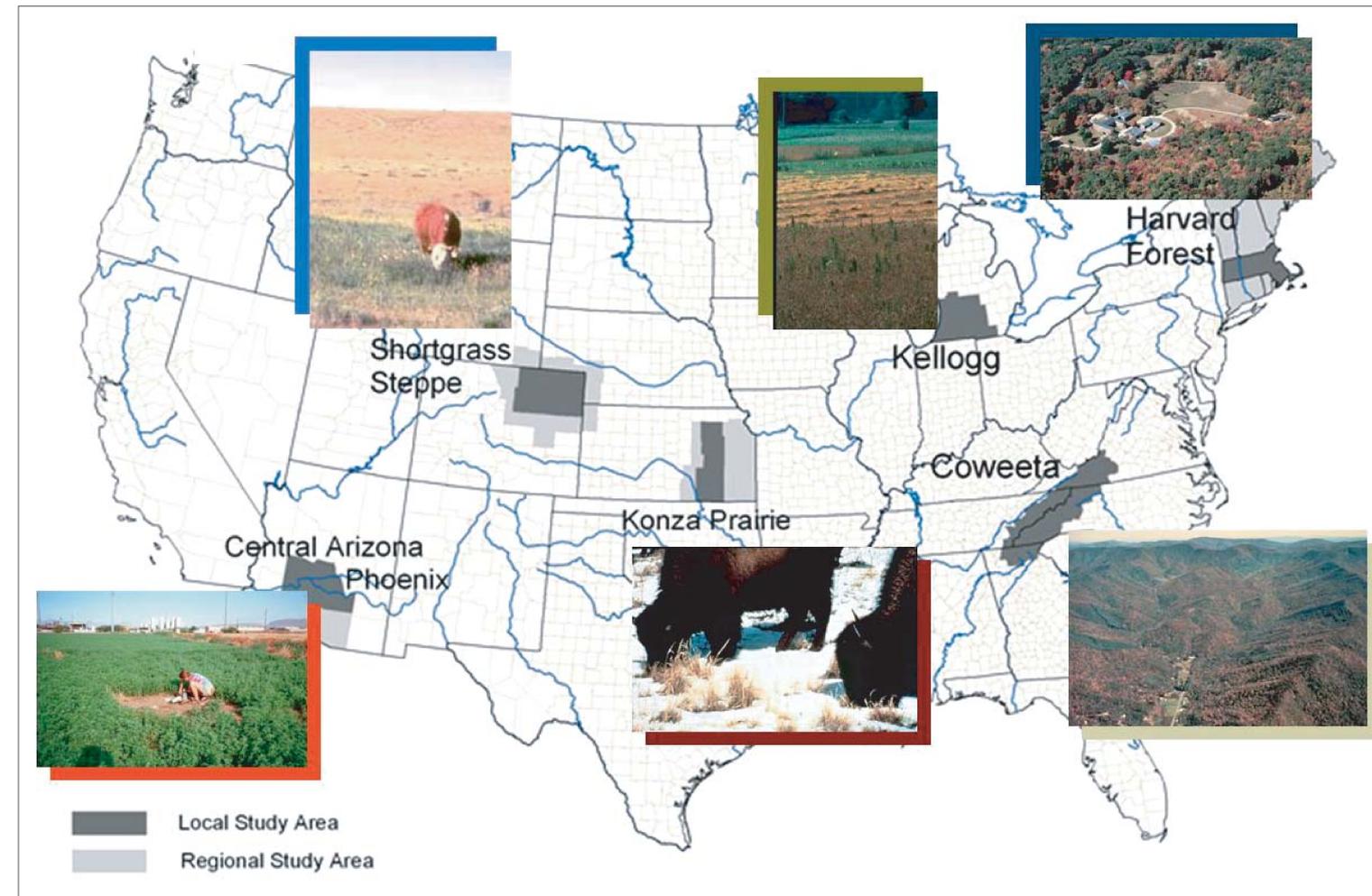


AGRARIAN LANDSCAPES IN TRANSITION: A CROSS-SCALE APPROACH

Charles L. Redman, David R. Foster, Myron P. Gutmann, Peter M. Kareiva, Ann P. Kinzig, and Lauren H. Kuby



INTERDISCIPLINARY COLLABORATION AMONG SIX LTER SITES



Agricultural land-conversion decisions are driven by economics, politics, technology, environment, climate, culture, and perceptions of landscapes operating and interacting at a variety of scales. In this Biocomplexity project, six LTERs, led by CAP LTER, are identifying and quantifying the ways in which agrarian transformations differ across regions and time and how these variations explain cross-scale patterns.

► <http://ces.asu.edu/agtrans>

YEAR 1

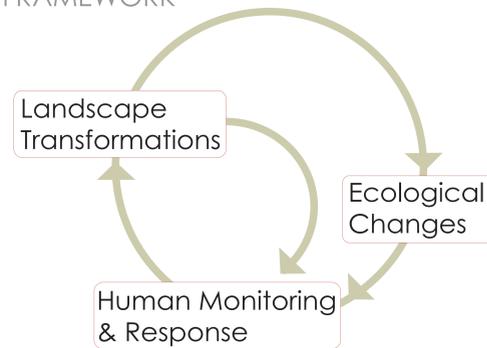
We have created baseline sets of spatial, historical, and ecological information about the six LTER study areas and a first iteration on a series of models to explain the processes underlying agrarian transformations:

- Agricultural and historical census data: to identify historic patterns and social-ecological interactions
- Regional ecological information: to help measure ecological change
- Remote sensing and GIS data: for comparisons of the six sites over space and time
- Narrative case studies: to weave qualitative data into quantitative analysis

OUR APPROACH

- “Cross-scalar”—spanning temporal, spatial, and organizational scales
- Particular attention to long time spans, especially the influence of lags and legacies on present-day dynamics
- Comparative in order to elicit general processes and relationships that drive patterns observed in particular cases. These comparisons will be cross-site, cross-cultural, and cross-biogeographical.

CONCEPTUAL FRAMEWORK



RESEARCH DESIGN

	Years 1 through 4
Data Gathering (Ecological, social, economic)	Dark red bar
Remote Sensing	Green bar
Case-Study Narratives	Dark red bar
Spatial Effects Analysis (identify key causal relationships)	Green bar
Structural Equation Modeling (identify key interactions, lags & legacies)	Dark red bar
Cross-Site Synthesis	Green bar
International Collaborations	Dark red bar
Conservation & Scenarios	Green bar
K-12 Education	Dark red bar

INTELLECTUAL MERIT

- AG TRANS is demonstrating the importance of social-science information and approaches in ecosystem investigations, expanding the results of the LTER network, and bridging the divide between social and natural sciences.
- AG TRANS is developing general theories on how socio-ecological legacies, as well as lags in the recognition of and response to change, vary across space and time.
- Through detailed case histories and quantitative analyses, we expect to provide convincing evidence that humans act not only to disturb ecosystems but to monitor ecosystem values, maintain stability, and minimize crises.

BROADER IMPACTS

- AG TRANS offers information of direct use to policy makers, The Nature Conservancy, and land managers by explicitly relating socio-ecological processes to varying levels of political organization.
- AG TRANS will train interdisciplinary scientists at all levels of the educational spectrum.

INITIAL COLLABORATORS

Central Arizona - Phoenix Charles Redman Ann Kinzig Lauren Kuby Charlene Saltz	Harvard Forest David Foster John O'Keefe
	Coweeta Ted Gragson Paul Bolstad
	Kellogg Alan Rudy Craig Harris
	Konza Gerad Middendorf Leonard Bloomquist
	Shortgrass Steppe Myron Gutmann Ken Sylvester
	The Nature Conservancy Peter Kareiva ...And many others