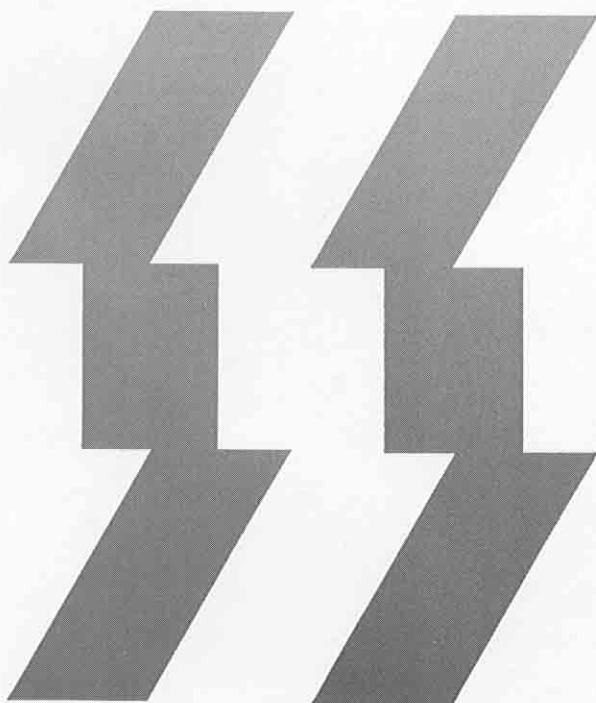


PENNSTATE



**POPULATION AND ECOLOGY
RESEARCH LABORATORY**

1995 Annual Report



A joint undertaking of the Rural Resources Studies Program,
Institute of Agriculture and Animal Science, Tribhuvan
University, Nepal and the Population Research Institute, The
Pennsylvania State University, USA.

In 1994 the Institute of Agriculture and Animal Science (IAAS) of Tribhuvan University in Nepal and the Population Research Institute (PRI) of The Pennsylvania State University in the USA began the process of creating a joint social science research and training institution. On January 1, 1995 the IAAS and the PRI opened the Population and Ecology Research Laboratory (PERL). This report is a summary of the activities and accomplishments of the PERL during 1995, its first year of operation.

The PERL was designed to accomplish three specific sets of aims. Those aims are as follows:

Research Aims:

- 1) To assess the influence of rapid changes in the ecological context on population processes, with a special emphasis on the processes of family formation, since these processes are a major determinant of population growth.
- 2) To assess the influence of changing demographic parameters, particularly related to population growth, on the ecological context.

Teaching Aims:

- 1) To train Nepalese applied social scientists in state-of-the-art social science research methods.
- 2) To train US social science students in research methods appropriate for developing country contexts.

Institutional Aims:

- 1) To create and institutionalize technical infrastructure for ongoing social science and demographic research in Nepal, including computing facilities and a survey research staff.
- 2) To develop a strong institutional link between IAAS and PRI that will be the basis for cooperative research projects and training of faculty and students at both sites.

Since its creation the PERL has been co-directed by Dr. Ganesh Shivakoti (IAAS) and Dr. William G. Axinn (PRI). PERL activities are carried out by a variety of staff at both IAAS and PRI. During 1995 the PERL staff made substantial progress toward accomplishing the aims listed above. In the pages that follow we describe the specific PERL achievements toward these goals.

RESEARCH

During 1995 the research activities of the PERL revolved around two large scale, long term research projects. The first of those is titled "Changing Social Contexts and Family Formation" which is referred to in the field as the "Chitwan Valley Family Study." The second project is titled "Reciprocal Relations between Population and Environment" and this project builds directly from the Chitwan Valley Family Study. The study area for both projects is the western part of the Chitwan Valley in south central Nepal. It is surrounded by the Chitwan National Park (jungle) in the

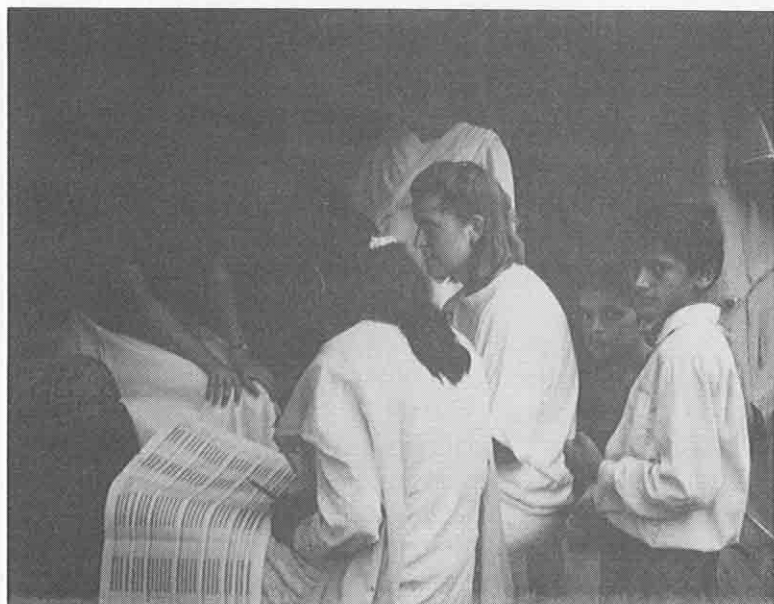
south, the Rapti River in the west, Nepal's East-West Highway in the east and by the Narayani River in the north. While both projects are funded initially for five years, the Chitwan Valley Family Study began in late 1994 and the Population and Environment study started officially in September of 1995.

Chitwan Valley Family Study: This study is designed to investigate the influence of changing social contexts on the timing of marriage, childbearing and contraceptive use. The research is aimed at answering the following specific questions: (1) To what extent do changes in the community-level social and institutional context produce changes in family formation processes? (2) Do changes in the family organization of individual life courses transmit these contextual effects? (3) Do any direct effects of contextual change remain once important individual-level experiences are taken into account? and (4) Do the consequences of community-level changes depend on the cultural context? This study utilizes a combination of ethnographic and survey methods to gather neighborhood histories from 132 neighborhoods in Western Chitwan. The project will also gather personal histories from the approximately 5575 individuals between the age of 15 and 64 years living in these neighborhoods.

The sample of neighborhoods for this study was chosen to represent the neighborhoods in Western Chitwan (probability proportionate to size), including the five major ethnic divisions inhabiting the area. These ethnic divisions include high caste Hindus, hill Tibeto-Burmese (such as Gurung, Tamang and Magar), indigenous terai Tibeto-Burmese (such as Tharu, Derai, and Kumal), Newar, and low caste Hindus.

Considering the importance of dramatic social and economic changes in Narayanghat (the only city in the valley, on the edge of the study site), the sample was stratified by distance from this town.

During 1995, we designed and pre-tested neighborhood history instruments and collected information from each neighborhood using questionnaires and a neighborhood event history calendar. We also took censuses of schools, health facilities, transportation facilities, banks, development projects, temples, women's groups, agricultural cooperative and other public facilities in western Chitwan and gathered information on each of these facilities. By the end of 1995 nearly all of this data had been coded and entered in the computer.



In 1995 methodological work to design the individual-level questionnaires and a Life History Calendar also began. Individual-level data collection for this project is scheduled to begin in the summer of 1996 and we expect the data collection phase to be completed in 1997. Two years of data analysis work will follow.

Reciprocal Relations between Population and Environment:

This study is designed to answer the following specific questions regarding the relationships between population change and environmental change: (1) To what extent do changes in marriage timing, household fission, childbearing, and migration influence changes in land use, soil quality, water quality, and flora diversity? (2) To what extent do variations in land use, soil quality, water quality, and flora diversity produce changes in marriage timing, household fission, childbearing, and migration? And (3) To what extent are the observed relationships between population processes and the environment produced by exogenous changes in the social and institutional context?

This study builds on the already ongoing Chitwan Valley Family Study (CVFS) by utilizing the same study population and sampling frame. This feature allows the Population and Environment study to utilize data on socioeconomic change and demographic history collected in the CVFS. The Population and Environment study is designed to add several new components to this data base. These include land use maps of the areas surrounding the neighborhoods, flora diversity counts from surrounding forests and pasture land, lab analyses of water samples collected from the neighborhoods, a monthly update of demographic events (for three years), and a seasonal update of agricultural activities (also for three years).

In 1995 we began the methodological work to obtain each of these new types of environmental data. We used 1992 aerial maps scaling 1:25,000 of Western Chitwan to select sites for flora counts and obtained permission from the Department of Parks and Wild Life and the Department of Forestry to take flora counts in the National Park area and the district forest area. We began land use mapping by delineating boundaries of the neighborhoods and measuring the land area of each neighborhood by land use type (e.g., cultivated land: upland, perennial and seasonally irrigated land; household and kitchen garden yards; plantations and orchards; common land and pastures; roadways). We also selected drinking water sampling points. We expect these aspects of our environmental data collection to be completed by early in 1996. These measures will be repeated in early 1999.



In 1995 we also began to design a baseline survey and a seasonal update of agricultural activities and an ongoing registry of demographic events. Both these data collection activities will be conducted at the household level among all the households included in the CVFS. These data collection activities are scheduled to begin in mid 1996 and will continue through 1999.

TRAINING

Training activities conducted by the PERL during 1995 focussed on training of both Penn State Ph.D. students and IAAS junior faculty. The highlight of these training activities was a semester long research and training exchange between PRI students and PERL's Nepalese staff. Four Ph.D. level students from Penn State spent the Fall semester of 1995 in Nepal conducting individual research projects and participating in the ongoing research program of the PERL. Each student was assigned to a counterpart from the Nepalese PERL staff and the IAAS junior faculty. The PRI students were registered for Penn State course credit and their individual projects were each tailored to their Ph.D. studies so that the experience would not slow their progress toward the Ph.D. These students underwent intensive Nepalese language training day during their stay. They also helped the Nepalese junior faculty prepare for GRE and TOEFL in preparation for attending Ph.D. programs at Penn State. Finally the Penn State students worked with their Nepalese counterparts on a small scale research project designed to provide education in research methods and a vigorous exchange of ideas.

Lucy Dwight, a Ph.D. student from the Department of Sociology at Penn State, worked with Purandhar Dhital, Faculty Associate at PERL, to investigate the political participation of Nepalese women within the Chitwan Valley Family Study (CVFS) area in order to determine the extent to which women's roles are autonomous. Dwight and Dhital also worked on an inventory of women's groups in the CVFS study area. Lisa Pearce, also a Ph.D. student from the Sociology Department, worked with CVFS Project Coordinator Dirgha Ghimire on creating a retrospective data collection tool (i.e. Life History Calendar) for use in the study. Pearce and Ghimire also worked with six PERL interviewers to complete an exploratory test of the calendar. Stephanie Bohon, another Ph.D. student of Sociology, worked with PERL Faculty Associate Kishor Gajurel on a methodological study of fertilizer use practices in the Chitwan Valley. Muiyiwa Oladosu (Nigeria), a Ph.D. student from the Department of Rural Sociology at Penn State, worked with PERL Faculty Associate Prem Bhandari on the role of men in reproductive and family planning in Nepal. The aim of this study was to examine the decision-making processes in the household and how male authority influences spousal behavior with respect to reproduction and family planning.

Other PERL training activities in 1995 centered on a number of activities aimed at teaching survey research methods. Penn State staff worked on training PERL staff in Nepal on questionnaire design, interviewing techniques, supervising protocols, questionnaire pre-testing, coding procedures, and data entry methods.

Jennifer Barber is Project Manager of the Chitwan Valley Family Study at PRI and an upper level Ph.D. student in Sociology at Penn State. Along with other training activities, Barber worked on project activities in Nepal with the aim of enhancing the international research and research methods components of her Ph.D. training. Barber spent fourteen weeks in Nepal at the PERL developing sampling strategies, delineating neighborhood boundaries, drafting and refining neighborhood history data collection instruments, and designing individual-level questionnaires. She also supervised all the data entry activities during 1995.

Dirgha Ghimire completed a six week internship in survey research study management at the Survey Research Center of the University of Michigan. Ghimire is the coordinator of the Chitwan Valley Family Study in Nepal and responsible for supervising the PERL survey research staff. Throughout 1995 he was engaged in training PERL staff in survey research methods.

The 1995 PERL training program ended on a particularly positive note as Kishor Gajurel, IAAS junior faculty member in Rural Sociology and PERL faculty associate, was admitted to the dual title Ph.D. program in Rural Sociology and Demography of Penn State. Gajurel began his Ph.D. studies at Penn State in January of 1996.

INSTITUTION BUILDING

Institution building activities at the PERL have focussed on developing research infrastructure at the IAAS in Nepal and forging stronger links between IAAS and PRI. In 1995 the development of PERL research infrastructure began

with investment in two research support groups: (1) the Survey Research Support Group, and (2) the Computing Support Group. The PERL physical infrastructure are housed in two IAAS buildings, one for the survey research support



group and a second for the computing support group. This second building also houses the living quarters for visiting PERL staff and students. In 1995 PERL infrastructure development began with the acquisition of basic furnishings, including tables, chairs, desks, storage cabinets, book shelves and filing cabinets. Slowly, however, during the course of the year, PERL has made strong progress toward its institution building aims.

Survey Research Support Group. In 1995 this PERL support group employed four IAAS faculty associates, two coordinators (one for each research project), two field work supervisors, ten field workers, and five field assistants. All of these staff received training in survey research and related research methods. The staff was engaged in a variety of survey research work during the year, including questionnaire design, pre-testing of instruments, coding, and data entry.

In 1996 PERL will recruit more than three dozen new interviewers and train them for work on the PERL's two ongoing research projects. Previous staff will be trained to take on supervisory and study management roles. New staff will also be hired and trained for coding and data entry. By the end of 1996 we expect to have a trained and experienced staff capable of fielding a large scale survey research effort.

Computing Support Group. The PERL computing facility consists of four 486 desk top computers, two 486 lap top computers, and one ink jet printer along with an large array of supporting equipment. Due to the problems of severe heat and excessive moisture during the monsoon and the frequent power outage, the laboratory is furnished with an air conditioner, an electrical generator, two uninterrupted power supply sources, and several voltage stabilizers. Besides these facilities, the IAAS's Rural Resources Studies Program (PERL's parent institution) maintains a modest GIS laboratory with two 486 computers, one laser jet printer, one dot matrix printer, a 54 color combination printer, two hand held roving G.P.S. devices, and a digitizing pad.

In 1995 these computing facilities were mainly used to develop new questionnaire material for both neighborhood and individual-level data collection. As a result the PERL staff

developed an expertise in both English and Nepalese word processing. Computer entry of neighborhood data also required the development of computer data entry skills. The staff also includes members with expertise in data management, particularly the use of spread sheets. During 1996, when full scale data entry will be under way, we expect to develop a core staff with strong data entry skills. By 1997 we also expect to develop staff with strong data management and analysis skills.

Other PERL Infrastructure. Besides these research support groups, the nature of the lab's research and training agendas required the development of other support facilities. These include transportation, housing, and library facilities. During 1995 PERL acquired two reconditioned vehicles (one Pajero jeep and a Land Rover), one motorcycle, and 20 bicycles. This transportation infrastructure provides the means for staff to travel to field sites and complete data collection activities in a timely manner. The PERL also operates a small guest house with three guest rooms, a bathroom, and a kitchen. These facilities provide housing for PRI students studying at the PERL, as well as visiting PERL staff. Finally, PERL maintains a small library of study materials related to population, the environment, and social science research methods.

Exchange Visits. One of the keys to our strategy of developing stronger research and training links between the IAAS (Tribhuvan University, Nepal) and the PRI (Penn State, USA) has been a series of exchange visits between IAAS and PRI. The visits were aimed at promoting stronger collaborative ties between IAAS and PRI and promoting new

PERL related research or training initiatives. To meet this aim exchange visits were organized around ongoing PERL activities.

The following visitors and research collaborators visited PERL during 1995:

Dr. Dennis Hogan, Director of the Population Research Institute, Penn State spent two weeks in Nepal. He visited the PERL at IAAS and met with the Dean of IAAS, Director of Research, PERL Faculty Associates and other PERL staff. He also met with a Member of Nepal's National Planning Commission, Faculty at the Central Department of Population Studies at Tribhuvan University, and officials at UNFPA/Nepal. Dr. Hogan also visited the Chitwan Valley Family Study sites and provided input on the study as well as the PERL organizational structure.

Dr. Kerry Richter, of the Population Research Institute, Penn State spent 8 weeks in Nepal working on a variety of PERL research activities. That work included help with the environmental data sampling plan, preparation of the field manuals for environmental data collection, and work on the design of seasonal agricultural and household registry data collection instruments.

Dr. Stephen Matthews, of the Population Research Institute, Penn State spent 4 weeks in Nepal engaged in both PERL related research activities and efforts to build stronger links between PERL and other agencies conducting environmental research in Nepal. These liaison activities included meetings with professionals at ICIMOD, UNFPA/Nepal, LRMP, Department of Geography at the Tribhuvan University, the Department of Roads, and the Department of Forestry and

Parks and Recreation in Kathmandu. His research work included visits to the CVFS field sites to make an assessment of the equipment needs for environmental data collection. Dr. Matthews also helped train PERL staff on the use of QBasic for land use mapping and Atlas GIS for marking boundaries. He also assisted in the development of sampling techniques for flora counts.

Dr. Tom Fricke, of the Institute for Social Research and Department of Anthropology of the University of Michigan visited the PERL in Nepal for four weeks. His research work focussed on ethnographic investigation of social and cultural aspects of the ethnic groups inhabiting Chitwan. He advised the CVFS team on data collection related to local culture, religion, youth activities, and important social changes. He also worked on training PERL staff in ethnographic methods, particularly techniques for conducting unstructured interviews.

Dr. Ganesh Shivakoti, Co-director of the PERL at IAAS, Tribhuvan University, visited the PERL offices at PRI, Penn State, for two weeks. During this time Dr. Shivakoti met with research collaborators at both Penn State and the University of Michigan. He also discussed future collaborative ties between the IAAS and PRI with a number of administrative officials at Penn State. These meetings included discussions with officials at Penn State's Population Research Institute, Department of Sociology, Department of Rural Sociology, Department of Agricultural Economics, and Office of International Programs. His travel in 1995 also included attendance at the Population Association of America annual meetings in San Francisco.

FINANCIAL SUPPORT

Financial support for PERL activities during 1995 came from a number of different sources. Below we provide a brief summary of those sources within categories of the activities they support. Without financial resource from these groups the PERL's accomplishments in 1995 would not have been possible.

Research Support. Financial support for PERL research projects came from the National Institute of Child Health and Human Development (NICHD) of the National Institutes of Health and the National Science Foundation (NSF) both of the USA. Specifically:

- The Chitwan Valley Family Study is funded by NICHD under a grant entitled "Changing Social Contexts and Family Formation" (grant # R01-HD32912-02), William G. Axinn, principal investigator.
- The Population and Environment Study is funded by NICHD under a grant entitled "Reciprocal Relations between Population and Environment" (grant # R01-HD33551-01), William G. Axinn, principal investigator.
- Additional support for these ongoing research activities comes from a grant from the NSF entitled "NSF Young Investigator Award" (grant # SES-9257724), William G. Axinn, principal investigator.

Training Support. Financial support for PERL training activities came from the Population Research Institute (PRI) of Penn State via institutional grants from the Andrew W. Mellon Foundation and William and Flora Hewlett Foundation, from various academic units at Penn State, and from the NSF. Specifically:

- Support for travel and field expenses for Penn State Ph.D. students (from the US) participating in PERL training activities in Nepal came from the PRI's Andrew W. Mellon Foundation Grant entitled "International Demographic Research and Training for the 1990's"
- Support for travel and field expenses for Penn State Ph.D. students (from developing countries) participating in PERL training activities in Nepal came from the PRI's William and Flora Hewlett Foundation Grant entitled "International Population Training and Collaborative Research"
- Tuition and stipend support for Penn State Ph.D. students participating in PERL training activities in Nepal came from Penn State University's College of Liberal Arts, Department of Sociology, and Department of Rural Sociology.
- Additional support for these ongoing training activities comes from matching funds generated by a grant from the NSF entitled "NSF Young Investigator Award" (grant # SES-9257724), William G. Axinn, principal investigator.

Institution Building Support. Financial support for PERL institution building activities, including both infrastructure development and travel for exchange visits, also came from PRI institutional grants from the Mellon and Hewlett foundations as well as matching funds from the NSF. Specifically:

- Support for PERL infrastructure development and exchange visits by Penn State staff (US) to the PERL came from the PRI's Andrew W. Mellon Foundation grant "International Demographic Research and Training for the 1990's"
- Support for exchange visits by Nepalese PERL staff to Penn State came from the PRI's William and Flora Hewlett Foundation Grant entitled "International Population Training and Collaborative Research"
- Additional support for infrastructure development and exchange visit travel came from matching funds generated by a grant from the NSF entitled "NSF Young Investigator Award" (grant # SES-9257724), William G. Axinn, principal investigator.

1995 PERL PAPERS AND RESEARCH REPORTS

Although 1995 was PERL's first year of operation, PERL staff completed two of papers based on PERL research projects. They are listed below.

- 1) Barber, Jennifer, William G. Axinn, Ganesh P. Shivakoti and Kishor Gajurel. 1995. "Sampling Strategies for a Less Developing Countries: A Detailed Example from Rural Nepal." Paper presented at the 1995 Annual Meeting of the Population Association of America, San Francisco.
- 2) Axinn, William G., Jennifer Barber, and Dirgha J. Ghimire. 1996. "The Neighborhood History Calendar: A Data Collection Methods Designed for Dynamic Multilevel Modeling." Paper presented at the 1996 Annual Meeting of the Population Association of America, New Orleans.

The Institute of Agriculture and Animal Science

The Institute of Agriculture and Animal Science (IAAS) started as a School of Agriculture in 1957 under the Department of Agriculture of the Government of Nepal, and was elevated to the status of Institute of Agriculture and Animal Science, and became a part of the Tribhuvan University system. The central campus of the Institute is located at Rampur in the Chitwan district about 150 kilometers south-west of the capital city of Kathmandu. The mission of IAAS is to promote research and development in agriculture, and to train students to support, implement and maintain agricultural development.

The academic programs at IAAS include a Bachelor of Science in Agriculture and a Bachelor of Veterinary Science and Animal Husbandry. The Institute also offers Master's degrees in Agronomy and Plant Breeding, Agricultural Economics, Animal Science, Horticulture, Entomology and Pathology. The programs are conducted through a total of thirteen departments and a core of 120 faculty.

The research activities of IAAS are coordinated through the Directorate of Research responsible for the formulation and execution of policies, and monitoring of faculty and student research. The faculty at IAAS have organized several research groups to take up interdisciplinary research and studies. Rural Resources Studies Program (R-RESP) is one of them and its mission is to continue the advancement of social science research and extension activities at IAAS in the areas of rural, natural and human resources. The two areas in which R-RESP is involved are: (1) Population and Ecology Research Laboratory (PERL) and (2) Rural Resource Information Laboratory (RRIL).

The Population Research Institute

The Population Research Institute provides an organizational setting for interdisciplinary population research and training. The Institute includes more than forty faculty associates and about fifty graduate students from eleven different departments in the social and agricultural sciences and in health-related fields.

Population training at Penn State includes both pre- and postdoctoral training programs. Predoctoral training is provided through a multi-disciplinary dual-title graduate program in demography. This unique program allows students to earn a dual-title master's or doctoral degree in demography and one of the following fields: sociology, economics, anthropology, agricultural economics, rural sociology, or human development and family studies. The program enables students to develop expertise and skills in demographic theory, methodologies, and policy analysis while maintaining a professional identification with their social science disciplines. Support for predoctoral students is provided by the Hewlett, Ford and Mellon Foundations, the National Institute on Aging (NIA), and research and teaching assistantships in affiliated departments.

Postdoctoral training in the Population Research Institute is oriented toward refining demographic research skills through collaborative apprenticeships in research in population biology, intergenerational relations, and cohort succession in aging populations. This NIA funded training program supports four postdoctoral fellows each year. Postdoctoral training at the Institute also focuses on international demography, particularly fertility in developing countries and methods for combining qualitative and

quantitative research strategies. This aspect of the training program is funded by the Mellon Foundation. Postdoctoral support also is available through the Mellon Foundation's fellowship program in anthropological demography, and PRI has hosted several postdocs in this area.

The Population Research Institute provides research support services and facilities to PRI associates and affiliates and pre-and postdoctoral trainees. Research support activities are provided in five main areas: administration, computer facilities and programming, statistical consulting, information access and retrieval, and geographic information analysis. These services are funded through a combination of Penn State support, core grants from the National Institute of Child Health and Human Development and National Institute on Aging, and private foundations such as Hewlett and Mellon. The PRI is the institutional home of the Center on Aging and Health in Rural America (CAHRA) and the Population and Ecology Research Laboratory (PERL).