LBA-ECO LC-01 Northern Ecuadorian Amazon Household Surveys, Summary Results: 1999

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Revision date: December 19, 2011

Summary:

This data set reports summary statistics from socioeconomic and demographic surveys administered to the male and female heads of household on 767 farm plots. The surveys were performed in the provinces of Sucumbios and Napo/Orellana, in the northern Ecuadorian Amazon colonist settlements (Oriente) in 1999 (Pan and Bilsborrow, 2005). In addition, perception of, and opinions about local climate, soil quality, and environmental contamination were assessed for both the male and female heads of household. There are two comma-delimited (csv) ASCII data files. One file provides summary data from male respondents; the other data file provides summary responses from the female household survey (generally the spousal respondent). The original questionnaire forms are included as companion files (PDF format).

Data Citation:

Cite this data set as follows:

Walsh, S.J., R.E. Bilsborrow, and W. Pan. 2011. LBA-ECO LC-01 Northern Ecuadorian Amazon Household Surveys, Summary Results: 1999. Data set. Available on-line [http://daac.ornl.gov] from Oak Ridge National Laboratory Distributed Active Archive Center, Oak Ridge, Tennessee, U.S.A. doi:10.3334/ORNLDAAC/1052

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Data users should use the Data Set Citation and other applicable references provided in this document to acknowledge use of the data.

Table of Contents:

1. Data Set Overview:

Project: LBA (Large-Scale Biosphere-Atmosphere Experiment in the Amazon)

Activity: LBA-ECO

LBA Science Component: Human Dimensions

Team ID: LC-01 (Bilsborrow / Walsh / Garcia)

The investigators were Bilsborrow, Richard E. and Walsh, Stephen J. . You may contact Walsh, Stephen J. (swalsh@email.unc.edu) ; Bilsborrow, Richard E. (richard_bilsborrow@unc.edu) and Pan, William (wpan@bios.unc.edu)

LBA Data Set Inventory ID: LC01_Households_NEC

This data set reports summary statistics from socioeconomic and demographic surveys administered to the male and female heads of household on 767 farm plots in the northern Ecadorian Amazon colonist settlements (Oriente) in 1999. Perception of and opinions about local climate, soil quality, and environmental contamination were assessed for both the male and female heads of household.

2. Data Characteristics:

Data are provided in two comma-delimited (.csv) ASCII files. There are also two companion files, in PDF format, which provide the original survey questionnaires used; one for the males and one for the females.

File 1. **Male_survey_results.csv**

This file provides 35 tables of survey question summary statistics for 767 farms plots. The surveys were performed in 2 provinces: Sucumbios and Napo/Orellana. For each question, statistical data are provided on frequency, percent, cumulative frequency and cumulative percent. Please refer to **male_head_household_survey_form.pdf** for more detailed information regarding the survey questions.

Two of the 35 survey questions and tables of statistical data from file 1 are provided below as examples.

Example 1:

Road distance to market (kilometers)

	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0 to 4.9	81	10.56	81	10.56
5 to 9.9	114	14.86	195	25.42
10 to 19.9	261	34.03	456	59.45
20+	311	40.55	767	100

Example 2:

Year in which head of household came to settle in the Oriente

	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Before 1975	48	12.06	48	12.06
1975-1979		24.62	146	36.68
1980-1989	261	46.73	332	83.42
1990-1994	33	8.29	365	91.71
1995-1999	33	8.29	398	100
Frequency Missing = 369				

Example data records

(Summary header records omitted.)

```
Road distance to market (kilometers),,,,
,Frequency,Percent,Cumulative Frequency,Cumulative Percent
0 to 4.9,81,10.56,81,10.56
5 to 9.9,114,14.86,195,25.42
10 to 19.9,261,34.03,456,59.45
20+,311,40.55,767,100
```

```
Year in which head of household came to settle in the Oriente,,,,
,Frequency,Percent,Cumulative Frequency,Cumulative Percent
Before 1975,48,12.06,48,12.06
```

```
1975-1979,98,24.62,146,36.68
1980-1989,261,46.73,332,83.42
1990-1994,33,8.29,365,91.71
1995-1999,33,8.29,398,100
Frequency Missing = 369,,,,
```

File 2. **Female_survey_results.csv**

This file provides 22 tables of survey question summary statistics from 654 female heads of household. The surveys were performed in 2 provinces: Sucumbios and Napo/Orellana. The questions pertain to household composition, education, migration background, emigration from the household, household amenities, fertility, mortality, and health. There is also a tables provided on statistical data regarding the population in the sample by age and sex, and a table of data regarding out-migrants since 1990 by age and sex.

Please refer to **Female_head_household_survey_form.pdf** for more detailed information regarding the survey questions.

Two of the 22 survey questions and tables of statistical data from file 2 are provided below as examples.

Example 1:

Household has a Separate Kitchen

	Frequency	Percent	Cumulative Frequency	Cumulative Percent
No	32	4.89	35	4.89
Yes	622	95.11	654	100
Frequency Missing* = 109				
*Refers to women living in the house of another woman to whom the questionnaire was administered (i.e., extended households)				

Example 2:

Households in which Children Have Received Vaccinations

	Frequency	Percent	Cumulative Frequency	Cumulative Percent
No	68	11.51	68	11.51
Yes	519	87.82	587	99.32
Don't Know	4	0.68	591	100
Frequency Missing* = 172				
*Refers to women that have never been pregnant				

Example data records

(Summary header records omitted.)

```
Household has a Separate Kitchen,,,,
,Frequency,Percent,Cumulative Frequency,Cumulative Percent
No,32,4.89,35,4.89
Yes,622,95.11,654,100
Frequency Missing* = 109,,,,
"*Refers to women living in the house of another woman to whom the questionnaire was administered (i.e., extended households)",,,,
```

```
Households in which Children Have Received Vaccinations,,,,
,Frequency,Percent,Cumulative Frequency,Cumulative Percent
No,68,11.51,68,11.51
Yes,519,87.82,587,99.32
Don't know,4,0.68,591,100
Frequency Missing* = 172,,,,
*Refers to women that have never been pregnant,,,,
```

Companion Files:

- **Male_head_household_survey_form.pdf**
- **Female_head_household_survey_form.pdf**

Site boundaries: (All latitude and longitude given in decimal degrees)

Site (Region)	Westernmost Longitude	Easternmost Longitude	Northernmost Latitude	Southernmost Latitude	Geodetic Datum
Northern Ecuadorian Amazon (Ecuador)	-77.0000	-77.0000	-0.50000	-0.50000	World Geodetic System, 1984 (WGS-84)

Time period:

- The data set covers the period: 1999/01/01 to 1999/12/31
- Temporal Resolution: one time survey

Platform/Sensor/Parameters measured include:

- FIELD INVESTIGATION / HUMAN OBSERVER / SURVEYS

3. Data Application and Derivation:

Socioeconomic and demographic survey data have typically been applied in one of two ways -- to generate descriptive statistics or to serve as either dependent or independent variables in statistical modeling.

The 1999 survey data has contributed to the study of population-environment interactions in a frontier environment, particularly deforestation, urbanization, and subsistence and commercial cultivation of agricultural crops on lands made accessible by petroleum-company-built roads and the corresponding in-migration of spontaneous colonists beginning in the late 1960s (Pan et al., 2007; Walsh et al., 2003; 2004).

The socioeconomic data was also combined with GIS coverages of resource endowments and geographic accessibility and a classified Landsat Thematic Mapper (TM) satellite time series in the development of a cell-based morphogenetic model of land use and land cover change (Messina and Walsh, 2001; 2005).

4. Quality Assessment:

The 1999 male household head surveys were conducted by male Ecuadorian interviewers, while spousal surveys were conducted by female Ecuadorian interviewers. To ensure data quality, interviewers were given extensive training in Quito conducted by principal investigators in each year, and field supervisors reviewed all questionnaires after interviews were conducted.

The 1999 household survey data were successfully collected for 767 of the 823 farm plots on 392 fincas, with a response rate of 95%. Most non-responses were either refusals (N = 21) or uninhabited farms with no agricultural activity (N = 22).

The summary statistics have been checked and no further changes to the data are anticipated.

5. Data Acquisition Materials and Methods:

Ecuadorian Study Site

The study site was in northeastern Ecuadorian Amazon, lying in the headwaters of the Napo and Aguarico River valleys, encompassing the lowlands known as the Oriente (currently the provinces of Sucumbios and Orellana, originally Napo province). Oriente has an area of about 130,000 km^2 and comprises everything east of the Ecuadorian Andes, which by most definitions approaches half the country. Oriente is significant from a social, biophysical, and geographical perspective. Among the Amazon-basin countries, Ecuadorian forests are disappearing most rapidly (FAO, 1995). The rich biodiversity of the region has been diminished significantly by petroleum development, rapid population growth, and land clearing by migrant agricultural colonists. The population more than doubled from 1950 to 1990, to over 371,000, and was almost 550,000 in 2000 (INEC, 2001). Besides in-migration, high fertility contributed to rising population density in the region. However, between 1990 and 1999, according to this data set, the total fertility rate declined, but these lowered rates continued to exceed national and other regional averages (Carr et al., 2006).

The original settlers were generally poor, small-scale farmers who in-migrated as almost entirely spontaneous colonists. The colonists originally settled on 50 ha plots called fincas (farms normally configured as 0.25 km × 2.0 km plots), clearing primary forest to grow crops and to create small pastures for cattle. The Oriente has a year-round growing season, requiring the use of slash and mulch agriculture, with little burning, and possesses pockets of more fertile soils related to its proximity to volcanic Andean slopes. The agricultural system in the region involves annual crops such as corn and rice; semi-perennials such as plantains, bananas, and yucca; and perennial tree cash crops, mainly coffee (on over 80% of all farms) with modest production of cacao. However, as soil fertilty and land degraded over time in Oriente, some farmers sold off parts of their plots to newcomers. Others subdivided the farms as family size grew. The result has been a significant decline in farm size, leading new owners to reduce land in forest and pasture, increase more in the intensive forms of land use (e.g., perennials and annual crops, and increase in off-farm employment. Other important recent changes included the expansion of the road network and electrification grid and an increase in local urbanization.

Data Acquisition

The Ecuadorian research project was initiated as a 1990 cross-sectional study of spontaneous colonists who entered the northern Oriente region to obtain land adjacent to roads built by the oil industry. In 1990 a two-stage sampling design was used to select a sample of farm plots, settled by spontaneous migrant

families. The sample of plots surveyed was selected in 1990 via a two-stage procedure in which first settlement areas or sectors were selected and then farms or fincas (government defined agricultural units within which farm households are located) were selected from each sample sector. The 1990 final sample comprised 418 households located on 408 fincas, representing about 6% of all colonist plots in Oriente.

This survey was administered in 1999 on the same fincas successfully interviewed in 1990 using similar questionnaires for the household head and spouse. During the intervening 9 years, an extraordinary process of subdivision and fragmentation of many of the fincas occurred, resulting in more than twice as many families living on the same plots in 1999 as in 1990 (823 farms, plus 111 solares or house plots with under 1 ha of land). Data were successfully collected for 767 farm plots on 392 fincas.

Two questionnaires were administered by personal interviews in each farm household, one to the male head of household and one to the female head of household (spouse). In addition, the spatial location of crops and other forms of land use, and changes since 1990, were noted on sketch maps for each farm, including the location of all subdivisions and houses. The location of each farm with all subdivisions, dwelling units, and roads was spatially-referenced with GPS technology.

6. Data Access:

This data is available through the Oak Ridge National Laboratory (ORNL) Distributed Active Archive Center (DAAC).

Data Archive Center:

Contact for Data Center Access Information:
E-mail: uso@daac.ornl.gov
Telephone: +1 (865) 241-3952

7. References:

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