2408 Rio Bravo Circle
Sacramento, CA 95826

(530) 304–8353 Cell
(530) 754-6212 Work
neroth@ucdavis.edu

Nathaniel E. Roth

Education

1995-2000 University of California, Davis Davis, CA

B.S., Environmental Biology and Management with emphasis in Environmental Biology.

Minor, Geographic Information Systems

Cumulative GPA: 3.268

Research Interests

Spatial analysis of environmental impacts caused by past and future urban development and transportation networks.

Ecosystem services

Quantitative impact assessment of current and proposed land use policies on landscapes.

Development of Geographic Information Systems based models for environmental assessments.

Spatial data accessibility and decision support systems for land managers.

Open space recreation access opportunities.

Publications and Awards

Publications:

Schmidt, E. E., Thorne, J. H., Huber, P, Roth, N., Thompson, E., & McCoy, M. C. (2010) **A New Method is Used to Evaluate the Strategic Value of Fresno County Farmland.** *California Agriculture*, *64*(3), 129-134.

Beardsley, K., Thorne, J. H., Roth, N., Gao, S., & McCoy, M. C. (2009) **Assessing the influences of rapid urban growth and regional policies on biological resources.** *Landscape and Urban Planning*, *93*(2009), 172-183.

Johnston, R. A., Roth, N., & Bjorkman, J. (2009) **Adapting Travel Models and Urban Models to Forecast Greenhouse Gasses in California.** *Transportation Research Record*, *2133*, 23-32.

Beardsley, K., Roth, N.E., McCoy, M.C., (2007) **Impacts of Different Growth Scenarios in the San Joaquin Valley of California.** In *Proceedings of the 2007 International Conference on Ecology and Transportation*, edited by C. Leroy Irwin, Debra Nelson, and K.P. McDermott. Raleigh, NC: Center for Transportation and the Environment, North Carolina State University.

Thorne, J., McCoy, M., Hollander, A., Roth, N., Quinn, J. (2006) **Regional Environmental Analysis for Transportation Corridor Planning.** In *Proceedings of the 2005 International Conference on*

Ecology and Transportation, edited by C. Leroy Irwin, Debra Nelson, and K.P. McDermott. Raleigh, NC: Center for Transportation and the Environment, North Carolina State University.

Conference Presentations

Roth, N., McCoy, M., (2011), **Land Use Summarization by Travel Survey Geographies for Local Land Use Effect Analysis**, 12th International Conference on Computers in Urban Planning and Urban Management, Lake Louise, Alberta, Canada, July 5-8, 2011

Roth, N., Thorne, J., McCoy, M., (2007) **Urban Growth Impacts on Agriculture and Urban Services in the San Joaquin Valley**, **California**. 2007 Association of American Geographers Annual Meeting. San Francisco, CA, April 17, 2007

Huber, P., Roth, N., Thorne, J., McCoy, M., Meade, R.,(2007) **Potential impacts of urban growth on an ecological network in the San Joaquin Valley, California.** 2007 Association of American Geographers Annual Meeting. San Francisco, CA, April 17, 2007

Beardsley, K., Roth, N., Thorne, J., Huber, P., McCoy, M., (2007) **Environmental Impacts of Urban Growth in California's San Joaquin Valley**. 2007 Association of American Geographers Annual Meeting. San Francisco, CA, April 17, 2007

Roth, N., Viers, J., Johnson, J., Deas, M., Quinn, J. (2005) **Sunrise on the Klamath: An ArcObjects application for determining topographic sunrise and sunset.** 2005 ESRI User Conference Proceedings, 25-29 July, San Diego, CA.

Sailer, C., Noujdina, N., Roth, N., Mount, J., 2003. (2003) **Change detection methodology for the Cosumnes watershed of Northern California.** Proceedings of ASPRS Annual Conference, 5 – 9 May, Anchorage, Alaska (American Society for Photogrammetry and Remote Sensing, Bethesda, Maryland), unpaginated CD-ROM.

Awards

First place, 2006 ESRI User Conference Map Gallery. "Best Software Integration." Roth, N., Viers, J., Slaton, M., Safford, H. **Spatially Integrated Reporting of Environmental Criteria for Resource Management: An Example from Lake Tahoe**. 2006 ESRI User Conference, San Diego. August 7-11, 2006

Skills

Complex Analysis with Geographic Information System (GIS) software. (ArcGIS, PostGIS)

Programming in Visual Basic and Python

Development for ArcGIS using ArcObjects in Visual Basic or VBA

Map composition and display of complex datasets

Network editing for transportation demand forecast models (CUBE)

Microsoft Access database customization

Geodatabase creation

Field data collection using Global Positioning Systems (GPS)

Integration of GPS data into GIS analyses

Simple satellite imagery analysis and classification using multi-spectral data.

Network administration and personal computer repair

Simple web page construction with active user input.

Major Projects

California Statewide Travel Model: Leading efforts at UC Davis to define transportation analysis zones and develop road and transit networks for base, calibration and future years.

Statewide Development of Transportation / Land Use Planning Tools: Assembly of land use data concurrent to 2009 National Household Travel Survey, and preparation of supporting data for computation of 'Ds' elasticities. Enhancement of UPlan to include a 'Ds' calculator.

UPlan development and programming including updates to the core UPlan code base and the addition of analytical tools for exporting land use data to transportation models and greenhouse gas calculations.

UPlan user training and support:

- San Joaquin Valley Blueprint Project: Provide technical support to 8 MPOs using UPlan as the urban growth element of the Blueprint process.
- Rural Counties Blueprint Support: Provide technical and data development support for the use of UPlan in rural counties that have received Blueprint grants issued by the California Department of Transportation for long range regional growth visioning. This includes many northern California rural, costal and foothill counties.
- Amador, Alpine and Calaveras Counties Regional Growth Modeling: Provided technical, training and data creation support to 3 rural counties for regional growth modeling.

Great Places Project: Provide data library support to CERES and DFG Region 4 and the Development of the Universal Model Builder for ArcGIS. Funded primarily by the California Department of Transportation

CalTrans Task Order 35: GIS support for a vegetation map using CalTrans DHIPP data and analysis based on the data product. Funded by the California Department of Transportation

CalTrans Task Order 39: Develop a GIS application that allows the user to check data out of a central database, and edit it in the field before returning the edits to the central database. Also including tracking changes to the dataset. Funded by the California Department of Transportation

Cosumnes Watershed Change Detection: Support for Sailer, C, and Noujdina, N in change detection mapping over the lower Cosumnes River. Funded by the David and Lucile Packard Foundation

North Coast Regional Water Quality Control Board TMDL determinations: Provided GIS support. Funded by the North Coast Regional Water Quality Control Board

Tahoe Terrestrial Ecosystem Unit Inventory. Provided GIS support for the USFS during their inventory process. Funded by the United States Forest Service

Valles Caldera Natural Preserve: Provided GPS support to the VCNP as they mapped an extensive network of old timber roads.

GIS Models

UPlan: VBA for ArcGIS, A simple urban growth model, updated from an earlier version by Eric Lehmer and others.

Sunrise on the Klamath: Determining Topographic Sunrise and Sunset. VBA for ArcGIS. Presented at the 2005 ESRI User Conference

Universal Model Builder. VBA for ArcGIS. Reprogrammed and enhanced for ArcGIS9 based on an earlier version by Michael Byrne.

Distance Matrix Calculator. VBA for ArcGIS, created to calculate distances between sets of points over a raster based surface.

Work Experience

2002-2011 Information Center for the Environment
UC Davis, CA
Programmer I, II and III

- GIS application development
- Customization of ArcGIS for specific applications
- End user support and training
- Geodatabase design
- Cartographic display
- Custom GIS analysis
- Client and community GIS support
- Miscellaneous tasks / time critical assistance.

2000-2002 Information Center for the Environment
UC Davis, CA
Post-Graduate Researcher I and II

- Aerial Photo interpretation for digitizing to vector coverages
- GPS field work for ground control point collection.
- GIS data preparation.
- MS Access database creation for tracking vegetation plots and invasive species records.
- ASP forms for remote submission of invasive species data.
- MS Access database for tracking and reporting CalTrans bridge historic

register data.

Outreach

1998-2000 Department of Environmental Science & Policy
UC Davis, CA
Network Administrator (Student assistant II and III)

- Basic network administration
- Creating and deleting user accounts.
- Manage the department email server.
- Trouble shooting of problems with personal and departmental computers.
- Miscellaneous other duties as the need arose.