

Faculty Mentor: Diane C. Bates

Faculty Mentor Title: Associate Professor

Years at TCNJ: 6 years

Department: Sociology & Anthropology

Project Title: Demographic and land use changes and their implication for carbon mitigation schemes in the Ecuadorian Amazon

Number of Student Collaborator(s): One (1) : Angelika Gutierrez, Class of 2011, Sociology
IRB approval for data collection in 2007-08, received (see Appendix)

Project and Learning Plan:

I. Intellectual Merit: As international carbon exchange becomes an increasingly viable option for climate change mitigation, tropical forests are again a source of both controversy and a target for conservation. South American nations in particular have both the natural resources and the economic incentives to participate in international carbon swaps, whereby wealthier Northern nations like the United States pay to offset carbon emissions by preserving or planting forests in the Global South (Persson, Azar, and Lindgren 2006). The upper reaches of the Amazonian Basin are likely candidates for such swaps, given large blocks of remaining forests, relatively low pressure for agricultural expansion, and the relatively well organized networks of indigenous and environmental non-governmental organizations already established in this region (cf. Rudel 2005, Sawyer 2004, Lewis 2000). However, exogenous public and environmental policy has had notoriously limited success in protecting—much less rehabilitating—rural environments in developing countries without local collaboration and support (cf. Ferguson 1994). For this reason, sophisticated understanding of the local dynamics of social systems in rural Amazonian regions is paramount to the success of future carbon exchange programs.

The proposed project for Summer 2009 will organize the data from multiple waves of surveys and censuses from a research site in the Amazonian region of Ecuador and to build an annotated bibliography that will facilitate the completion of a monograph on this topic. There are precious few detailed monographs available on contemporary Amazonian communities, and even fewer longitudinal studies. The critical research question for the longitudinal analysis is to determine how land use activities affect the migration of household members, especially young men and women. One of the most neglected of social groups constitutes one of the largest populations in the Amazonian frontier region, national migrants who colonized the region during periods of land reform and road expansion. In the 1960s and 1970s, international agencies and Amazonian governments funded colonization programs in Bolivia, Brazil, Colombia, Ecuador, Peru, and Venezuela. In 1968, the US Peace Corps, along with funding from the Inter-American Development Bank and an Ecuadorian state agency (CREA), helped to identify appropriate colonists in the relatively poor Andean highland provinces of Azuay and Cañar to settle Amazonian lowlands in the adjacent province of Morona Santiago. High rates of migration from colonist land-owning households has been associated in this region with spontaneous reforestation (Rudel, Bates, and Mashiguiashi 2002b), which is consistent from other studies of Latin America (cf. Baptista and Rudel 2006; Rudel, Perez-Lugo, and Zichal 2000).

Since 1996, I have studied of this region and have authored and coauthored a number of peer-reviewed articles and book chapters on changes there (Bates 2009; Bates 2008; Bates 2007; Rudel, Bates, and Golbeck 2006; Bates and Rudel 2004; Bates 2002; Rudel, Bates and Mashiguiashi 2002a; Rudel, Bates, and Mashiguiashi 2002b). This research reveals the economic strategies and land use decisions of households living in the region, and how environmental changes affect them. In 2008, I helped complete a census of households in the largest colonist village in this region. This census reveals depopulation through emigration among original settlers and their offspring. The summer research project will allow the faculty mentor and student researcher ample time to build a literature review, produce initial statistical analyses, and organize an archive of additional material relevant to the research question, which is currently spread between my offices at TCNJ and a colleague's archive at Rutgers University.

II. Role of Student and Mentor: The student researcher, Angelika Gutierrez, began working as a research assistant with the most recent census data during the Spring semester, 2009. She

will help translate and clean the data collected in the most recent census. In addition, she will help build the SPSS file that will contain these data and merge this with earlier datasets. Because she has only begun to work on these data, it is unclear how much of this initial work will be completed during the spring semester and how much may extend into the summer period.

The main goal of the proposed summer project is to allow Angelika to get more involved in the process through which data are analyzed and contextualized, as well as incorporate mixed methods of analysis. To this end, she will help construct an interdisciplinary review of appropriate literature. Because of Angelika's language skills, she will also be able to review research from Latin American and Spanish scholars. To build this literature review, the faculty and student will meet early in the summer term and conduct a series of searches on reference databases. In addition to collecting resources available electronically and at TCNJ, this search will also involve extensive use of Interlibrary Loan and will involve visits to the Rutgers University libraries, which have an extensive collection on Latin American studies, agriculture, and ecology. Both Angelika and I will review the literature collected and construct an annotated bibliography using EndNote (a program available at TCNJ that stores bibliographic information).

During visits to Rutgers University, Angelika will also be introduced to a senior researcher, who is collaborating on this project, Dr. Thomas Rudel, Chair of the Department of Human Ecology in the School of Environmental and Biological Sciences (SEBS). Dr. Rudel maintains an extensive archive of surveys, interviews, and other documents pertaining to the research site, dating back to 1968. Angelika and I will help organize this material and determine which may be valuable to the current research question. This process of discovery is virtually impossible during the academic year, because of Dr. Rudel's schedule and the large blocks of time necessary to sort through these archives.

The final component of the summer project will involve preliminary data analysis, using SPSS. Because Angelika will be a rising junior in Summer 2009, she has not yet had the opportunity to take the quantitative research methods course in the sociology major. Thus, she will need basic instruction on the use of SPSS. However, this is not a problem because she has already completed Statistics 115 and because she will be learning mixed methods not addressed in the methods course. However, this project will allow her to build her familiarity with SPSS while working with a familiar dataset that she helped create.

III. Broader Impacts: This project will be pivotal for both the faculty mentor and the student. The faculty mentor is in the early stages of writing her first monograph, which will be based in part on the literature and data organized during the proposed summer project. More importantly, this project will have positive impact on the student's academic experience. The student is early in her academic career and has had little opportunity thus far to engage in primary research activities. She is a first-generation college student and a member of a group underrepresented in all social scientific disciplines. Angelika has expressed research interests in sociology, with a particular emphasis on Latin American societies (in part due to her own heritage, which includes both Caribbean and Ecuadorian cultures). Angelika is enrolled in TCNJ's Educational Opportunity Fund (EOF), participates in the WILL program, and is currently president of Union Latina (UL), the largest student organization at TCNJ for Latino/a students. Her engagement in primary research will thus not only benefit Angelika's academic career, but as a student leader, she will serve as a role model for other students in EOF, WILL, and UL.

Works Cited

- Baptista, Sandra and Thomas K. Rudel. 2006. "Is the Atlantic Forest Re-Emerging?: Urbanization, industrialization, and the forest transition in Santa Catarina, southern Brazil." *Environmental Conservation* 33,3: 195-202.
- Bates, Diane C. 2009. "Population, Demography, and the Environment." Pp. 107-124 in *Twenty Lessons in Environmental Sociology*, ed. by Kenneth Alan Gould and Tammy Lewis. New York: Oxford University Press.
- Bates, Diane C. 2008. "Deforestation in Ecuador." Pp. 257-266 in *The Ecuador Reader: History, Culture, Politics*, ed. by Carlos de la Torre and Steve Striffler. Durham, NC: Duke University Press.
- Bates, Diane C. 2007. "The Barbecho Crisis, la Plaga del Banco, and International Migration: Structural Adjustment in Ecuador's Southern Amazon." *Latin American Perspectives* 34,3: 108-122.
- Bates, Diane C. and Thomas K. Rudel. 2004. "Climbing the 'Agricultural Ladder': Social Mobility and Motivations for Migration in an Ecuadorian Colonist Community." *Rural Sociology* 69, 1: 59-75.
- Bates, Diane C. 2002. "Environmental Refugees?: Classifying Human Migration caused by Environmental Change." *Population and Environment: A Journal of Interdisciplinary Studies* 23,5: 465-477.
- Ferguson, James. 1994. *The Anti-Politics Machine: "Development", Depoliticization, and Bureaucratic Power in Lesotho*. Minneapolis, MN: University of Minnesota Press.
- Lewis, Tammy L. 2000. "Transnational Conservation Movement Organizations: Shaping the Protected Area Systems of Less Developed Countries." *Mobilization* 5, 1: 105-123.
- Persson, Tobias A., Azar, Christian, and Kristian Lindgren. 2006. "Allocation of CO2 Emissions Permits: Economic Incentives for Emissions Reductions in Developing Countries." *Energy Policy* 34, 14: 1889-1899.
- Rudel, Thomas K. 2005. *Tropical Forests: Regional Paths of Destruction and Regeneration in the Late Twentieth Century*. New York: Columbia University Press.
- Rudel, Thomas K., Diane C. Bates, and Susan L. Golbeck. 2006. "How do Poor, Remote, Rural Places get Child Care Centers?: Patriarchy, Out-Migration, and Political Opportunities in the Ecuadorian Amazon." *Human Organization* 65, 1: 1-7.
- Rudel, Thomas K., Diane C. Bates, and Rafael Machinguishi. 2002a. "Ecologically Noble Amerindians?: Cattle Ranching and Cash Cropping among Shuar and Colonist Smallholders in Ecuador." *Latin American Research Review* 37, 1: 144-159.
- Rudel, Thomas K., Diane C. Bates, and Rafael Machinguishi. 2002b. "A Tropical Forest Transition?: Agricultural Change, Out-migration, and Secondary Forests in the Ecuadorian Amazon." *Annals of the Association of American Geographers* 92,1: 87-102.
- Rudel, Thomas K., M. Perez-Lugo, and H. Zichal. 2000. "When fields revert to forests: development and spontaneous reforestation in post-war Puerto Rico." *The Professional Geographer* 52, 3: 386-397.
- Sawyer, Suzana. 2004. *Crude Chronicles: Indigenous Politics, Multinational Oil, and Neoliberalism in Ecuador*. Durham, NC: Duke University Press.

Appendix I: CV, deleted by request

Appendix II: Budget:

Student stipend: \$2500

Student housing: \$1305

Faculty stipend: \$1000

Project related expenses: \$473.59

Travel to and from Rutgers University (4 x 60 miles @ \$.585 per mile): \$140.40

Lunch while at Rutgers University (4 x 2 x \$8.00): \$64

Photocopy expenses (articles from Rutgers libraries, copies of relevant material from Rudel archive): (2000 pages @ .10 per copy + 2 x \$.40 for new copy card purchase): \$200.80

SPSS Reference Guide for Student Researcher: \$58.40

Flash drive (4GB): \$9.99

Total Budget: \$5278.59

Appendix III. Past MUSE/SURP award reports

SURP 2006: In collaboration with colleagues Dr. Rachel Adler and Dr. Elizabeth Borland, the Summer Undergraduate Research Program provided five students to do research on three related projects in the Trenton, NJ: an analysis of ethnic transition in Chambersburg (Adler), an analysis of social movement activism (Borland), and an analysis of the controversy surrounding contaminated soil found at a school construction site. During this summer, I worked with two student assistants, Tamaria Green and Johanna Soto, to conduct exploratory research. We conducted a series of interviews with community leaders and members and attended community meetings. Initial data analysis was presented at the TCNJ Celebration for Student Achievement in 2007, as well as the Southwestern Social Science Association meetings. This project also served as the basis for the successful application to the National Conferences on Undergraduate Research summer grant program, which fully funded Trenton-based summer research programs in 2007 and 2008 (see below), that coordinated with SURP and MUSE. As a result of this research experience, Ms. Green pursued this project in Summer 2007 through the NCUR program (see below) and eventually pursued this topic as her senior thesis. Ms. Green graduated in 2008 and is currently enrolled and works as a research assistant at the Bloustein School of Planning and Public Policy, where she will complete her MCRP in 2010. Ms. Soto went on to spend the following two summers working as a research assistant for Dr. Rachel Adler (anthropology) and Dr. Dave Prensky (marketing). She is currently working on her senior thesis, which involves a focus group and survey of parents involved in PTOs and qualitative interviews with graduates of Trenton's public schools. The New Jersey Minority Academic Career Undergraduate Fellowship accepted Ms. Soto into their program in 2008, providing substantial funding to complete her thesis and travel reimbursement to present her research (\$2500). She intends to pursue a degree in social work upon graduation from TCNJ in 2009.

MUSE 2007 (Externally funded): With co-director Dr. Elizabeth Borland, I applied for and received an external grant of \$40,000 from the National Conference of Undergraduate Research to fund seven projects, involving seven faculty members and ten undergraduate students (see www.tcnj.edu/~trenton for more details). During this summer, I worked with two student research assistants, Tamaria Green and Regine Saintilien, to continue the study of the contaminated school site in North Trenton. During this summer period, we conducted interviews of neighborhood residents, school and School Construction Corporation officials, and officials from the NJ Department of Environmental Protection. In addition, we compiled relevant census data from North Trenton stretching back to 1890, did exhaustive newspaper reviews on the topic, and worked closely with the main community groups involved with this school site to develop two external grant proposals. Ms. Green and Ms. Saintilien presented their findings at the TCNJ Celebration of Student Achievement in 2008, at the Eastern Sociological Society meetings (New York, March 2008), and at the National Conference for Undergraduate Research (Salisbury, MD, April 2008). I presented preliminary results at the Southwestern Social Science Association (Las Vegas, April 2008), and am currently developing a manuscript titled "Routine Activities Theory and Environmental Crime: A Case Study of Illegal Dumping at a City School Construction Site". As a result of this research experience, Ms. Green pursued this topic as her senior thesis, earning a Phi Kappa Phi research award to complete her thesis research. The New Jersey Minority Academic Career Undergraduate Fellowship accepted Ms. Green into their program in 2007, providing substantial funding to complete her thesis and travel reimbursement to present

her research (\$2500). Ms. Green graduated in 2008 and is currently enrolled and works as a research assistant at the Bloustein School of Planning and Public Policy, where she will complete her MCRP in 2010. Ms. Saintilien will graduate in 2009, and has applied to the Teach for America program, although she is interested in eventually pursuing a degree in urban planning or community development.

MUSE 2008 (externally funded): With co-director Elizabeth Borland, I applied for and received a renewal grant of \$25,000 from the National Conferences of Undergraduate Research to fund seven projects, involving eight faculty members and seven undergraduate research assistants (see www.tcnj.edu/~trenton for more details). During this summer, I worked with colleague Elizabeth Borland and student research Susan Cosgrove to compile a list of Trenton-Ewing area social service organizations and to conduct a phone survey of a sample of these organizations to determine the level of interest in participating in community-based research with TCNJ students and faculty. This research was coordinated with the Bonner Center for Community Engagement, with the goal of facilitating the development of the CEL-II program (second, advanced Community Engaged Learning requirement for liberal learning). We found that most community organizations were willing and enthusiastic about working with TCNJ on such projects. Moreover, the database compiled has already been used by other faculty members at TCNJ to identify community partners for research. Ms. Cosgrove presented her findings at the MUSE poster fair in July, 2008 and will present it at the National Conference for Undergraduate Research in LaCrosse, WI in April, 2009. Ms. Cosgrove will graduate in Spring 2009 and has applied to ten doctoral programs in sociology. She expects to receive admissions notifications in March 2009.

Appendix IV: Student Application

Name: Angelika Gutierrez

Major: Sociology

Year: Sophomore

Graduation: May 2011

Housing: On Campus

This experience will expose me to new information and skills. It will be greatly beneficial to work with Dr. Bates and learn from her research, previous experiences in Ecuador and knowledge in the field of Sociology. My ultimate career goal is create International Medical Clinics for people to serve those without resources. I plan to study Public Health in graduate school. I would like to open a medical clinics in Ecuador. Therefore, studying their people and culture is crucial. The MUSE program and this research will have a direct impact on my goals.

Within the past year and a half, I had the honor to represent the school as an Ambassador and serve on two executive boards. I served as the Membership Co-Chair for the Women In Learning and Leadership (WILL) Program and I am currently the President of Union Latina. These activities have required many qualities, some of which I had and some of which I developed through these leadership positions on campus. Hard working, responsible, organized and trustworthy are some of the qualities I possess. I am very serious about accomplishing tasks in a timely manner. To do so, one must be responsible and organized. I am also bilingual in Spanish, which will greatly contribute to the project since most of the documents are in Spanish.

I am currently the research assistant of Dr. Bates. Through this research, I am being exposed to the materials we will be working on during the summer program. This being said, I will go into the summer already having done preliminary research on the topic. I had the ability to take *Sociology 101* with Dr. Bates this past semester. In this class, I developed my passion for Sociology. We were required to create a pilot study concerning a topic of interest. I truly enjoyed collecting the data for the research I conducted. I approached Dr. Bates on occasion to speak about my pilot study and other sociological questions concerning the course material. She informed me that she had lived in Ecuador for some time doing research and I immediately expressed an interest in her work. I am of Ecuadorian descent and have always wanted to learn more about its culture and people. By being her research assistant, I have already learned so much and I am excited to collaborate with her again this summer.

My concentration within the Sociology major is Health and the Environment. It is crucial to study current health and environment issues since they have huge effects on so many populations across the globe. Every country is interconnected. Therefore, studying the “Demographic and Land Use Changes and their implication for Carbon Mitigation Schemes in the Ecuadorian Amazon” is important because of the global ramifications it can have on other countries. Participating in this summer program will allow me to combine my passion for social scientific research, health and the environment and Latin America. This will be a rewarding experience that will greatly contribute to my academic and career goals.