

Wednesday, 8 January / Miércoles 8 de enero

16:00-17:30: Salón Topacio

Special Session / Sesión especial

**Changing Landscapes: Field Studies from Mexico and Peru
/
Paisajes cambiantes: Estudios de campo de México y del Perú**

Chair: Joshua Rudow

Restoring Degraded Agricultural Lands: Key Structures and Processes

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This paper examines the key structures and processes involved in repairing degraded agricultural lands. Field measurements from an ongoing effort to restore hillslope terraces in Tlaxcala, Mexico stress that simply restoring agricultural structures (the arrangements of landforms and vegetation) is insufficient, and ignores how processes of maintenance often drive agricultural development and, ultimately, sustainability. Consequently, methods of wildland restoration that employ the technologies of intensive agriculture, now growing in number and scope, must also plan for and facilitate a sustained human involvement with the land. Periodic maintenance is a fundamental characteristic of intensive agrosystems often forgotten in the search for quick, easy, low-cost ways to repair environmental damage.

Keywords: agriculture, maintenance, Mexico, restoration, terrace

Temporal Footprints of Colonial Land Use in a Coffee-Growing Region, Mexico

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In parts of northern Latin America, colonial land use has left an indelible footprint on the landscape. In this paper, we use historical studies, 1907 and 2009 land-tenure maps, a supervised classification of 2009 land cover, and ancillary topographic data to examine the temporal footprint of colonial land use in Xalapa-Coatepec, Mexico. In 2009, areas under hacienda control in 1907 had relatively more pasture, sugar, and urban and relatively less forest and shade coffee land cover compared to areas not controlled by haciendas. Pasture was proportionally dominant, and ~60% of sugarcane was found, on slopes <12%. In contrast, shade coffee and forest were dominant on intermediate (12-40%) and highly sloping (>40%) land. These findings indicate that past land tenure and topography interact to strongly

influence modern-day land cover. We discuss how insights gleaned from long-term landscape history can be used to assess and refine forest and coffee conservation targets.

Keywords: Mexico, colonial land use, landscape history, haciendas, conservation

Gauging the Material and Perceptual Realities of Roadside Litter across a Rural-but-Urbanizing Mexican Municipio: The case of Coxcatlán, Puebla, México.

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Roadside litter is a notable environmental issue for rural municipalities in Mexico and across the world. Litter has the potential to physically, chemically, biologically, as well as aesthetically contaminate landscapes. Thus, it is both a material and political environmental issue. In order to gauge its material magnitude against its perception as an environmental blight, the study estimated the abundance and type of roadside litter in the Municipio of Coxcatlán, Puebla, Mexico in 2011. After selecting ten, 250 m² sites and conducting an initial cleaning, two collections were made at 10-week intervals during which all litter was classed, counted, and weighed. The objectives were to classify/quantify litter in order to establish area-normalized and municipio-wide estimates to compare the relative littered-ness of Coxcatlán's highways to other similar studies while determining what constitutes litter along Coxcatlán's roadsides. The results point to the power of perception and discourse regarding the construction of environmental issues.

Keywords: litter, garbage, Mexico, highways, social construction of environmental issues

Creating Digital Elevation Models in Data-Poor Mountainous Regions: A Comparative Analysis of DEMs Developed for a Peruvian Glacial Valley

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Digital elevation models (DEMs) are a basic but often critical component of geographical research. However, outside of North America, Europe, and East Asia, accessing high-resolution DEMs (i.e., <30m resolution) can be difficult due to the lack of publicly-available satellite data or because of the high incidence of cloud cover. As part of our research in Río Abiseo National Park, Peru we constructed a 2.9m resolution DEM for the Callejón Rojas valley (6.76 km²) using GPS track points, photo reconnaissance, ground truth surveys, and point digitizing within ArcGIS 10.1. In this paper, we compare our results with DEMs produced using ASTER grids and digitized topographic maps for the same valley. The pros and the cons of these and other DEM options for Latin Americanist geographers are reviewed and the methodological challenges associated with field mapping in remote locations are discussed.

Keywords: DEM, field research, GPS elevation points, mountain valley, Peru

Agricultural Adaptations to Climate Change in the Río Ica Watershed, Peru

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Climate change is a pressing environmental challenge that demands adaptation, particularly in agriculture. Peru is especially vulnerable to climate change because of its fragile Andean ecosystems and a population in which 28% live in poverty with scarce adaptation resources. This paper will analyze agricultural adaptations to climate change within the Río Ica watershed (RIWS) in southeastern Peru within the context of other farmer challenges such as low market prices, invasive species, and migration. Farmers in the RIWS include smallholders and large-scale monocropping, and both share the resources of a watershed and collectively respond to climate change. Methodology includes farmer interviews, surveys on agricultural strategies, and an examination of historical climate records. Preliminary results suggest that the environment has undergone climate changes through a shorter, more intense rainy season, and extreme temperature fluctuations. Farmers are responding using a variety of traditional and modern agricultural techniques.

Keywords: climate change, sustainable agriculture, Peru, adaptation