination network (RCN)
Funded by the NSF RCN-UBE (Undergraduate Biology Education) Program

The EREN Mission

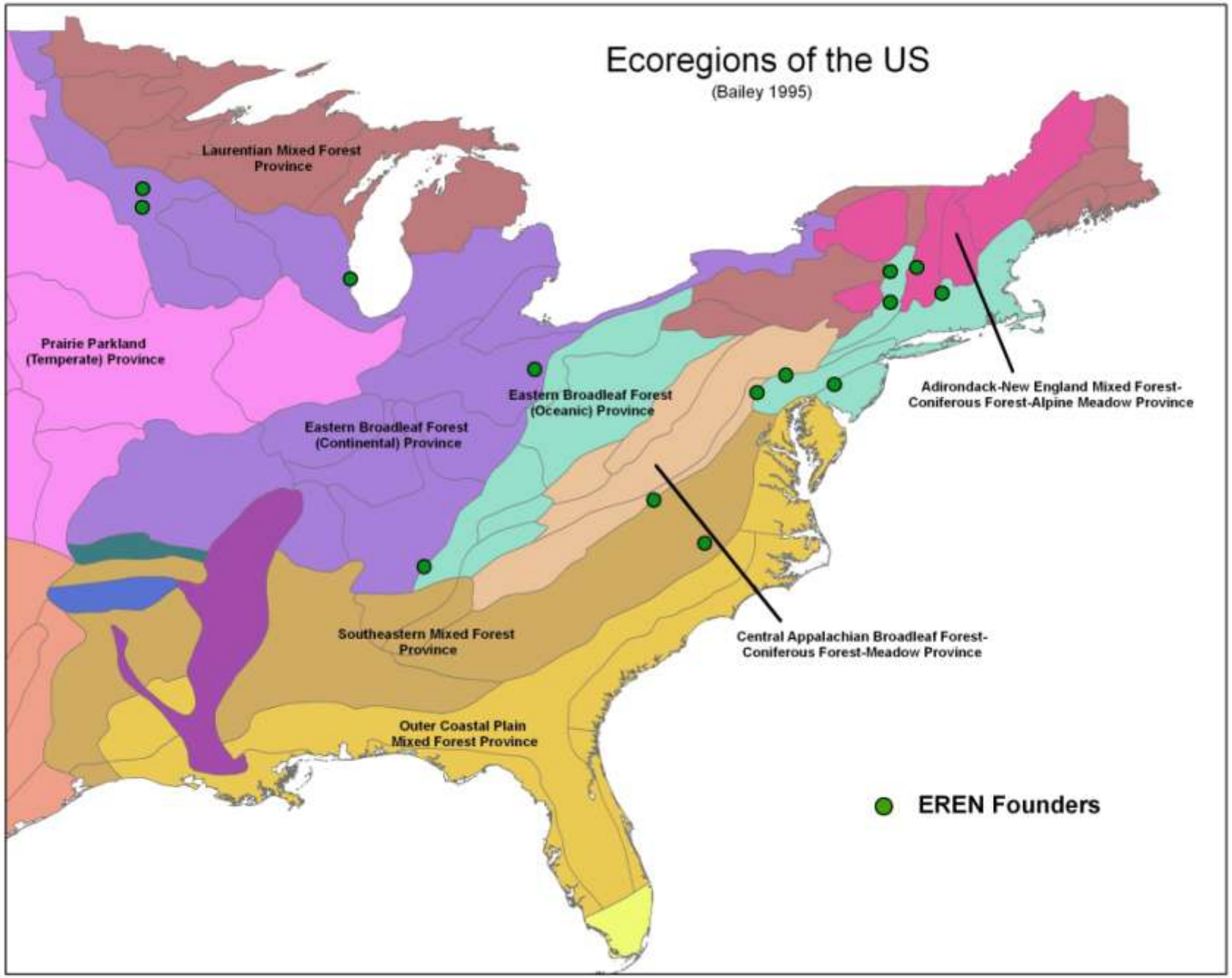
- To create a model for collaborative ecological research that generates high-quality, publishable data involving undergraduate students and faculty at primarily undergraduate institutions (PUIs)

Coordinating undergraduate research across many sites will enhance the scientific and educational value of these activities.

EREN Founders

- Anderson, Laurel - Ohio Wesleyan Univ., OH*
- Bowne, David - Elizabethtown College, PA
- Gartner, Tracy - Carthage College, WI*
- Kuers, Karen - Sewanee: The Univ. of the South, TN*
- Downing, Amy - Ohio Wesleyan Univ., OH
- Dosch, Jerald - Macalester College, MN
- Hoopes, Martha - Mount Holyoke College, MA
- Hornbach, Dan - Macalester College, MN
- Johnson, David - Ohio Wesleyan Univ., OH
- Lindquist, Erin - Meredith College, NC*
- Machado, Jose-Luis - Swarthmore College, PA*
- O'Reilly, Catherine - Bard College, NY
- Pohlad, Bob - Ferrum College, VA*
- Simmons, Jeffrey - Mount St. Mary's Univ., MD*
- LoGiudice, Kathleen - Union College, NY
- Shea, Kathy - St. Olaf College, MN
- Thomas, Carolyn - Ferrum College, VA*
- Woods, Kerry - Bennington College, VT

The EREN Founders are
18 scientist-educators from
14 PUI institutions.
*** = Grant Co-PI**


Ecoregions of the US
(Bailey 1995)
Laurentian Mixed Forest Province
Prairie Parkland (Temperate) Province
Eastern Broadleaf Forest (Continental) Province
Eastern Broadleaf Forest (Oceanic) Province
Adirondack-New England Mixed Forest-Coniferous Forest-Alpine Meadow Province
Southeastern Mixed Forest Province
Central Appalachian Broadleaf Forest-Coniferous Forest-Meadow Province
Outer Coastal Plain Mixed Forest Province
EREN Founders

Some of EREN's Founders meeting at Ohio Wesleyan University, November 2010

Specific Goals of EREN

- Develop collaborative research projects among PUIs that fit within the constraints of scientists with significant teaching responsibilities
- Enhance the roles of PUI scientists and their students in existing and emerging ecological research networks
- Maximize student engagement in ***authentic science*** while generating publication quality data
- Develop a continental ecology course module using our data that is team-taught by scientist-educators distributed across different PUIs
- Create an online database of data sets collected by the PUI network

CHIEF Acronym for EREN Research

CHIEF projects are:

- Collaborative
- High Impact science and education
- Ecological or environmental research
- Feasible for all kinds of institutions

Projects currently under development

- Invasive vs. native plant decomposition comparisons across sites and ecoregions
- Turtle sex ratios along urbanization gradients
- Tick species distributions across sites and ecoregions
- Invasive vs. native plant leaf retention and leaf-out comparisons
- Effects of vegetation on stream temperatures across sites and ecoregions
- Permanent forest plots in wild, suburban and urban forests – possibilities for tree growth, carbon accumulation, and invasive species data

Permanent Plot Project: Educational Benefits

- Educational Questions:

1. What factors affect tree growth/carbon accumulation across a range of sites and ecoregions?
2. How do factors at local vs. regional scales influence tree growth?

- Methods: Establishment of 20 x 20 m permanent plots, characterization of site variables, tree ID, measurement of tree diameters using a common protocol
- Educational Advantages: Data collection can occur as part of a teaching lab, technically simple, good possibilities for comparisons with other databases of forest biomass.

Permanent Plot Project: Scientific Pitfalls and Potential

- Pitfalls: Extensive data on forest carbon is available from FIA and other sources, tree diameters are variable, requiring within-site replication of plots
- Potential: EREN plots can host manipulative studies coordinated across sites and provide tree growth information about forest fragments in urban and suburban matrices. Plots can also be used for a range of other long-term studies.

Example manipulative study

- Research Questions:

1. Do invasive shrubs effect native tree growth?
2. Do the effects of invasive shrubs on tree growth vary across sites and ecoregions?

- Methods: Establish paired plots, replicated in some sites. Remove shrubs from one set of plots at each site. Tree diameters are measured in control and manipulated plots by students in teaching labs over multiple years.
- Advantages: Large initial investment in plot set-up and shrub removal, but long-term data collection can then be maintained through teaching. Datasets on invasive species effects across regional scales are rare.

Permanent Plot Project: Possible Development Trajectory

- Start with plots as pedagogical tools to build and validate EREN, and work out teaching-friendly protocols.
- Promote the forest plot project to research level as EREN expands.
- Investigate the range of field sites and faculty interests represented as EREN expands.
- Submit grants to support plot replication and manipulation at sites with interested faculty.
- Carry out long-term, manipulative study with teaching labs doing data collection.
- Students compare their results across temporal and spatial scales.

Laying out 20 x 20 m plots at Sewanee: The University of the South, June 2010

EREN – Stay Tuned at Level 2!

- EREN will be ready to invite participation in projects in August 2011 (Level 1 participation).
- But, you can join us as a Level 2 participant now! Register on the EREN website (www.erenweb.org) to receive updates and be part of searchable contact list.
- Share relevant data sets– we will be developing our web page to archive PUI data sets that have potential for collaborative work.
- Post research ideas on our Facebook page to get people interested in your version of a collaborative project.