International Forestry Resources and Institutions (IFRI) Research Program ifri@umich.edu http://www.sitemaker.umich.edu/ifri

FIELD MANUAL

May 2007
Version 14
****Revised December 2011****

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Revisions to IFRI Manual and Forms

Revisions to IFRI Field Manual, version 13 Rev8-08

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	2008	
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List of Acronyms

ARD	Associates in Rural Development
CPR	Common-pool resource
CRC	Collaborating research center
DA	District administrator
DFO	District forestry office
FAO	Food and Agriculture Organization of the United Nations
GIS	Geographic information system
GPS	Global positioning system
IAD	Institutional Analysis and Development
IFRI	International Forestry Resources and Institutions
NAS	National Academy of Sciences
NGO	Nongovernment organization
NIIS	Nepal Irrigation Institutions and Systems
NSF	National Science Foundation
PRA	Participatory rural appraisal
PVO	Private voluntary organization
RA	Rapid appraisal
RC	Resistance Council
USAID	United States Agency for International Development
USDA	United States Department of Agriculture

Preface

The *International Forestry Resources and Institutions (IFRI) Field Manual* has been written over the past 14 years with the help of IFRI pretest teams and with the input of all established Collaborating Research Centers. This manual is not meant to be a stand-alone, self-teaching document. It is intended to be used in conjunction with specialized training seminars about the theory on which the IFRI research program is based and is intended to be a reference manual for IFRI researchers, useful for planning an IFRI study and for setting up a research site. The manual briefly describes the underlying framework of the IFRI research program—the Institutional Analysis and -Development framework—and how it is used in conjunction with the database. Other reference manuals address topics on how to use the database application, how to enter data, and how to approach data analysis.

Section I includes the history of the IFRI research program in the context of other programs, its goals and objectives, the present stage of development of the IFRI program, and the framework of -analysis that has guided the formulation of the research instruments. Section II briefly describes each research instrument, the IFRI relational database, its relationship to the research instruments, and the database conventions used on each research instrument. Section III describes the IFRI field research conventions and provides guidelines for the use of each of the ten research instruments. It also includes completed samples of research instruments based on a study conducted through the combined efforts of the Latin American Social Science Faculty (FLASCO) in Guatemala; Nature's Defenders (DN); the Forests, Trees, and People Programme of the Food and Agriculture Organization (FTPP-FAO); Faculty of Agronomy at San Carlos University (FAUSAC); and the International Forestry Resources and Institutions Research Program at Indiana University (IFRI-IU). Section IV focuses on questions of research design and methods. It also contains general guidelines for IFRI data collection, including site selection, research team composition, mapping instructions, and a list of recommended field equipment.

Page numbers are distinct for each section of the manual so materials may be added and revised over time. The first part of the page number denotes the section of the manual, with the page number in that section following a hyphen. For example, the completed sample of the *Site Overview Form* (Form O) begins on page III.A.1-11 (section III.A.1, page 11).

Acknowledgments*

We would like to thank the following people for their comments on the IFRI data collection instruction manual as it has evolved:

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* We also wish to thank the many people who commented on the original drafts of the research instruments.

I. INTRODUCTION AND RATIONALE FOR THE IFRI RESEARCH PROGRAM

A. INTRODUCTION

The rapid disappearance of tropical forests around the world is causing considerable concern among scientists, policy makers, and resource users. Because forests affect both the supply and condition of fundamental commodities such as air, soil, water, and the genetic diversity of flora and fauna, individuals and organizations are mounting new efforts to understand the variety of causes and consequences of deforestation. At the international level, treaties and accords such as the Tropical Forest Action Plan and the Intergovernmental Panel on Forests (an outgrowth of the Agenda 21 framework initiated in Rio de Janeiro in 1992) limit the continued depletion of forests. Many national governments pursue new policies to protect forests. Nongovernment organizations have designed and implemented community-based forestry projects, and local communities themselves are constructing or renewing efforts to manage their own forest resources.

Without a theory of the causes and consequences of deforestation, plans to limit it can produce unintended or perverse effects. Without paying attention to ecological factors, policies suitable for some regions can aggravate environmental problems in other areas. Similarly, well-meaning policies can accelerate deforestation by failing to understand how local populations use their forest resources. These two problems are symptomatic of a larger problem: Policy failures often stem from the mismatch of ecological and human systems (Low et al. 1999). Unless the scale at which the sustainable use of natural resources is addressed, public policy can fail to protect such resources.

The International Forestry Resources and Institutions (IFRI) research program provides scholars, policy makers, activists, and local populations with a systematic set of findings about how people interact with forest resources at the community level. Researchers collect information about the demographic, economic, and cultural characteristics of communities dependent on forests, using rigorous forestry techniques to measure community impact on forest conditions—which can be defined in different ways and are discussed throughout this manual. Researchers can then use social and biophysical information to explain why some communities have institutions that sustainably use forest resources while others do not.

1. Defining Two Key Terms

Throughout this manual, **institutions are defined as rules that constrain human behavior,** either by encouraging people to do x or not to do x. The former are commonly called "incentives," "inducements," and the like. The latter are referred to as "sanctions," "punishments," or similar terms. Among other things, institutions determine:

- who is eligible to make decisions in some arenas;
- what actions are allowed;
- the rules used to aggregate individual preferences into community-wide rules, decisions, norms, choices, and the like;
- what information is available to individuals; and
- the rewards (or payoffs) individuals obtain from collective action.

By institutions, IFRI does not restrict itself to formal, official rules. They are only part of the institutional framework affecting local populations, especially if they seek to prohibit or encourage local users from using (or abusing) forest resources. Local users may have their own sets of norms, rules, and codes that specify how forests should or should not be used.

IFRI also considers these to be institutions, regardless of whether they are written down or acknowledged as institutions by locals and/or other observers (E. Ostrom 1992:19–27). Indeed, IFRI coding forms are designed to identify such rules so researchers can measure and assess their impact on forests.
Identifying these rules is important because they determine whether communities use and conserve their forest resources by regulating access to them. Communities that do not build or maintain such rules can see their forest resources degraded, depleted, or simply destroyed. Institutions, therefore, are the "glue" that binds communities and empower them to avoid collectively suboptimal outcomes.

Common-pool resources, such as forests, are characterized by difficulty of exclusion and generate finite resource units so that one person's use subtracts from the quantity of resource available to others (E. Ostrom, Gardner, and Walker, 1994). While some "forests" are small enough that fencing them or protecting their borders from intrusion is relatively easy, excluding beneficiaries from access and use of most forests is costly. For many forest products, one person's harvesting also subtracts from those available to others in the short run. Though forests can generate a large number of goods over the long run, they can be degraded, depleted, or destroyed if access to their products is unlimited.

Other ecosystem services generated by forest resources—including watershed protection, carbon sequestration, biodiversity enhancement, and the like—also have many of these attributes. Though they are typically considered to be externalities or public goods, they are closely tied to the sustainability of the forest stock. They also are threatened by the same set of incentives that tempt users of an unregulated forest resource into a race to use up the timber and destroy the forest itself.

2. Forests As Common-Pool Resources: A Primer

Degradation of forest resources is most likely to occur in open-access forests where people involved and/or external authorities do not possess effective institutions to regulate the following:

- who is allowed to appropriate forest products;
- the timing, quantity, location, and technology of appropriation;
- who is obligated to contribute resources to provide or maintain the forest ;
- how appropriation and obligation activities are to be monitored and enforced;
- how conflicts over appropriation and obligation activities are to be resolved; and
- how the rules affecting the above will be modified over time with changes in the extent and composition of the forest and the strategies of participants.

Most theoretical studies have analyzed simple common-pool resource systems using relatively similar assumptions (Feeny, Hanna, and McEvoy 1996). They assume that the resource generates a highly predictable, finite supply of one type of resource unit (hardwood timber, for example) in each relevant time period. They believe appropriators are homogenous in terms of their assets, skills, discount rates, and cultural views. They also assume that appropriators are short-term, profit-maximizing actors who possess complete information. In this theory, anyone can enter the resource and appropriate resource units. Appropriators gain property rights only to what they harvest, which they then sell in an open, competitive market. The open-access condition is a given, and the appropriators make no effort to change it. Appropriators act independently and do not communicate or coordinate their activities in any way. As a result, this theory predicts that the resource in question will be overharvested.

Until recently, textbooks in resource economics presented this conventional theory of a simple common-pool resource as the only theory needed for understanding all common-pool resources. (For a different approach, see Baland and Platteau 1996.) With the growing use of game theory, appropriation from common-pool resources is frequently represented as a one-shot or finitely repeated Prisoner's Dilemma game (Dasgupta and Heal 1979; Dawes 1973). These models formalize the problem differently, but do not change any of the basic theoretical assumptions about the finite and predictable supply of resource units, complete information, homogeneity of

users, their maximization of expected profits, and their lack of interaction with one another or capacity to change their institutions. These models also predict the overexploitation of a common-pool resource.

A sufficient number of examples exist where the absence of property rights and the independence of actors captures the essence of the problem facing appropriators, explaining why the broad empirical applicability of the theory was not challenged until the mid-1980s. The desertification of the Sahelian area, the massive deforestation in tropical countries, and the collapse of the California sardine fishery and other ocean fisheries confirmed the worst predictions to be derived from this theory for many scholars. Garrett Hardin's (1968) dramatic article in *Science* convinced many non-economists that this theory captured the essence of the problem facing most common-pool resources in the world. Because appropriators are viewed as being trapped in these dilemmas, recommendations were repeatedly made that external authorities must impose a different set of institutions on such settings. Some recommend private property as the most efficient form of ownership (Demsetz 1967; Posner 1977; Simmons, Smith, and Georgia 1996). Others recommend government ownership and control (Ophuls 1973). Implicitly, theorists assume that regulators will act in the public interest, understand how ecological systems work, and change institutions so as to induce socially optimal behavior (Feeny, Hanna, and McEvoy 1996:195).

The theoretical conclusion that local users were helpless to overcome the incentives leading to the overuse of natural resources led many national governments to nationalize forest resources during the era following World War II. Nepal first nationalized all nonregistered forest and waste land in 1957 and expanded the definition of forest land in 1961 (Arnold and Campbell 1986). Similar developments occurred in India and Indonesia at about the same time (Arnold and Stewart 1991; Gillis 1988).

Unfortunately, these efforts had unexpected and perverse results. Unseen by policy makers, forest users in many locations had organized themselves and had vigorous programs to protect and, in some cases, enhance local forests (Fairhead and Leach 1996; Fortmann and Bruce 1988; Fox 1993). Once forests were nationalized, they were perceived by many local users as the property of the government rather than as local common property with a long-term value to local users. Because they no longer perceived themselves as the owners of these resources, a rush to harvest from them before others ensued, and deforestation processes accelerated rather than decelerated. The combination of loss of ownership with substantial increases in population, greater commercialization of forest products, and technological changes in harvesting efficiency increasingly threatened forests in all parts of the world (Arnold and Stewart 1991; Jodha 1986; Messerschmidt 1993; Poffenberger 1990).

Until the work of the National Academy of Sciences' Panel on Common Property (National Research Council 1986), the conventional theory was applied to all common-pool resources regardless of the capacity of appropriators to communicate and coordinate their activities. The growing evidence from many studies of common-pool resources in the field, however, called for a serious rethinking of the foundations of the conventional theory of common-pool resources (see Berkes 1986, 1989; Berkes et al. 1989; Bromley et al. 1992; McCay and Acheson 1987). These empirical studies question the generalizability of this theory, even if they do not challenge its validity where it is relevant.

As researchers around the world recognized that policies intended to reduce deforestation had had the opposite effect, considerable interest was rekindled in promoting various forms of community forestry (Alcorn 1990; Gilmour and Fisher 1992; Herring 1990; Peluso and Poffenberger 1989). Substantial evidence suggests that local forest users were capable of managing forest resources in many diverse locations (Agrawal and Yadama 1997; Ascher 1995; Becker, Banana, and Gombya-Ssembajjwe 1995; Shivakoti et al. 1997) as well as many other common-pool resources (E. Ostrom, Gardner, and Walker 1994; Schlager 1990; Tang 1992).

B. DEVELOPMENT OF THE IFRI RESEARCH PROGRAM

By drawing upon a large body of theoretical and empirical research about common-pool resources, IFRI integrates knowledge about local populations and their forest resources in a theoretically meaningful way. By using the same research instruments across sites and time, IFRI studies can test the usefulness of hypotheses about the biophysical, demographic, cultural, and economic conditions conducive to the sustainable use of forest resources. Of equal importance, they can provide policy makers with a systematic set of findings about how local populations interact with forest resources. Both types of knowledge will help improve the links between scientists, public officials, activists, and citizens in the efforts to promote the sustainable use of forests.

In March 1992, the Forests, Trees and People Program at FAO sponsored a small working seminar at Indiana University in Bloomington to examine the potential applicability of using database structures developed by the Workshop in Politial Theory and Policy Analysis (Workshop) for recording and storing forestry resources and institutions data. Early in the discussions, it became clear that to accommodate the complexity of forest systems, the database structure would need to be revised. The diversity of products that exist within the resource, the number of uses of these products, and the relationship between the harvesters and the resource were three levels of complexity not previously addressed in the database. Thus, the group concluded that developing a new structure for the forestry database that also retained many of the variables of earlier efforts would be a practicable strategy.

Seminar participants suggested that the database be guided by pretests of research instruments. The pretests occurred in India, Nepal, Mali, Bolivia, and Uganda. At the close of the seminar, participants wrote several long-term goals for the development of IFRI (see section C). After the seminar, staff at the Bloomington Collaborating Research Center (CRC) wrote a prospectus to describe data collection instruments and the relational database housing all IFRI data. E. Ostrom and Wertime (1994) wrote a paper outlining the IFRI research strategy, and CRC researchers have published over 100 articles, chapters, and papers, which are listed in the Publications section of the IFRI web site: http://www.sitemaker.umich.edu/ifri/publications.

IFRI is a global research program with its home base at the University of Michigan (UMich) in Ann Arbor. Administrative duties are shared with the Workshop and the Center for the Study of Institutions, Population, and Environmental Change (CIPEC) at Indiana University.

C. GOALS OF THE IFRI RESEARCH PROGRAM

The IFRI research program facilitates multicountry, multiyear collection and analysis of data about forests and forest institutions:

- to provide a way to ground-truth aerial data and spatially link forest use to deforestation and reforestation,
- to improve assessment capabilities in participating countries, and
- to enhance interdisciplinary knowledge about the causes and consequences of deforestation at the local level.

Researchers seek an empirically based consensus about the principal causes of deforestation and loss of biodiversity by focusing on the following core questions:

- How do institutions affect the incentives facing forest users (forest dwellers, timber corporations, transhumant populations, etc.)?
- How do these incentives encourage forest users to engage in the sustainable development or the destructive use of forests?

- Why do forest users establish collective-choice arrangements or continue to pursue independent strategies?

- How are forest users affected by government-driven development activities and policies?

D. PRELIMINARY HYPOTHESES

Prior theoretical and empirical studies provide an initial set of hypotheses about general factors that we expect to find associated with the more successful forest governance and management systems (see McKean 1992; Moorehead 1994; E. Ostrom 1990). The initial set of working hypotheses used in designing the database is that sustainable forest systems are more likely to result when:

- the expected value of long-term use of a forest exceeds the expected cost of managing the forest;

- local forest users participate in and have continuing authority to design the institutions that govern the use of a forest system;

- the individuals most affected by the rules that govern the day-to-day uses of a forest system are included in the group that can modify these rules;

- the institutions that govern a forest system minimize opportunities for free riding, rent seeking, asymmetric information, and corruption through effective procedures for monitoring the behavior of forest users and officials;[1]

- forest users who violate rules governing the day-to-day uses of a forest system are likely to receive graduated sanctions from other users, from officials accountable to these users, or both;

- rapid access is available to low-cost arenas for resolving conflict between users or between users and their officials;

- monitoring, sanctioning, conflict resolution, and governance activities are organized in multiple layers of nested enterprises; and

- the institutions that govern a forest system have been stable for a long period and are known and understood by forest users.[2]

IFRI research instruments operationalize these variables in multiple ways. They also include other variables noted in the literature useful for explaining deforestation and biodiversity loss.

The database should be used to generate information about forest conditions and the institutions that enhance forest sustainability. Results obtained at local research centers are shared with local users (e.g., government officials, forest users, donors, practitioners, technicians, and researchers from other institutions) to improve policy making and technical oversight.

E. RESEARCH QUESTIONS AND SITE SELECTION

CIPEC has been involved with IFRI since 1996, and the group's methods can be used as guides for other CRCs. CIPEC studies deforestation and reforestation at various locations around the world based on the following primary research questions:

- How are regional and global political and economic processes linked to human behaviors at household and community levels?

- How can macroscale physical and biological processes observed and modeled at a global scale be linked to meso- and microscale human organizational and decision-making processes?

- How do institutional arrangements influence the direction and size of the impact of human driving forces, such as population density and transportation networks, on ecosystems and global change?

To address these questions, information is collected on social and cultural factors, demographic patterns, institutional arrangements, and political and economic factors. These data are integrated and analyzed with remotely sensed images and ecological studies of forest environments. Through the use of geographic information systems (GIS) and statistical models, researchers aim to provide comprehensive, multidisciplinary explanations of land-use and land-cover change in forested regions of the world.

Site selection is based on the following criteria:

1. Forest types that cross more than one country or subnational jurisdiction, where significant differences in national, regional, and/or local institutions exist so the impact of diverse institutions and policies can be assessed while controlling for broad ecological factors.

2. Sites where substantial prior ecological data exist so that information about long-term ecological processes can be combined with information about social, economic, and political processes.

3. A sample of sites selected from data analysis of satellite images of subregions exhibiting particularly rapid or slow rates of deforestation and regrowth. Ground-level research is needed to ascertain what socioeconomic and biophysical processes are generating the faster or slower rates of change.

4. Sites are selected to address policy concerns within a country where the research is undertaken. Some of these will monitor policy innovations. Others will assess self-organized or indigenous institutions for their sustainability.

Sites selected with these criteria fall within one of three forest types: temperate deciduous, tropical dry, and tropical moist. They also are arrayed along one of three forest management regimes: private, communal, or government-owned. IFRI researchers can obtain more information about CIPEC, its methods and aims, by browsing its web site at http://www.cipec.org.

Each IFRI CRC is free to select sites according to its own criteria. What is important is that information collected at each site should be part of a research design that specifies, among other things, what a team expects to find. These hypotheses, whether confirmed or rejected, should be part of an overall selection of cases that allows researchers to identify the configuration of factors that lead to certain outcomes in their countries or regions of the world. Researchers can obtain more suggestions about research design in section IV of this manual.

ENDNOTES TO SECTION I

1. Free riding occurs when individuals do not contribute to the provision and/or production of joint benefits in the hopes that they will receive the benefits without paying the costs of providing such goods. Rent seeking occurs when individuals obtain entitlements that enable them to receive returns that exceed the returns they would receive in an open, competitive environment. Asymmetric information occurs when some individuals obtain information of strategic value that is not available to others. Corruption occurs when individuals in official positions receive personal side-payments in return for the exercise of their discretion.

2. These hypotheses are obviously stated in a very general manner. Gibson, McKean, and Ostrom (2000) describe how more specific versions of these hypotheses could eventually be analyzed using the IFRI database.

II. DESCRIPTION OF RELATIONAL DATABASES AND RESEARCH INSTRUMENTS

The IFRI database and database application help researchers carefully store a large number of variables across time about forests and the communities that use them. It also facilitates the systematic analysis of this information and makes it possible to share data.

Section II provides a brief introduction to the research instruments and a description of the relational database that IFRI uses. It reviews the relationships between the research instruments and the database (see also Jerrells and Ostrom 1995; E. Ostrom et al. 1993). Section II also explains how the research instruments and database are used through the use of generic examples.

A. A BRIEF INTRODUCTION TO THE RESEARCH INSTRUMENTS

Each research instrument includes variables that researchers are using to understand the connection between the physical characteristics of the forests and human interaction with the environment. Relying on rapid appraisal and traditional interview methods, the questions serve as a guide to researchers in the field. As researchers read this section, they are encouraged to examine the IFRI Conceptual Model shown in Figure 1 and the Summary of the Research Instruments in Table 1.

Each research instrument is divided into several parts. Section A is usually a historical overview. Section B includes a question about changes that have occurred since the last time the site was visited. The research instruments are:

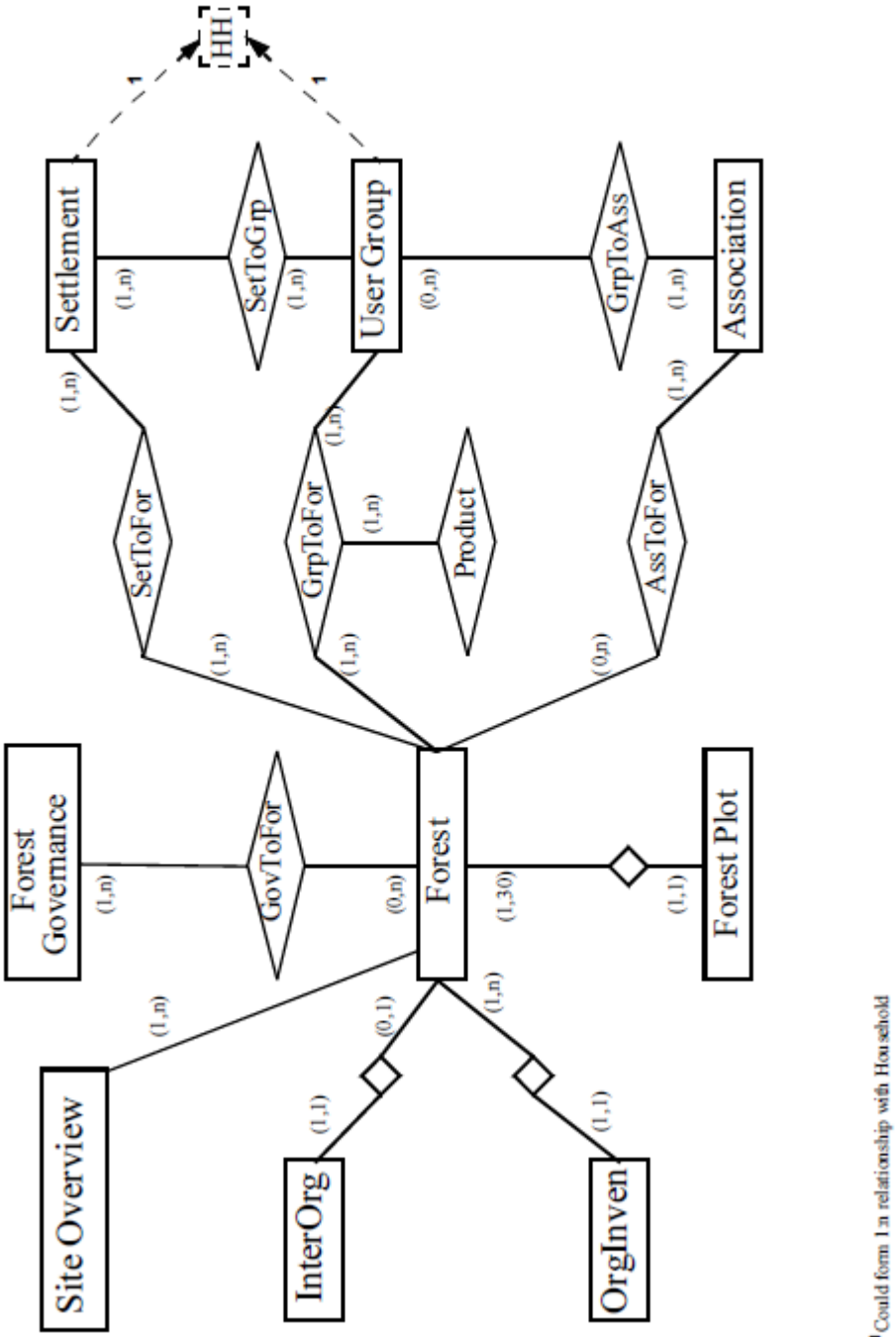
Form O: the *Site Overview Form* (Site Overview in Figure 1) is completed for each research site. A Site Overview Map is drawn that includes major -physical features of the area, including whether there is one or more distinct forest(s) and/or settlement(s) in the site and how they are arranged in relationship to each other. General information about the site that is relevant to all of the other forms is gathered, including local wage rates, local units of measurement for forest products, and the exchange rate for local currency. Information about the diverse individuals with whom in-depth discussions are held and the procedures followed in a particular site are documented on this form.

Form F: the *Forest Form* (Forest in Figure 1) defines a forest as a surface area with woody vegetation of at least 0.5 hectares, exploited by at least three households, and governed overall by the same legal structure. The size, ownership, internal differentiation within the forest, forest products harvested, and uses made of organic and inorganic forest products are recorded on this form. Changes in density of trees, grasses or ground cover and changes in forest area are recorded here. Questions on this form also address rules related to entry, maintenance, and monitoring of the forest, and penalties for breaking these rules. A forester's appraisal of the overall condition of the forest concludes the *Forest Form.*

Form P: the *Forest Plot Form* (Forest Plot in Figure 1) is used to collect botanical information in random plots - composed of three concentric circles (or rectangles with one common corner in some applications). In the first circle (1-meter radius), woody seedlings and herbaceous ground cover are sampled. An estimate of the percentage of the circle covered by each species is made and recorded on Form P. Shrubs, saplings, and woody and herbaceous climbers are identified and counted in the next circle (3-meter radius). The diameters and heights of woody stems between 2.5 and 10 centimeters in diameter are recorded. In the largest circle (10-meter radius), stems greater than or equal to 10 centimeters in -diameter at breast height (DBH) are identified and counted. The DBH of each is measured and its height estimated.

FIGURE 1

IFRI CONCEPTUAL MODEL



[1]Could form 1:n relationship with Household

Form S: the *Settlement Form* (Settlement in Figure 1) identifies a settlement inhabited by one or more forest user groups. Form S elicits demographic information about a settlement -and its relation to external markets and administrative centers. Questions about the climatic features, soil types, vegetation, topography, and elevation of the -settlement and the -surrounding area are also found in the *Settlement Form.*

Form U: the *User Group Form* (User Group in Figure 1) identifies the size, social-economic status, and related attributes of a group of people who harvest from, use, and/or maintain a forest or forests. It also records how they share the same rights and duties to products from the forest(s), even though they may or may not be formally organized. A variety of forest-related characteristics are collected about the user group: its dependence on the forest(s); ownership, -maintenance, and management of the forest(s); and strategies used by the user group to maintain or improve the -forest(s).

Form A: the *Forest Association Form* (Association in Figure 1) captures some of the information required to analyze institutional arrangements for forest governance and management at both the local and -federal level. A user group may have developed formal or informal rules that determine the activities of the group with respect to use of the forest(s), thereby becoming a forest association. Federated forest associations may also exist, composed of two or more forest user groups that jointly work together on activities and accomplish objectives with rules, policies, and -guidelines. This form records the activities the association has arranged, coordinated, or adopted rules about, such as the -governance and structure of the association, the general membership of the association, and the types of records maintained by the association or submitted to a higher authority. A matrix is used to examine the variety of forest-related decisions that are created and enforced by the association staff. This form also contains information on resource mobilization and account keeping, governance and -constitutional choice processes and internal relations within the association.

Form G: the *Forest–User Group Relationship Form* (GrpToFor in Figure 1) gathers information about products harvested by the user group from a particular forest. It codes all forest products that the user group harvests from the forest and identifies the three products that are most important to the user group. Uses made of the forest products are listed and labelled as household, commercial, or both household and commercial.

Form R: the *Forest Product Form* (Product in Figure 1) records specific details about a product harvested from a particular forest by the user group. (At least three products should be coded on three different Form Rs and more if the researcher would like to research other products.) This form identifies the uses made of the product, temporal harvesting patterns of the forest product, alternative sources and substitutes for the product, and tools and techniques used to harvest the product. The form also codes information about harvesting rules (when, how much, where, and what restrictions exist for harvesting practices), and penalties imposed for breaking a harvesting rule.

Form V: the *Forest Governance Form* (Forest Governance in Figure 1) obtains information about any organization that designs rules, policies, and/or guidelines about or influences the utilization of the forest -(harvesting, maintenance, monitoring, etc.), but does not itself use or harvest from the forest. The organization could be a local or regional office of a national government ministry, a multinational organization, private voluntary organization, or nongovernment -organization. This form addresses governance and structure, officials, resource mobilization and account keeping, and constitutional-choice processes of the organization.

Form I: the *Organizational Inventory and Interorganizational Arrangements Form* (OrgInven in Figure 1) depicts the interrelationships between all organizations (harvesting or nonharvesting) that -govern a particular forest or cluster of forests. The first part of this form provides an inventory of all organizations involved in harvesting and governance activities. It also identifies the type of activity each organization undertakes with regard to a site (provision, production, harvesting and use, consuming and processing, or sale). Finally, it records the level of activity, whether at the operational level, the collective-choice level, or the constitutional-choice level. The second part of this form focuses on relationships among organizations and user groups and how potential conflicts are resolved in a site.

In addition to the substantive variables already included on each form, several generic variables are left undefined on each form so researchers at the IFRI CRCs can add variables of particular interest not included in the -standard data collection forms. While a household survey is not part of the regular data collection efforts in an IFRI site, the database can be designed to link household surveys, along with the other data collected, to the full IFRI relational database.

TABLE 1: SUMMARY OF IFRI RESEARCH INSTRUMENTS

Form Name	Number to be Completed per Site	Links to Other Forms	Explanations and Notes
O	One per site	None	Relates to all other forms that comprise a single site.
F	One for each IFRI forest at the site	One I. *One or more* S, U, and R (usually three Rs). One G for each U to which it is linked. Many Ps (usually 30). May link with A or V.	By definition, an IFRI forest is used by at least three households. Therefore, there must a minimum of one user group (Form U) using a minimum of one product (Form R) for each IFRI forest (Form F).
P	Usually 30 per forest	One F.	Records biological and physical data about each forest. The size of a statistically adequate sample of forest depends on the research question and the degree of diversity in the forest. See section III.A.3 of the manual.
S	Minimum of one per site	*One or more* U and F.	Entry of data about user groups requires a link to a settlement (Form S). Therefore, there must be at least one settlement per site.
U	Minimum of one per site	*One or more* S and F. One G for each IFRI forest utilized.	Entry of data about user groups requires a link to a settlement (Form S). For each forest with which the user group is linked, one Form G and at least one Form R (usually three or more) must be completed.
A	Completed only for sites with formal associations of forest users involved in forest management	*One or more* F and U.	Not all sites have Forest Associations.
G	*One or more* per site: One for each user group–forest relationship at the site.	One F and U.	Records data about the relationship between a particular user group and a particular forest. There must be one Form G for each user group-forest relationship.
R	*Three or more* per user group–forest relationship, unless the user group uses fewer products in a given forest.	One G.	Records data about a product a particular user group uses in or takes from a particular forest. Because Form R records data on quantities used as well as rules for use, a separate Form R must be completed for each user group–forest relationship for which it is relevant.
V	Completed only for sites with organizations involved in forest governance but not forest use.	*One or more* F.	Not all sites have nonharvesting governance organizations. When a nonharvesting organization is present, the form must specify which IFRI forest or forests it affects.
I	One for each organization identified.	One F.	The inventory is for organizations affecting management of each IFRI forest.

B. AN INTRODUCTION TO THE CONCEPTS OF A RELATIONAL DATABASE

A relational database, such as the IFRI database, is a collection of files, or tables, that are linked with a common identification scheme called a conceptual model. It is as exhaustive as the study is designed to be and does not store information twice. This feature of nonredundancy eliminates contradictory query results and enables efficient information processing.

1. Relationships

The relationships contained in the IFRI database are dictated by the nature of the entities themselves: user groups are a part of settlements; forest associations are formed by user groups; user groups utilize forests. Some -relationships are so crucial to understanding the sustainable, productive use of a forest that a separate research instrument is used to -capture elements of the relationship. Forms R and G, for example, capture information about how user groups relate to forests.

Because the IFRI database is a comparative and international database, data from different forests are -collected. In order to construct a database that will accommodate a variety of forests, most relationships have been modeled as many-to-many relationships. For example, a settlement may contain more than one user group and a user group may live in more than one settlement. Likewise, residents in a settlement may use many -forests, and a forest may be used by residents of many settlements. The structure of the database must reflect all -possibilities, rather than the generally expected situation. Many-to-many relationships complicate the database by requiring the addition of linking tables, but provide the necessary functionality demanded by the international scope of the IFRI database.

2. Working Parts of a Relational Database

Let us turn to the second hypothesis listed in section I.D:

> Sustainable forest systems are more likely to result when local forest users participate in and have -continuing authority to design the institutions that govern the use of a forest system.

In this hypothesis there are several objects of inquiry that are called **entities** in the database. Each entity is composed of rows, columns, and cells. The simplified structure of entities in the database, in this case forests, is illustrated in Table 2. Forests and local forest users, and the relationship between a forest and its users, are the entities that are included in the IFRI database -relevant to the hypothesis. Form F, Form U, and Form G cover these entitites. They are stored as tables in the database.

To analyze any hypothesis, one needs to relate the attributes (called attributes, variables, or fields in a database) of one entity to other attributes of the same entity or of a different entity. To analyze the above hypothesis, one needs to gather, store, and retrieve information about attributes of a user group and its related forest association, if it exists, and then determine whether these entities are related to characteristics of a forest.

Understanding the methods used to store the information is unnecessary when using a relational -database. The user interacts with the data—storing, retrieving, modifying—in a two-dimensional array or a table format. The data about all of the forests included in the database is presented to the user in table form. -Similarly, the data about all settlements is presented as another table.

TABLE 2: BASIC WORKING PARTS OF AN ENTITY CONTAINED IN A DATABASE

Columns: Each "variable" in an entity is stored in a column.
Rows: Each "case" of an entity (in this example, a forest) is stored in a row.

<FNAME>	**Column 1:** First variable in forest entity	**Column 2:** Second variable in forest entity	**Column n:** Last variable in forest entity
Row 1: First forest in database	**Cell $_{11}$:** data about the first variable for the first forest	**Cell $_{12}$:** data about the -second variable for the first forest	**Cell $_{1n}$:** data about the last variable for the first forest
Row 2: Second forest in database	**Cell $_{21}$:** data about the first variable for the second -forest	**Cell $_{22}$:** data about the -second variable for the second forest	**Cell $_{2n}$:** data about the last variable for the -second forest
Row m: Last forest in database	**Cell$_{m1}$:** data about the first variable for the last forest	**Cell $_{m2}$:** data about the -second variable for the last forest	**Cell $_{mn}$:** data about the last variable for the last forest

In Table 3, note how a simplified database table will look with sample data taken from the *Forest Form* (Form F) research instrument.

TABLE 3: COMPLETED EXAMPLE OF TABLE 2

<IDCODE>	. . .	<FNAME>	<FCODED>	<FHOWOLD>	<FINITWHO>
001-UGA-001-9/93		Namungo	1	300	6
001-UGA-001-9/93		Lwamunda	1	300	1
001-UGA-003-11/93		Echuya Forest Reserve	1	300	6

3. Temporal Elements

A key objective of this research program is to take a conceptual snapshot of a forest, its users, and the rules used to govern and manage it at different points in time. Changes in such matters as the sustainable, -productive use of the forest and the type and amount of forest product harvested are examined in conjunction with changes in harvest rules or forest association activities. The initial data collection will include data not expected to change over time. These are archived in one of the history tables—e.g., Settlement History, User Group History, Forest Association History, Forest History, Forest Governance History—and will not be gathered in subsequent data collections at that site. XHISTORY entities are shown as subsets in the conceptual model.

4. Database Design

Entities—classes of "real-world objects" based on the individual IFRI research instruments—are represented by rectangles in Figure 1. Relationships between entities are represented by diamonds.

Numbers within parentheses next to each line identify the minimum and maximum number of times any entity -element can participate in the relationship: (minimal cardinality, maximal cardinality). A minimal cardinality of 0 means that participation in the relationship is optional; minimal cardinality of 1 means that participation in the relationship is mandatory. The maximal cardinality values of the entities participating in the relationship determine its type:

- Many-to-many relationships in which both maximal cardinality values are greater than 1 (e.g., several user groups may use several forests; also referred to as m-n)

- One-to-many and many-to-one relationships in which one maximal cardinality value is 1 and the other maximal cardinality value is n (e.g., one forest has many plots; also referred to as 1-n or n-1)

- One-to-one relationships in which both maximal cardinality values are 1 (e.g.,only one interorganizational -relationship for each forest; also referred to as 1-1)

Neither table columns corresponding to individual questions on the research instruments nor detail tables created by -questions with multiple answers are identified at this general level. Unique identifiers (table keys) used for maintaining the relationships between rows of data are stored in separate tables and contain research center identification numbers, country codes, site identification numbers, and the initial date of the data collection effort. This unique identifier is referred to as the IDCode, as noted in the first column of Table 3 above.

5. Units of Analysis

Many units of analysis—or objects of study—are incorporated within the IFRI database structure. The forest (using data collected in Form F and data aggregated from the sample of plots recorded on Form P) and the user group (using variables from Form U and Form A) are potential units of analysis.

C. SITE CONFIGURATIONS AND RESEARCH INSTRUMENTS

Before turning to a more detailed description of the variables included in each of the research instruments, let us first -discuss how various configurations of forests, user groups, settlements, nonharvesting organizations, and the like require -different combinations of research instruments. We will start with a very simple example and move to more -complex ones.

Example 1: A Simple Site

Figure 2 shows an example of a site where there is one forest used by one user group living in one settlement with one nonharvesting organization (in this case, a District Forest Office of a National Ministry of Forestry). Although such cases exist, this is not the "typical" case but rather the simplest case that one is likely to -confront. For a simple site such as this, the following forms will be completed in light of discussions with -different individuals in the two weeks prior to the first visit to this site.

Form O: *Site Overview Form*—this form is always required because it provides key information about the site needed to interpret the rest of the data. The identification number assigned to a site is contained in the identification code used for all forms related to that site.

Form F: *Forest Form*—this form is also always required. It would be possible, however, to discover on the third or fourth site visit that the forest no longer exists. The research team describes what has -happened in section B0 in response to the question: Have there been any major changes in the forest system since the last visit and, if so, what are they? In some sites, described below, researchers should use more than one F Form.

Form P: *Forest Plot Form*—in most research sites a minimum of thirty (30) Form Ps are completed for each forest.

Form S: *Settlement Form*—one (1) of these forms is completed to describe the settlement in which the users of this forest reside.

Form U: *User Group Form*—one (1) is completed to record information regarding the size and other attributes of

the group that uses the forest. User groups may engage in many activities besides harvesting from a forest. The nature of the user group, in fact, is defined by its use of the forest. Uses can include harvesting and planting as well as nonconsumptive uses, including use for recreational or religious purposes.

Form A: *Forest Association Form*—if the user group is organized to make and maintain some of its own rules—such as when and where certain forest products should be harvested—Form A should be completed for the user group. **Form U and Form A are tightly associated in many instances and refer to the same entity, but this is not always the case.** The rules-in-use shared by members of a forest -association do not need to be in written form nor considered by external authorities as formal law (see section I.A.2). Whenever there is a group with sufficient structure and at least some of their own rules-in-use, this forest association participates in the governance of the forest even though it may be somewhat limited in its scope, authority, and recognition.

Form G: *Forest–User Group Relationship Form*—researchers should also complete one (1) of these forms, recording information about three or more of the most important forest products -harvested by a user group (as identified by that user group). If all sites were as simple as this one, all of this information could be included on a Form U. But, as Example 3 (Figure 4) illustrates, there are times when one user group harvests from more than one forest. This makes completion of a separate Form G essential.

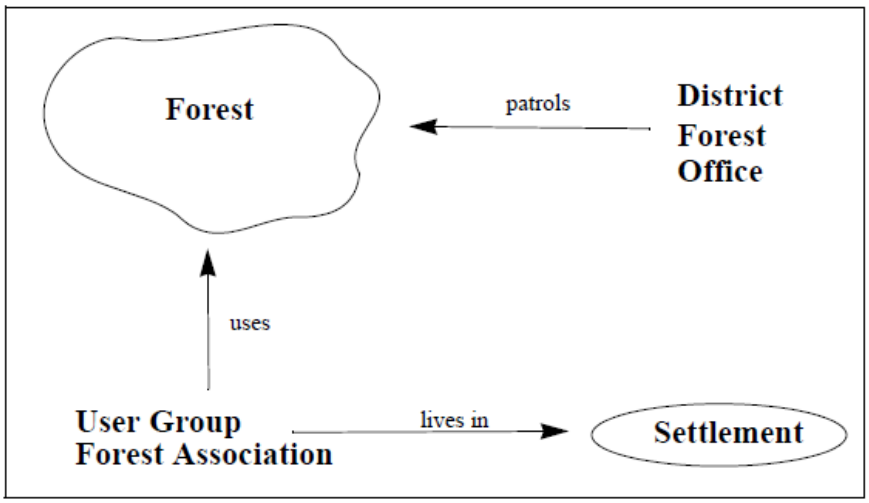
Form R: *Forest Product Form*—each of the important forest products recorded on Form G needs to be the focus of one (1) Form R, where information about the -availability of this product, the technology used in -harvesting it, and the rules-in-use for harvesting it are recorded. Form Rs are completed per user group, per forest. If the user group uses three (3) or more products in a given forest, complete *at least* three (3) Form Rs. There is no upper limit in the database to the number of Form Rs for a site.

Form V: *Forest Governance Form*—researchers record information about the personnel and activities of the local District Forest Office (DFO) on this form.

Form I: *Organizational Inventory and Interorganizational Arrangements Form*—one (1) of these will be -completed and the information on this form will be relatively simple since there are only two types of organizations to list on the inventory. The first is an 'N' = a local, forest-specific formal entity for the forest association/user group located in this area. The second is a 'G' = a forestry agency of the national government (see section III.A.10-6).

FIGURE 2

EXAMPLE 1: A SIMPLE SITE

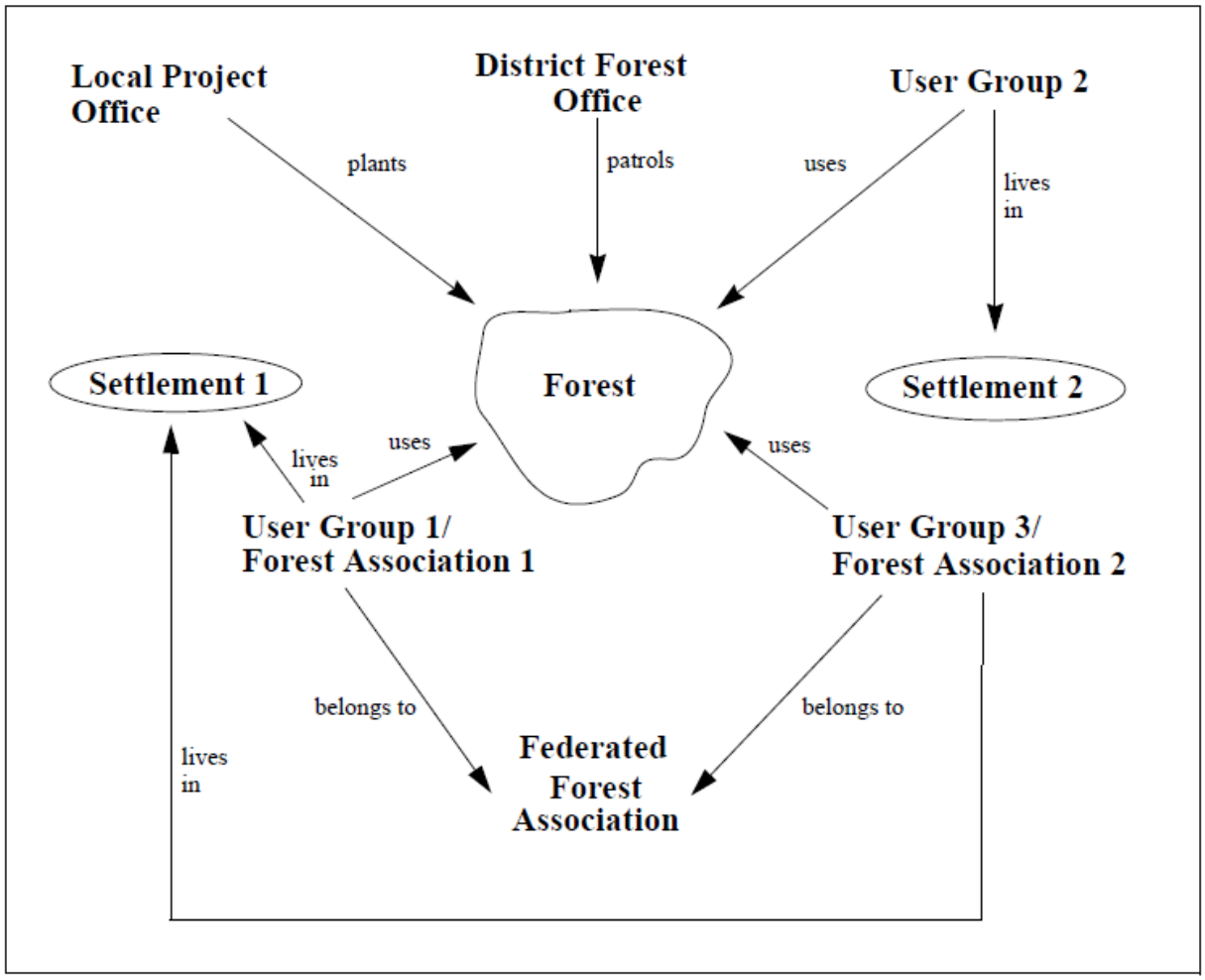


Example 2: A Somewhat More Complex Site

In Figure 3, a somewhat more complex site is drawn where the forest is used by three user groups (one of which is not organized into a forest association) living in two settlements. This site also has two nonharvesting - organizations: a District Forest Office of a National Ministry of Forestry and a Local Project Office of a - multinational, not-for-profit organization that has a "project" in the forest and makes rules related to the use of the project area.

FIGURE 3

EXAMPLE 2: A SOMEWHAT MORE COMPLEX SITE



For a case such as this, the following forms are completed:

Form O: *Site Overview Form*—as indicated in Example 1, this form is always required.

Form F: *Forest Form*—as indicated in Example 1, at least one (1) is always required.

Form P: *Forest Plot Form*—a minimum of thirty (30) Form Ps are completed for the one forest in this site.

Form S: *Settlement Form*—two (2) forms are completed to describe the settlements in this case.

Form U: *User Group Form*—three (3) forms are completed to capture information about the attributes of the groups (or organizations) that harvest from this forest.

Form A: *Forest Association Form*—determining how many of these forms to complete is more difficult in this example. User Group 2 is a nascent group. The individuals harvest similar products and do so under similar legal rights and rules, but they do not have any governance arrangements, and have not evolved or developed any of theirown rules-in-use. A Form U is completed for the user group, but no Form A. User Groups 1 and 3 are each organized and have developed some of their own rules. Thus, researchers should complete one (1) Form A for each of these user groups [totaling two (2) Form As]. In addition, the two groups have created a Federated Organization that organizes a yearly cleanup of the forest and distribution of the branches, leaves, and other materials to the members of User Group 1 and User Group 3. Thus, researchers should fill out a third Form A for this federated unit.

Form G: *Forest–User Group Relationship Form*—reserachers should complete a total of three (3) forms, one for each user group.

Form R: *Forest Product Form*—researchers should complete at least three (3) form Rs for each of the user groups, one form for each of the most important products coded in the Form Gs. A total of nine (9) Form Rs will be produced for this site. If the researchers so desire, more forms can be completed for each user group.

Form V: *Forest Governance Form*—information about the personnel and activities of the Local District Forest Office are recorded on one form. The Local Project Office of a multinational private voluntary organization (PVO) is recorded on a second form.

Form I: *Organizational Inventory and Interorganizational Arrangements Form*—one (1) of these is completed for the site. On Part A of this form, there is one 'M' for the nascent user group (number 1), three 'Ns' for the two more formally organized user groups (numbers 2 and 3) and the federated forest association. Part A of this form also includes one 'G' for the District Forest Office of the national government and one 'S' for the local project sponsored by a multinational not-for-profit organization.

Example 3: An Even More Complex Site

Figure 4 depicts a site with more than one forest. One of the forests is owned and managed by the national government. The second forest has been leased from the national government to an organized User Group/Forest Association that has divided the forest into four management units (a, b, c, and d). A sacred forest from which timber is not harvested is located in unit d. Even though the national government is the owner of both forests, the District Forest Office of the national government defines how Forest B is used, whereas the rules defining how Forest A is used are set by the User Group-Forest Association. The two forests may not have a fence between them, but the governance arrangements and legal structures of these two systems differ.

There are two user groups (one of which is not organized into a forest association) living in one settlement.

For a case such as this, the following forms are completed:

Form O: *Site Overview Form*—one (1) form is always required.

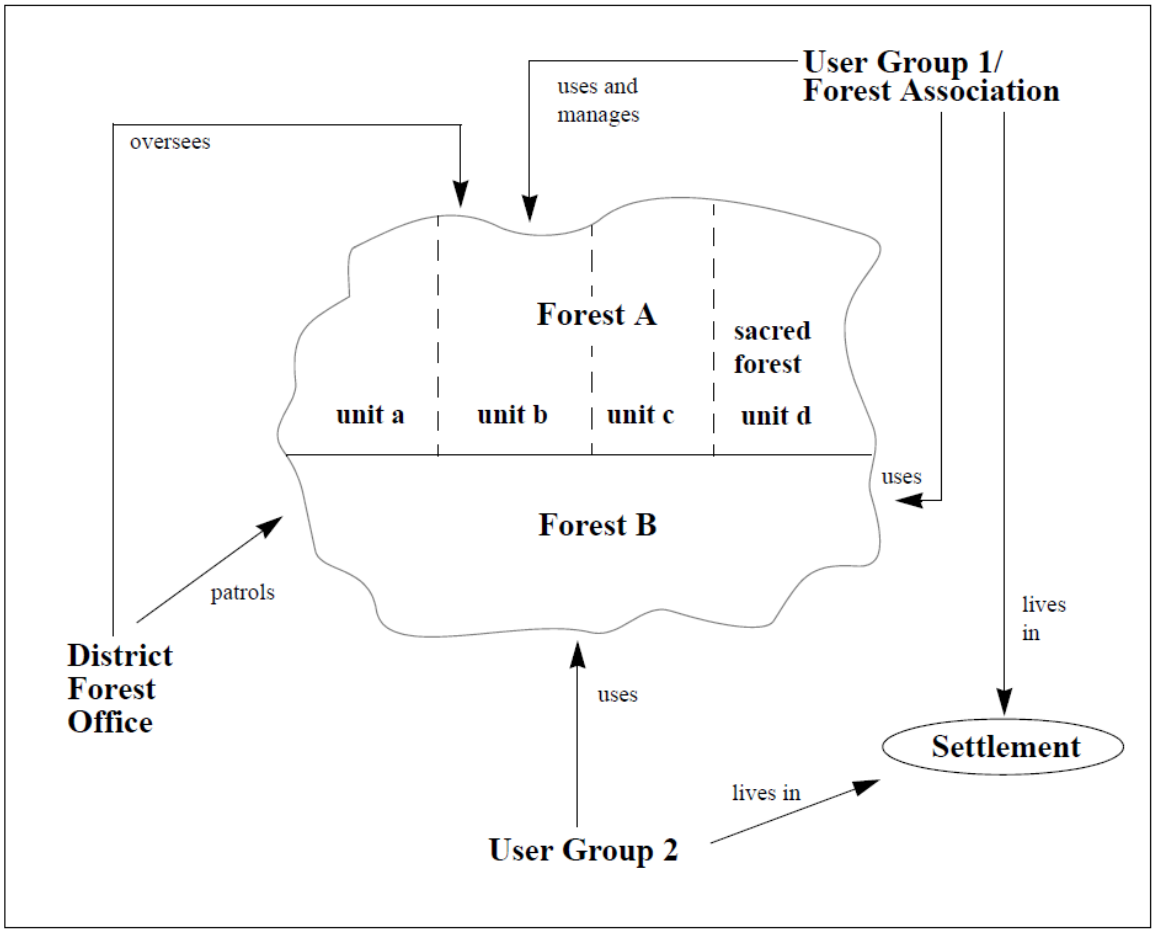
Form F: *Forest Form*—two (2) forms are required, one for Forest A and one for Forest B.

Form P: *Forest Plot Form*—At least thirty (30) Form Ps are completed in each forest. A larger number of plots may be needed if the management units differ in terms of terrain, orientation, species composition, or other attributes.

Form S: *Settlement Form*—one (1) form is completed.

Form U: *User Group Form*—two (2) forms are completed, one each for User Group 1 and User Group 2.

FIGURE 4
EXAMPLE 3: AN EVEN MORE COMPLEX SITE



Form A: *Forest Association Form*—one (1) form is completed for User Group 1, but not for User Group 2 because it is a nascent group. It does not have any governance arrangements and has not developed any rules-in-use.

Form G: *Forest–User Group Relationship Form*—three (3) forms are completed. Two forms are filled out for User Group 1: one for Forest A and the other for Forest B. One form is filled out for User Group 2 relating to Forest B.

Form R: *Forest Product Form*—nine (9) forms are completed. User Group 1 uses Forests A and B, so at least three (3) forms are needed for each of those forests, for a total of six (6) forms for User Group 1. User Group 2 uses only Forest B, so at least three (3) forms are needed to show their use of products. If the user groups use more than three (3) products in a forest, additional forms can be completed at the team's discretion. Three Form Rs must be completed for each forest used by a user group. The only exception occurs if user groups use fewer than three products from a forest. In this case, the team completes forms for the one or two products used by the user group.

Form V: *Forest Governance Form*—Information about the personnel and activities of the local District Forest Office are recorded on one form. Different responses are coded for question A4 on this form for Forest A and Forest B.

Form I: *Organizational Inventory and Interorganizational Arrangements Form*—two (2) forms are completed: one for each of the two forests at this site. For Forest A, there is one 'N' for the more formally organized user group (Group 1) and one 'G' for the District Forest Office listed under A1 of this form. For A2, many governance activities are undertaken by N and not by G. The District Forest Office and the organized User Group are both identified as undertaking relevant constitutional-choice activities. For Forest B, there is one 'M' for the nascent user group (Group 2), one 'N' for the more formally organized user group, and one 'G' for the District Forest Office of the national government.

Example 4: A Stylized Version of a Uganda Pilot Study Site

We include a "stylized" version of the site map in a form similar to the three prior examples (see Figure 5). In this site there are two forests. Forest A is owned by the head of a family who also owns a dairy farm. The owner employs workers and his son on the dairy farm who also harvest a variety of forest products from Forest A, even though their major commercial activities center on the dairy farm. The owner has recently set aside a small section of the forest to convert to a eucalyptus plantation (unit a). Forest B is a Government Reserve Forest patrolled when feasible by the District Forest Office.

A settlement is located relatively near both forests. A men's user group and a women's user group live in the settlement and have different customary rights to Forest A. The men's user group (User Group 1) also uses Forest B. Both user groups are nascent. The third user group is the owner's family and the workers who live in dormitories on the owner's land. For this site, the following forms are completed:

Form O: *Site Overview Form*—one (1) form is always required.

Form F: *Forest Form*—two (2) forms are completed.

Form P: *Forest Plot Form*—thirty (30) forms are completed for each forest.

Form S: *Settlement Form*—one (1) form is completed.

Form U: *User Group Form*—three (3) forms are completed: one each for the men's and women's user groups that live in the settlement and one for the owner's family and workers.

Form A: *Forest Association Form*—one (1) form is completed for the corporation that the owner established.

Form G: *Forest–User Group Relationship Form*—four (4) forms are completed, since the men's user group uses both forests, while the owner's family and the women's user group both use the private forest.

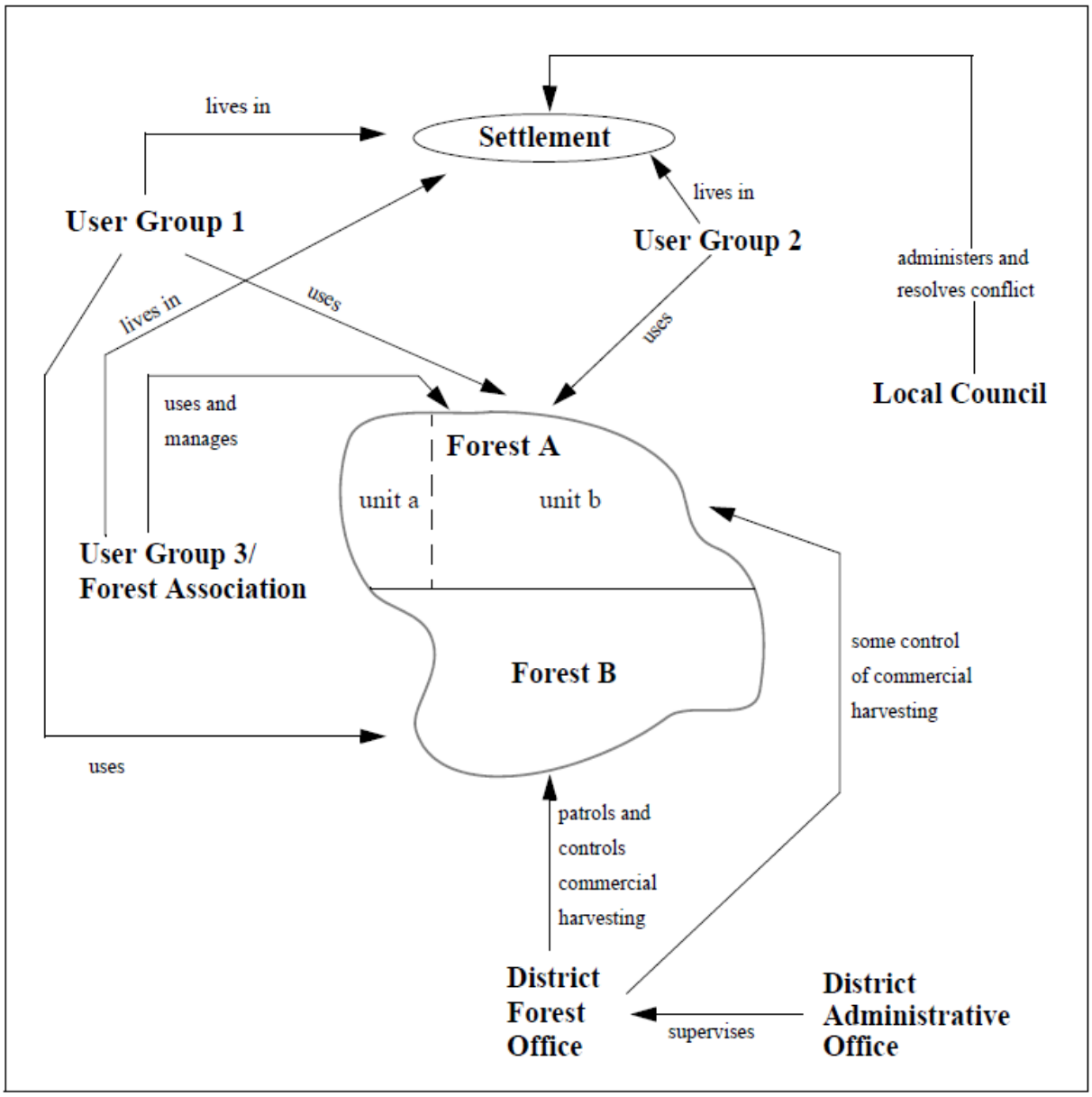
Form R: *Forest Product Form*—at least twelve (12) forms are completed: three for each of the three user groups that use Forest A and three for User Group 1's use of Forest B.

Form V: *Forest Governance Form*—three (3) of these forms are completed: one for the District Forest Office, one for the District Administrative Office, and one for the Local Council responsible for administrative and judicial functions at the settlement level.

Form I: *Organizational Inventory and Interorganizational Arrangements Form*—two (2) forms are completed, and information is coded differently for each of the two forests in this site.

FIGURE 5

EXAMPLE 4: A STYLIZED VERSION OF A UGANDA PILOT STUDY SITE



In section III of this manual, one completed example for each IFRI form is provided. The completed forms are based on the forms completed by a Guatemala site team consisting of members from the Latin American Social Science Faculty, Nature's Defenders, the Forest, Trees, and Peoples Program of the Food and Agriculture Organization of the United Nations, Faculty of Agronomy of San Carlos University, and IFRI–Indiana University. Because there were many forms completed for this site, we have not included the entire set. In consultation with members of the research team, we have adapted the forms for instructional purposes.

D. DATABASE CONVENTIONS USED ON ALL RESEARCH INSTRUMENTS

In designing the IFRI research instruments, we have used several database conventions. We will discuss these conventions first. In section III, we will mention a few research-related conventions that should be used on the research instruments.

1. Identification of Variables and Detail Tables

After each question on a research instrument, you will notice some information contained in either of two types of brackets: < . . . > or { . . . }.

The first type of brackets (the arrow brackets) contains the name used in the database to identify the answer to the question. This is the variable name for the attribute filled in with the answer to the question. All variable names on a research instrument use the alphabetical letter of that research instrument as the first letter of the variable name. This will save much time later when researchers analyze the data and are trying to remember on which form a variable is located.

Notice that we have indicated "***Mark only one answer***" for each question associated with a single variable. If it is difficult to mark a single answer, **mark whatever represents the most prevalent answer.** Information relating to alternative answers will not be lost.

The second type of bracket (the curly brackets) identifies detail tables where information about questions that can have multiple responses are stored. These questions are usually identified with the additional phrase, "***Multiple answers may be applicable.***" The option to enter multiple answers is exactly that—an option. Based on pretest information, we felt that multiple answers would frequently be needed to provide an adequate response to a question. As an example, let us look at question F1 on Form U*:*

F1. Name the ethnic groups in the user group and the number of individuals within each ethnic group.
{U_SES} <U_GRPTYPE> = "ETHNIC"

Multiple answers may be applicable.

Ethnic group name <U_GRPNAME>	**Number of individuals** <U_GRPNUM>
_____	_____
_____	_____

Notice that attributes of detail tables begin with the alphabetical letter of the research instrument followed by an underscore to signal that it is a detail table field.

Not all attributes with multiple answers are stored in detail tables. Another technique is used to store multiple answers within a variable whenever the multiple answers consist of option numbers. For example, question C1 on Form F has 13 options. If options (1), (7), and (11) are checked, "1,7,11" will be stored as the value for <FPRODUCTS_>. Likewise, a value of "9" stored in <FPRODUCTS_> indicates that option (9) is the only option checked. Notice that the variable name <FPRODUCTS_> has "_" as the final character. The final underscore signals that the variable may contain multiple answers.

2. Generic Variables Located on All Research Instruments

Since each research project associated with the IFRI research program may require additional questions of value to the particular research project, we have made provision for 13 additional variables at the end of all forms. Each of these forms has the following generic fields located at the end of the associated table in the database:

xGENSNUM1	xGENTEXT1	xGENLNUM1	xWKSPMEMO
xGENSNUM2	xGENTEXT2	xGENLNUM2	
xGENSNUM3	xGENTEXT3	xGENLNUM3	
xGENSNUM4	xGENMEMO	xGENLNUM4	

where prefix "x" is replaced by the letter assigned to a research instrument. GENSNUM, GENTEXT, GENMEMO, and GENLNUM represent different types of variables.

GENSNUM is a numeric field that can hold integers ranging from 0 to 32,767. This kind of variable could be used to construct a question like C5 on Form A. There are four of this kind of generic variable in each table.

GENTEXT is a variable that can contain up to 254 characters. There are three of this kind of generic variable. One memo field (GENMEMO) has been placed among the generic variables for longer text answers. A memo field can be used to store text information that exceeds 254 characters.

GENLNUM is a numeric field that can hold a real number up to 65,000.0. This kind of variable could be used to construct a question like D7 on Form S for <LDistance>. There are four of this kind of generic variable on each table.

WKSPMEMO also exists for researchers to describe the questions and/or methodology for the generic variables they have used on the forms.

If researchers need to add more data to a table, there are additional ways to accomplish this: (1) create a separate table and merge it with the existing table in the database, or (2) create a separate table inside the database. Note, however, that the imported new variables will not be accessible within the IFRI data entry program.

The inclusion of generic variables within each of the main IFRI tables provides the researcher with a limited capability to customize the data collection. This flexibility is best utilized if the following recommendations are followed:

- Formulate the question associated with a specific generic variable **before** actual data collection begins.
- The question associated with a generic variable should be used throughout data collection for the current research effort. For example, if a question is associated with <FGENSNUM1> to elicit information about Forest A, the same question should be associated with <FGENSNUM1> to elicit information about Forest B and Forest C.
- Carefully choose a generic variable whose type matches the type of **answer** solicited by the question.
- Reproduce a listing of questions and associated generic variables for each research instrument for distribution to the data collection team prior to the data collection visit.
- Make sure the questions associated with the generic variables are written on the pages provided at the end of the appropriate form(s) when sending data to the Collaborating Research Center.

3. Question B0

Where section A of a form is used as a history section, the first question in section B is usually:

> B0. Have there been any **major** changes in the *y . . . y* since the last visit, and if so, what were they? (*long text*) <xHISTCHNG>,

where *y . . . y* represents the entity element being coded (e.g., a forest or a settlement) and *x* represents the prefix letter assigned to the form.

This question can be used to describe any changes that the fieldworkers think are important to help understand why the entity is different from when it was most previously coded. A future researcher wanting to understand the history of a particular forest would read the history section coded at the time of the initial visit and the responses to the B0 questions that have been recorded at each subsequent visit. Any changes in the name recorded in the first section of the form in <xCODED> option "Yes, with a new name" should be recorded here.

4. Naming Rule

Do *not* use the same name for different entities. For data management purposes, each entity must have a unique name.

5. No or Yes Answers

Various tables in the research instruments contain columns that require numeric answers for "no" and "yes." We use the coding convention of **1 = NO** and **2 = YES**. Reversing the codes is one of the most common errors made when completing the forms.

6. Priority Variables

A significant problem for IFRI researchers that has recurred over the years has been that not all variables are collected at all IFRI sites, because: 1) there are so many variables in total; 2) fieldwork is constrained by limited time and funding; and 3) different researchers have different priorities.

As a solution, IFRI has identified 429 **priority variables** from within the existing protocols. The priority variables are the minimum set of variables that need to be collected, and which will *always* be collected for *all* new IFRI. Please note that questions which are not on the priority list will not be dropped from the IFRI research protocol, and all researchers are encouraged to continue to also collect data on as many of the other questions in the IFRI protocol as are of interest to them. The priority variables were identified based on feedback from CRC members, recommendations from the review committee, and a subsequent analysis of the frequency of missing data and response rates from the current set of cases in the IFRI database.

The priority variables have been clearly marked throughout the 10 IFRI research forms. Priority Variables are marked in **bold**, marked with an '►', and are **► surrounded by a grey box**

Example of a question that is a priority variable:

►F5. How do individuals in the user group define poverty? *(text)* <UDEFPOV>

A Footer at the bottom of every form reminds researchers to answer questions that are priority variables:

► This is a priority variable. Please make sure this question is answered. Rev. 12-11

III. COMPLETING THE RESEARCH INSTRUMENTS: A GUIDE

Section III provides a detailed description of each of the ten research instruments. Each instrument is structured in the following way for teaching purposes:

Section A:

- Definition: the definition section provides detailed information about key terms used within the research instrument.

Section B:

- Purpose: this section provides the reasons for the questions found in the research instrument.

Section C:

- Guidelines for Data Collection: this section guides the researcher through data collection, beginning with how to define key elements in the research instrument before and during data collection. The  demonstrates which coding forms must be used to complete the questions in individual research instruments. This section also provides highlights about key questions in the research instrument and team leader responsibilities.

Section D:

- Specific Guidelines by Section and Question: the questions on the research instrument that may need further explanation are discussed in this section.

- Sample Research Instrument: the sample research instrument at the end of each research instrument guideline section is based on a pilot research study conducted in Guatemala. The data in this example have been slightly altered for purposes of instruction.

Some instructions are repeated in the introductory materials, on the form itself, and again in a shaded box. Because there is so much detail to learn about the use of these forms, we have repeated key information in several locations to help the new researcher become familiar with key instructions rapidly.

A set of coding conventions has been developed for use in completing all forms. These conventions are listed in Table 4.

TABLE 4: IMPORTANT RESEARCH DATA COLLECTION CONVENTIONS USED ON THE RESEARCH INSTRUMENTS*

Research ID (<RID>)	The Research ID will be assigned by UMich. This number will remain the same for all studies carried out at the CRC.
Country ID (<CID>)	The Country ID will be the country code where the study is carried out. Only country codes supplied on the list in *Appendix 1–Form O* are acceptable. The country code will be chosen by the team leader for the study.
Site ID (<SID>)	This number will be assigned to the team leader for a site by the CRC database manager and does **not** change for future revisits to the same site.
Yes and No Responses	Throughout the research instruments, **1 = NO** and **2 = YES**. Reversing these codes is a very common error.
Naming Rule	Do *not* use the same name for different entities. For data management purposes, each entity must have a unique name.
N/A Responses	N/A will be handwritten on the research instruments by the researcher when a question is NOT APPLICABLE.
Blank Spaces	Questions on the research instruments that are not completed by the researcher will be regarded as missing-in-case by the data enterer (unless otherwise noted). The team leader must check all research instruments for blank spaces prior to data entry.
Handwriting	Responses on each research instrument should be printed as clearly as possible. If a member of the research team needs to use more space for a response, -additional information should be written on a page attached to the research instrument (clearly marking the question to which it refers).
sp.	Following a genus name, sp. indicates that the plant species could not be -determined. The accepted abbreviation for "species" is sp.
Section A as History Section	Where relevant, we have used section A on each form as a history section. The data recorded in the history section will be stored in the database as a separate table since one usually only needs to write information about the history of an entity once.
Dates	Date fields are to be filled out with month prior to day prior to year (e.g., July 8, 2004, should be written 07-08-04).
Conversions of Volume and Area	All units of volume and area should be written in local units and converted into metric units prior to leaving the field.
Priority Variables	The priority variables are the minimum set of variables which need to be collected and have been clearly marked throughout the 10 IFRI research forms. Priority variables are marked in **bold**, with an '►', and are **► surrounded by a grey box**

*These conventions apply only to handwritten research instruments. Database conventions are outlined in the IFRI Data Entry and Data Management Manual.

A. RESEARCH INSTRUMENT GUIDELINES AND SAMPLE RESEARCH INSTRUMENTS

The guidelines for each of the ten research instruments and a sample of each research instrument follow in sections III.A.1 through III.A.10.

III.A.1. FORM O—SITE OVERVIEW FORM: GUIDELINES

A. DEFINITION OF A SITE

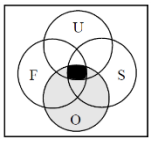
A **site** is the location where a study is being conducted. The location must include at least one 0.5-hectare or larger forest and be used by at least one user group comprised of at least three households. The three households can be represented in more than one settlement. If there are multiple entities being studied, the description of the site will contain all of these entities.

B. PURPOSE OF THE SITE OVERVIEW FORM

The *Site Overview Form* (Form O) is used primarily to record methodological information and general characteristics about the study area rather than substantive information about the entities being studied. A comprehensive map of the study site is included in this research instrument to note major physical features of the area, including whether there is one or more distinct forest(s) and/or settlement(s) in the site, and where entities are located in relationship to each other. Form O also includes questions about the research team, how a particular site fits into the sampling frame for a study, data collection techniques, geographic features, and general policy and legislative information.

C. GUIDELINES FOR DATA COLLECTION

1. Defining a Research Site



The lead researcher in an IFRI study may select a site based on interest in developing a case about a group or groups who govern a particular forest or forests in a special way. He or she may also be interested in studying a certain forest's ecology. Whether the lead researcher begins first by finding a forest to study or chooses a group of people using a forest, an IFRI study includes both the study of forests and people that harvest from or use the forest. Two major challenges face researchers in defining a site: defining the boundaries of the forest in the site and discovering who obtains products from that forest.

Two or more types of maps help the team define the site. As information is gained about the area in the presite visit and in the early stages of the site visit, a sketch of the site will be drawn by using scaled maps of the area. This map will be edited throughout the site visit. Another map will be drawn by community members from each settlement in the site. The map drawn by the community is a map of the community's perception of the forest and should include other landmarks that relate to harvesting from the forest. This map of the site should be transcribed onto notebook-size paper and attached to the Site Overview Map in C12. The community map for each site must be checked with the scale map, but not altered.

A site will always include at least one forest and one user group. Most likely it will also include a settlement where the user group lives. In some areas, we find that users of one forest also harvest substantially from another nearby forest, which could be heavily used by another user group, who also use a third forest. The question of how to bound a site can be perplexing when forests are located in close proximity. Additional forests and settlements may be added when they form a close network of related forests, settlements, and user groups. Examples of sites are given on pp. III.A.1-6 through -8.

Key Questions for the Research Team When Defining a Site

1. Where is the forest?
2. What are the forest's physical and legal boundaries?
3. How large is the forest?
4. Which communities live near the forest?
5. Which people use the forest?
6. How do forest users define the site?

2. Data Collection

Form O will be completed primarily by the leader of the research team assigned to a particular site. It will take shape as the forest and forest users are examined carefully. It will be completed, in other words, as other forms are completed. All research instruments should be carefully entered on paper and checked by the team leader before data is entered into the database. The *Site Overview Form* (Form O) will be the first data entered into the computer. This will generate a unique ID code. Other forms may then be entered for this site [e.g., the *Forest Form* (Form F) and the *Forest Plot Form* (Form P)].

3. Highlights of Questions on the Site Overview Form

The Site ID code is a crucial number used in all data entry and analysis. This number should be assigned before the first site visit and must be the same number on all research instruments for the site.

A5 and A11 give the research team the opportunity to note the research methods that they used to conduct an IFRI study. These questions must be answered completely to ensure integrity in the data used from each site.

4. Team Leader Responsibilities Before Leaving the Site

Prior to leaving the site, the team leader should carefully check site IDs on all research instruments, make sure that the sampling information is thoroughly explained in A5, and confirm that the Site Overview Map is the final map of the site. The community map, drawn by individuals in the settlement(s), should be transcribed onto notebook-size paper and included with the Site Overview Map.

D. SPECIFIC GUIDELINES BY SECTION AND QUESTION

Top of First Page

Name of site <ONAME>: _____
Research ID <RID>: _____ Country ID <CID>: _____ Site ID <SID>: _____
Date of site visit (mm-dd-yr) <VISITDATE>: _____
Name of person filling out this form: _____
Has this site been coded in previous years? <OCODED>

(1) _____ No
(2) _____ Yes
(3) _____ Uncertain
(4) _____ Yes, with a new name *(If this response is checked, write old and new names in B0.)*

Name of the Site should be a term that includes the forest(s) and settlement(s) within the site. This name will be assigned by the Team Leader and should **not** be the same as the forest(s) or settlement(s) contained within it.

Research ID is the number assigned to a particular IFRI CRC by UMich. This number must be obtained as soon as possible by new CRCs. It will be entered on all research instruments per study site. A team leader must obtain this ID number from the CRC prior to travelling to a research site. The numbers that have been assigned as of August 2004 include:

001 Uganda Forestry Resources and Institutions Research Center at Makerere University
002 Arun Agrawal
003 IFRI-Nepal
004 Bolivian Forestry Resources and Institutions Research program at CERES
005 Bloomington Forestry Resources and Institutions Research program at CIPEC
006 Ecuador
007 Mali
008 Institute of Rural Management/ANAND (IRMA)

009 FLACSO Guatemala
010 Madagascar
011 Tanzania
012 Arunachal Pradesh
013 *retired*
014 ACT-Bloomington
015 IFRI-Kenya
016 Nadia Horning in Madagascar
017 CRIM-UNAM in Mexico
018 Ingrid Kissling-Näf in Switzerland
019 Asian Institute of Technology (AIT)
020 Peggy Smith (University of Toronto, Canada)
021 CREATE
022 SHODH (Institute of Research and Development, NAGPUR)
023 Juan-Camillo Cardenas in Bogota, Colombia
024 Glen Green, CIPEC
025 Bill McConnell, FOCUS 1
026 Chris Thoms, University of Michigan
027 Charles Benjamin, University of Michigan
028 Krister Andersson, CIPEC
029 Edwin Castellanos, Universidad del Valle de Guatemala
030 Lauren Persha, CIPEC
031 Tanya Hayes, CIPEC
032 University of Michigan

Country ID is the alphabetical code we use for countries in which study sites are located. See *Appendix 1–Form O* for a list of these alphabetical codes. Thus, for the CRCs and scholars listed above, the Country IDs of their current studies will be:

001	UGA	012	IND	023	COL
002	IND	013	n/a	024	IND, MAD
003	NEP	014	BRA	025	MAD
004	BOL	015	KEN	026	NEP
005	USA, BRA, MEX, BOL, NEP, UGA, et al.	016	MAD	027	MLI
006	ECU	017	MEX	028	BOL, CHI
007	MLI	018	SUI	029	GUA
008	IND	019	BHU, LAO, NEP, THA, et al.	030	TAN
009	GUA	020	CAN	031	HON
010	MAD	021	IND	032	USA
011	TAN	022	IND		

Site ID is the numeric code assigned sequentially by a CRC to a particular site. **All research instruments for this site must use the same Site ID.** A team leader must obtain a list of Site ID numbers from the CRC prior to leaving for the field. For example, the Site ID number could be 589. Temporary Site IDs can be assigned in the rare occasion in which the team leader, while in the field, realizes that a single site should be considered as two or more sites. When this happens, use the Site ID codes of "999," "998," etc., as temporary Site IDs. The temporary Site IDs will not conflict with other Site IDs already assigned by the CRC to other simultaneous field collection efforts. The CRC can replace the temporary codes with valid codes when the data is returned to the CRC. The team leader must record the valid code(s) on all appropriate research instruments for the site(s). The Site ID (<SID>) number does **not** change for future revisits to the same site.

Date of Site Visit is the month, day, and year when data collection begins. The date assigned here should be the same date as the date entered for <OSTRTVISIT> in A1. This date will be written in the first section of each coding form.

Has this site been coded in previous years? is a question about repeat visits to the IFRI site. If this is the first time that an IFRI team has visited this site, the data coded here will be the first "time slice" for this site. "No" should be checked as the

answer, and a new Site ID will be assigned. If "Yes" is checked, the Site ID assigned will have the same numeric code as the earlier visit. "Uncertain" can only be a temporary answer when this question is answered on Form O. It is a sign to the team leader that more information must be found before assigning the Site ID. If "Yes, with a different name" is checked, this indicates that there has been a change in the name of the site since the last visit. Information about the name change should be recorded in B0.

A. Team and Site Information

A1. Beginning Date of Site Visit. This date will be the month, day, and year when the team leader first visits the site, and should be the same date as the Date of Site Visit at the beginning of Form O.

A4. Name of IFRI Research Project. An IFRI CRC may conduct numerous studies in one region and will usually want to assign a different name to each major project. That name should be posted here.

A5. Sampling Frame Information. A sampling frame is the method used by a research team to select a particular site. Some sampling frames will involve the careful enumeration of all forests (or settlements) that meet some clear specification and the choice of a subset according to a clear systematic or random procedure. In many countries, such an enumeration is not possible and the site will be selected because it is known to fulfill certain characteristics. Each IFRI study will have its own sampling frame, and the team leader should complete information about how this site fits into the sampling frame for the study. If this site was not selected prior to the field visit, the team leader should describe what steps were taken in the field to select it. The sampling frame information will frequently be the same for multiple sites. Instead of repeating all information for every site, the team leader should refer to the Site ID where the sampling frame information is fully described.

A8 through A12. These questions will be completed by the team leader *at the end of the site visit* in order to give complete information about all team members (including local members), persons consulted about botanical names and local information, the field data collection methods used for the history section, and a site description. Do include information about anything that might affect the quality of the data collected in the history section because it is stored separately and will not be asked again. Information about how data are collected for the other sections should be recorded in response to question B6.

B0. Major Changes Since Last Site Visit

This section will not be used until a second or later visit to the site is made. At that time, the team leader should carefully read the materials provided from the earlier site visit(s) so it is possible to record any relevant changes such as a new highway connecting the site to a major marketing center, recent clear-cutting activities on private land near the forest(s) under study, new facilities established in the settlement(s), etc.

B. Data Collection and Organization

B6. Describe field methods. If, for example, it rained throughout the site visit, a central part of the forest was under water, and measurements could not be taken, be sure to record that information in B6. If the villagers were particularly friendly or, unfortunately, particularly unfriendly, mention of that should also be recorded here. Explain calendar of data collection.

B7. This question enables the team leader to record the names of all of the entities encountered in this site. Please carefully mark the dates spent in the site, and time collecting data on each of the research instruments.

C. Geographic and Local Information

C1. Likely sources of this information will be an atlas for the particular country or region of a country, the meteorological bureau of a national or provincial government, or a nearby university. If information is not available from these sources, an attempt should be made to get estimates from a knowledgeable local resident, such as a farmer. **A note about the source of information should be made in the margin.** If the region has only two seasons, mark "NA" in the rows that are not completed.

C2 through C3. Record the latitude, longitude, and elevation. Please obtain as precise measurements of the latitude and longitude of the site as possible. Scale maps available from survey offices, forest departments, or other sources may provide the needed information. Use the approximate center of the site and an existing map to estimate the latitude and longitude. If a GIS parallel study is being conducted, the actual boundaries of the forest will also be precisely measured. The elevation should be an estimate for the average elevation in the site. Elevation of each forest plot will also be measured or estimated from maps.

If using GPS technology to collect data for this section, all GPS units must be set to the same Datum and Spheroid while collecting data in a site. For future comparisons across CRCs, the data collected in the reference system that is specific for the site area (where topomaps and other geographic data are provided) will need to be transformed into the WGS 84 reference system. For this, the eight variables in question C3 will record the transformation parameters that are needed to transform the positional data collected in the Plot Form (section E) from the specifics of the local coordinate system to WGS 84. The Molodensky Transformation is widely used to convert geographic coordinates from one datum to another.

C4. Convert local units into metric units. All data in other forms should be entered in METRIC FORM. The conversion table below demonstrates how the team transforms local measurements into metric units.

Local Name English Units	<OLOCLENGTH>
Local units 1 inch 1 foot 3 feet 1 mile	<OMETLENGTH> 2.54 centimeters .3048 meter .9144 meter 1.6093 kilometers

C6 through C8. Calendar information. The dates used in the research instruments should all be entered using a consistent calendar. Note here what that calendar is and provide a method of converting dates from a local calendar (if used) to a month, day, year calendar. The Gregorian calendar system is the most commonly used.

C9 and C9a. Currency conversion. Questions asking for information about days of work or local daily wage rate are recorded using local currency. Be sure to record the exchange rate of local currency to one U.S. dollar at the time of fieldwork. The amount written in C9a would be the equivalent of how many units of local currency could be purchased with one U.S. dollar at the time of the site visit.

C10 and C10a. Members of the research team will use local currency immediately in questions C10 and C10a. Please obtain the current standard, daily wage rates for men and women, and the rate that was in use five years prior to fieldwork.

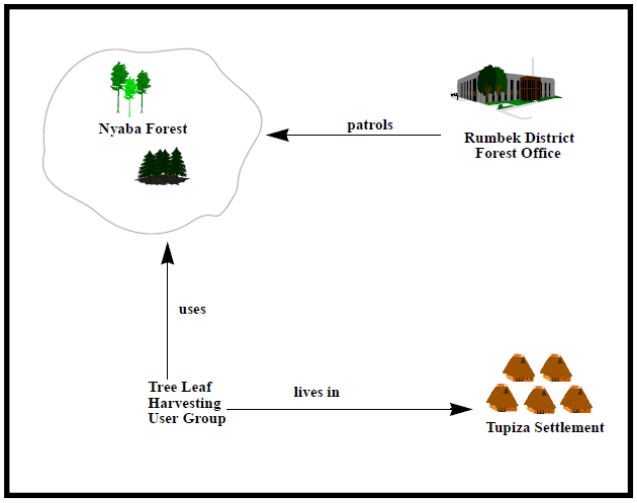
C12. Site Overview Map. This is a map drawn by the team to provide information to themselves and colleagues at a later juncture. It should be a relatively accurate picture of the spatial relationship among the forest(s), settlement(s), and features such as roads, streams, and agricultural land. The team should also include a copy of the map drawn by community members.

D. Policy and Legislation Information

In this section, researchers will describe any recent policy shifts or pending policies that may impact the user groups in this forest.

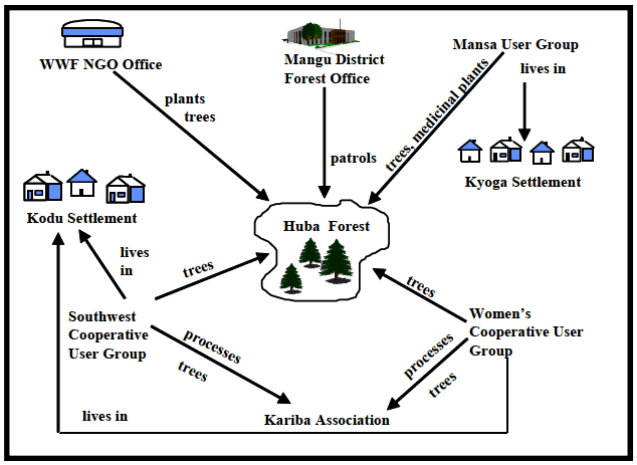
BOX 1: EXAMPLES OF SITES

a) A simple site may be synonymous with a small town, such as Tupiza, where forest users live in one community and only use one product, such as tree leaves for cattle fodder, from Nyaba Forest.
In this case, the site is coded as Argo Site.



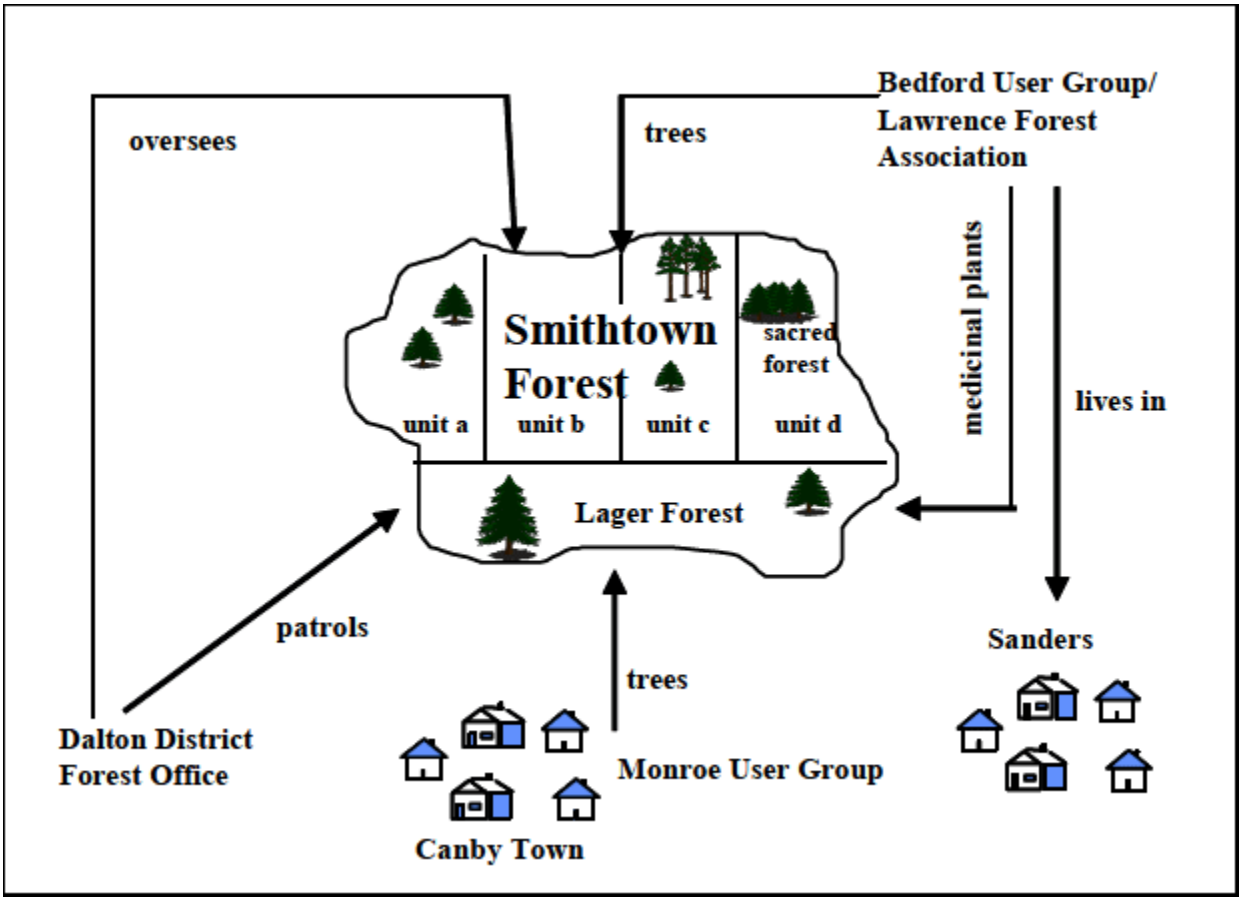
Argo Site

b) A complex site may take several days to define, as forest size, number of user groups, and location of users is sorted out. The number and size of the forest(s) and community(ies) surrounding the forest, whether a community is highly dispersed or not, and the difficulty of terrain will determine how long it will take to discover what makes up a site. In the case of Kyoga and Kodu, there is one, 100-hectare forest (Huba Forest) with two user groups from the Kyoga and Kodu areas using the forest. Several products are being harvested (trees, bark from trees, medicinal plants, and grass). The research team, in this case, will need to search the upper quadrant of the forest to see if other communities live and use the other sections of the forest. In this case, Kyoga and Kodu are in the Kasama Site. The site is coded with a unique name, Kasama.



Kasama Site

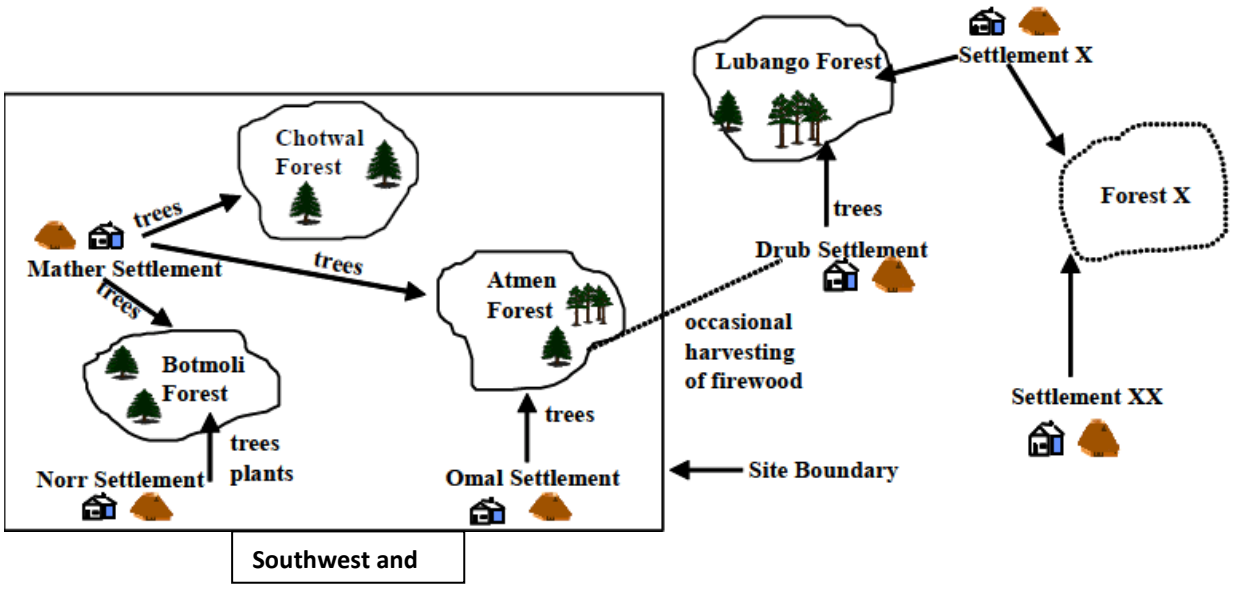
BOX 2: EXAMPLE OF SITE



Limestone Site

The increase in complexity in the site depends on the number of forests, sizes of forests, types of forests, numbers of people using the forest, numbers of rules about using the forest, and distance between groups. In this case, there are two forests (Smithtown Forest and Lager Forest) that initially appear to be one forest. As the terrain and use patterns are studied, researchers discover that the one large forest is further subdivided at the upper part into four management units. The Lawrence Forest Association has divised a pattern of use for each of these units, one of which is a sacred forest. Forest users from Sanders harvest forest products (trees and medicinal plants) from the Smithtown Forest and the Lager Forest. Forest users from Canby Town have the right to harvest only trees from the Lager Forest. There is one District Forest Office in Dalton. In this case, the site is coded as Limestone to use a unique name.

BOX 3: EXAMPLE OF SITE



Where forests are located close to one another, it is more difficult to make decisions about site boundaries. The task for a team leader in defining which forests, settlements, and user groups should be included within one site needs thoughtful judgment.

In Lotolo Site, there are three forests (Atmen, Botmoli, and Chotwal and a fourth forest, Lubango, which might be included). The residents of Mather settlement have exclusive rights to harvest fallen tree limbs as firewood and timber from Chotwal Forest, and do not allow anyone else to enter Chotwal. The residents of Mather settlement harvest at least 25 percent of their firewood from fallen trees in Atmen Forest during the dry part of the year when they can cross a stream and reach the forest. They also obtain one-third of their timber from Botmoli forest in the dry season. Residents of Norr settlement harvest all their fallen tree limbs as firewood and medicinal plants from Botmoli Forest, and the residents of Omal obtain firewood from Atmen. There is also a small village called Drub, where residents occasionally use the Atmen Forest but get the vast majority of firewood from their own Lubango Forest.

In this case, the Atmen, Botmoli, and Chotwal forests would constitute one site so the relationships between the Chotwal users and Atmen and Botmoli forests can be adequately represented. The boundaries of the site, however, would not include Drub settlement because the amount of forest products its residents extract from Atmen is minimal. There would be a one- or two-sentence description of this relationship in the text description of the site. Lubango Forest would not be included because the Chotwal user groups do not use this forest.

In a region with many forests located near one another, the team leader has to try to include those forests and settlements where there is substantial use and harvesting of products. He or she should exclude those where forest use and harvesting by external users is less significant.

▶ This is a priority variable. Please make sure this question is answered.

Appendix I- Form O

List of Country and Territory Codes*

Afghanistan	AFG
Albania	ALB
Algeria	ALG
American Samoa	ASA
Andorra	AND
Angola	ANG
Antigua and Barbuda	ANT
Argentina	ARG
Armenia	ARM
Aruba	ARU
Australia	AUS
Austria	AUT
Azerbaijan	AZE
Bahamas, The	BAH
Bahrain	BRN
Bangladesh	BAN
Barbados	BAR
Belarus	BLR
Belgium	BEL
Belize	BIZ
Benin	BEN
Bermuda	BER
Bhutan	BHU
Bolivia	BOL
Bosnia and Herzegovina	BIH
Botswana	BOT
Brazil	BRA
Brunei Darussalam	BRU
Bulgaria	BUL
Burkina Faso	BUR
Burundi	BDI
Cambodia	CAM
Cameroon	CMR
Canada	CAN
Cape Verde	CPV
Cayman Islands	CAY
Central African Repub.	CAF
Chad	CHA
Chile	CHI
China, People's Republic of	CHN
Colombia	COL
Comoros	COM
Congo, Republic of the	CGO
Congo, Dem. Republic of the	COD
Cook Islands	COK
Costa Rica	CRC
Côte d'Ivoire	CIV
Croatia	CRO
Cuba	CUB
Cyprus	CYP
Czech Republic	CZE
Denmark	DEN
Djibouti	DJI
Dominica	DMA
Dominican Republic	DOM
Ecuador	ECU
Egypt	EGY
El Salvador	ESA
Equatorial Guinea	GEQ
Estonia	EST
Ethiopia	ETH
Federated States of Micronesia	FSM
Fiji	FIJ
Finland	FIN
France	FRA
French Guiana	FGI
Gabon	GAB
Gambia	GAM
Georgia	GEO
Germany	GER
Ghana	GHA
Great Britain	GBR
Greece	GRE
Grenada	GRN
Guam	GUM
Guatemala	GUA
Guinea	GUI
Guinea-Bissau	GBS
Guyana	GUY
Haiti	HAI
Honduras	HON
Hong Kong, China	HKG
Hungary	HUN
Iceland	ISL
India	IND
Indonesia	INA
Iran, Islamic Republic of	IRI
Iraq	IRQ
Ireland	IRL
Israel	ISR
Italy	ITA
Jamaica	JAM
Japan	JPN
Jordan	JOR
Kazakhstan	KAZ
Kenya	KEN
Korea	KOR
Korea, Dem. People's Republic of	PRK
Kyrgyzstan	KGZ
Kuwait	KUW
Lao People's Dem. Republic	LAO
Latvia	LAT
Lebanon	LIB
Lesotho	LES
Liberia	LBR
Libyan Arab Jamahiriya	LBA
Liechtenstein	LIE
Lithuania	LTU
Luxembourg	LUX
Macedonia, Fmr Yug. Rep. of	MKD
Madagascar	MAD
Malawi	MAW
Malaysia	MAS
Maldives	MDV
Mali	MLI
Malta	MLT
Mauritania	MTN
Mauritius	MRI
Mexico	MEX
Moldova	MDA
Monaco	MON
Mongolia	MGL
Morocco	MAR
Mozambique	MOZ
Myanmar	MYA
Namibia	NAM
Nauru	NRU
Nepal	NEP
Netherlands	NED
Netherlands Antilles	AHO
New Zealand	NZL
Nicaragua	NCA
Niger	NIG
Nigeria	NGR
Norway	NOR
Oman	OMA
Pakistan	PAK
Palau	PLW
Palestine	PLE
Panama	PAN
Papua New Guinea	PNG
Paraguay	PAR
Peru	PER
Philippines	PHI
Poland	POL
Portugal	POR
Puerto Rico	PUR
Qatar	QAT
Romania	ROM
Russian Federation	RUS
Rwanda	RWA
Saint Kitts and Nevis	SKN
Saint Lucia	LCA
St. Vincent and Grenadines	VIN
Samoa	SAM
San Marino	SMR
Sao Tome and Principe	STP
Saudi Arabia	KSA
Senegal	SEN
Seychelles	SEY
Sierra Leone	SLE
Singapore	SIN
Slovakia	SVK
Slovenia	SLO
Solomon Islands	SOL
Somalia	SOM
South Africa	RSA
Spain	ESP
Sri Lanka	SRI
Sudan	SUD
Suriname	SUR
Swaziland	SWZ
Sweden	SWE
Switzerland	SUI
Syrian Arab Republic	SYR
Taiwan (Chinese Taipei)	TPE
Tajikistan	TJK
Tanzania, United Republic of	TAN
Thailand	THA
Togo	TOG
Tonga	TGA
Trinidad and Tobago	TRI
Tunisia	TUN
Turkey	TUR
Turkmenistan	TKM
Uganda	UGA
Ukraine	UKR
United Arab Emirates	UAE
United States of America	USA
Uruguay	URU
Uzbekistan	UZB
Vanuatu	VAN
Venezuela	VEN
Vietnam	VIE
Virgin Islands	ISV
Virgin Islands, British	IVB
Yemen	YEM
Yugoslavia	YUG
Zambia	ZAM
Zimbabwe	ZIM

Be sure to write the name(s) of the forest(s)

IFRI FORM O

SITE OVERVIEW FORM

A site is the location where an IFRI study is being conducted. The location must include at least one .5 hectare forest (or larger), and be used by at least one user group comprised of three households. The three households can be located in more than one settlement. If there are multiple entities being studied, the description of the site will contain all of these entities. Do not *use the same name for different entities. For data management purposes, each entity must have a unique name. Form O has been designed to obtain information about the general characteristics of the site. It also includes other relevant data that can be researched prior to the IFRI site visit.*

►**Name of site** <ONAME>: Rio Santiago Watershed

►**Research ID** <RID>: 005 **Country ID** <CID>: GUA ►**Site ID** <SID>: 001

►**Date of site visit (mm-dd-yr)** <VISITDATE> : 07-31-96

Name of person filling out this form: Carmen Cigarroa

► **Has this site been coded in previous years?** <OCODED>

* ***Mark only one answer***

(1) _X_ No

(2) _____ Yes

(3) _____ Uncertain

(4) _____ Yes, with a different name *(If this response is checked, write old and new names in question B0.)*

A. TEAM AND SITE INFORMATION

►**A1.** **What is the beginning date of this site visit using month/day/and year?**

<OSTRTVISIT> 07-31-96

►**A2.** **What is the ending date of this site visit using month/day/year?** <OENDVISIT> 09-26-96

►**A3**. **Was the team at this site throughout the above time period?** <OTMONSITE>
Mark only one answer

(1) X No

(2) _____ Yes

A4. What is the name of this IFRI research project: (brief text) <OPROJNAME> This is a pilot study conducted by the Latin American Social Science Faculty (FLASCO)- Guatemala; Nature's Defenders (ND); Forest, Trees, and Peoples Programme of the Food and Agriculture Organization (FTTP-FAO); the faculty of agronomy of the San Carlos University (FAUSAC); and the International Forestry Resources and Institutions program at Indiana University (IFRI-IU)

A5. Sampling frame information *(long text)* <OSAMPFRAME> This area was selected it is in the Sierra de las Minas Biosphere Reserve. It is inhabited by ladinos, Guatemalans who are not members of an indigenous group. It was selected based on conversations among FLASCO, DN, FTPP-FAO, and IFRI-IU.

► This is a priority variable. Please make sure this question is answered.

►A6. What is(are) the name(s) of the team leader(s)? <OTMLEADER>

Pablo Moreno and Clark Gibson .

A7. What is(are) the name(s) of the forest specialist(s)? <OFORSPEC>

Pablo Moreno

A8. What are the names of other team members and what are their skills? *(long text)* <OTEAMINFO>

Pablo Moreno, forester, FLASCO
Carmen Cigarroa, sociologist, FLASCO
Eliseo Galvez, communications specialist, Nature's Defenders
Lilian Marquez, forestry student, University of the Valley of Guatemala
Jorge Garcia, agronomy student, San Carlos University
Nery Jovenal Galvan Perez, agronomy student, San Carlos University
Jose Luis Echeverria, agronomy student, San Carlos University
Erika Ruano, agronomy student, San Carlos University
Amilcar Sanchez, agronomy student, San Carlos University
Clark Gibson, political scientist, Indiana University
David Dodds, anthropologist, Indiana University
Paul Turner, political scientist, Indiana University
Joby Jerrells, computer specialist, Indiana University

A9. What is(are) the name(s) of the person(s) or source(s) consulted on botanical names? *(brief text)* <OBOTANSRC>
Please offer complete citations if sources are text.

Leonel Cruz, agronomist, San Carlos University
Mario Veliz, biologist, San Carlos University

A10. Please list the names of the people with whom discussions were held: *(long text)* <ODISCNAME>

The majority of adults in the settlement

►A11. Please describe the methods used in obtaining information, the locations of discussions, and efforts made to obtain information from diverse sources. ***(long text)*** **<OINFMETHOD>**

1. Discussions with members of the community
2. Discussions with members of the following organizations: FLASCO, Nature's Defenders, a forestry engineer from San Carlos University, the mayor of Río Hondo, and CONAP
3. Group presentation before the communities of Moran, Naranjo, and Tabacal.
4. Forty-three (43) parcels within the forest

►A12. Please provide a general description of the site. ***(long text)*** **<OSITEDESC>**

The study site is located in the subwatershed of the Santiago River, which forms part of the watershed of the Monagua River in the sierra de las minas, a mountain range in eastern Guatamala. This is a mountainous zone covered by pine forests in the higher altitudes and oak forests in lower elevations. Please consult the map in question c12 of this form

► This is a priority variable. Please make sure this question is answered.

B0. MAJOR CHANGES SINCE LAST SITE VISIT

►**B0.** **Have there been any major changes in the site since the last visit, and if so, what were they?** ***(long text)***
<OHISTCHNG>

Do not complete if this is the first visit to this site to record information for the IFRI database.

N/A

B. DATA COLLECTION AND ORGANIZATION

► B1. Is coding based on: <OCODEBASIS>

(1) _____ Full set of IFRI research instruments in English

(2) _____ Full translated forms (please write language and name of the translator on the line below):

<OCODEOTH> Spanish forms supplied by Bloomington CRC

(3) _____ Authorized, shortened form

► B2. From what sources have data been collected? <ODATASRCE>

(1) _____ Field visits only

(2) _____ From secondary sources only

(3) X From both field and secondary sources

B2a. If data have been collected from secondary sources, please list these sources: *(text)* <OSECSRCE>

Nature's Defenders
Military Geographic Institute
The Health Center, Río Hondo, Zacapa

B3. Are Census data for settlements available? <OCENSAVAIL>

Mark only one answer

(1) _____ No

(2) X Yes

B3a. If yes, have Census data for settlements been: <OCENSUSE>

(1) _____ Utilized in coding these forms but not stored in paper or computer files

(2) X Placed in paper files but not used in coding these forms

(3) _____ Set up as a separate computer readable file and used in coding these forms

(4) _____ Utilized in coding these forms and stored in paper files

B3b. If (2), (3), or (4) is checked in B3a, describe where the files are located, what the file names are, and availability of the files. *(text)* <OCENSFILES>

The chief of the health area of Zacapa, District of Río Hondo; Military Geographic Institute; and The Health Center, Río Hondo, Zacapa

► B4. Has a household survey been conducted? If the answer is no, please skip question B5.<OHHSURVEY>

Mark only one answer

(1) X No

(2) _____ Yes

► This is a priority variable. Please make sure this question is answered.

► **B5.** **How are household data stored?** ***(text)*** **<OHHDATAHOW>**

Are the data stored in paper form, on diskette, in a database, etc.? Who maintains the files? Where are the files located? Are they available?

N/A

B6. Describe the field methods used (e.g., group interviews, PRA, one-on-one household surveying), the locations of discussions, reception of the team at the site, weather conditions, and harvesting activities during the site visit. *(long text)* <OFIELDINFO>

We held five community meetings: three in Moran on school property, one in naranjo in the area in front of the Catholic church, and one on the school property in tabacal. Four of the meetings were convened to present and inform the community about the study. One meeting in Moran was conducted with a group from the community to design a map of the watershed. This map was produced by approximately 50 men. Afterward, a meeting was held with the community. One of the communities also interviewed individuals in their homes and where they were working in the fields. We succeeded in interviewing a majority of the adult population.

During the study, the research team also observed members of the community collecting firewood and harvesting wood. the climate during the study was variable. it was mostly sunny and, especially at night, it rained. At the beginning of the study, members of the community were reserved in their conversations with the research team. After the second week of research, however, most of the members of the community accepted the aims of the study and became very friendly and willing to participate in group meetings and interviews.

►**B7.** **What are the names of the forest(s), settlement(s), user group(s), and forest association(s) (if applicable) for this site? Note the dates spent in the field collecting data on each of the research instruments.** ***(long text)*** **<OALLNAMES>**

Forest= El Sitio

Settlement= Moran- Naranjo

User Group= La Bamba (members of the community of Moran- Naranjo)

B8. Has this site been chosen for site verification? <OVerify>
Mark only one answer

(1) X No

(2) _____ Yes

B8a. If yes, describe the results of the site verification visit. *(long text)* <OVERRESUL>

N/A

► This is a priority variable. Please make sure this question is answered.

C. GEOGRAPHIC AND LOCAL INFORMATION

C1. What are the general climatic features of the region in which the settlement is located?

Provide season, seasonal average temperatures, amount of precipitation, and any other information that may be appropriate. Use annual information only if seasonal information is not available. Be sure to write "annual" under the season column if annual information is used. Temperature should be given in centigrade and precipitation should be given in millimeters. Write the source of information in C1 in the margin.

Season (or Annual)	Average temperature (centigrade)	Average precipitation (mm)
<OSEASON1> lluviosa	<OTEMP1> 24	<OPRECIP1> 2,000
<OSEASON2>	<OTEMP2>	<OPRECIP2>
<OSEASON3>	<OTEMP3>	<OPRECIP3>
<OSEASON4>	<OTEMP4>	<OPRECIP4>

Try to identify by using an atlas or checking at a meteorological bureau prior to discussing with the settlement

Measure C2, C2a, and C2b in a central location in the research site. Use decimal degrees or degrees-minutes-seconds for latitude and longitude. Please give elevation in meters above sea level. If elevation varies, provide the approximate average elevation.

►**C2.** What is the latitude of this site? <OSiteLat> _____(decimal degrees)
__15__ º __09__ ' __25__ " __N__ (degrees-minutes-seconds; N or S)

►**C2a.** What is the longitude of this site? <OSiteLong> _____(decimal degrees)
__89__ º __29__ ' __08__ " __W__ (degrees-minutes-seconds; E or W)

►**C2b.** What is the elevation of this site? <OSiteElev> __1,120__ (meters above sea level)

C3. Convert data in C2, C2a, and C2b to WGS 84.
Datum name: (text) <ODatum> _____

X translation to WGS 84 *(meters)*: <ODX>_____ r(omega) rotation to WGS 84 *(radians)*: <OROMEGA> ___

Y translation to WGS 84 *(meters)*: <ODY>_____ r(phi) rotation to WGS 84 *(radians)*: <ORPHI> _____

Z translation to WGS 84 *(meters)*: <ODZ>_____ r(kappa) rotation to WGS 84 *(radians)*: <ORKAPPA> ____

Scale change to WGS 84: <ODS> _____

C4. Conversion of local units to metric units:

	Length/Distance	Area	Volume/Weight
Name of local unit for:	<OLOCLENGTH> Kilometers	<OLOCAREA> manzana	<OLOCVOL> Pound (lb.)
Conversion formula to metric units	<OMETLENGTH> none required	<OMETAREA> 0.84 ha	<OMETVOL> 0.6987 kg

► This is a priority variable. Please make sure this question is answered.

C5. What is (are) the local language(s) spoken by most people in this site? <OLOCLANG> Spanish

C5a. If multiple local languages are spoken, list others used in this site. *(text)* <OLANGLIST>

N/A

C6. Which calendar system/format is being used locally? <OLOCCALEN> Gregorian

C7. If a local calendar system is being used, please give the conversion formula to the Gregorian calendar (month/day/year), if available. *(text)* <OCALCONVRT>

N/A

C8. Dates entered on forms are all using the: <OFORMDATE>
All dates entered with these forms should use only one of the following calendars.

(1) _____ Local calendar

(2) *x* Gregorian calendar (month/day/year)

C9. What is the name of local currency? <OLOCCURREN> Quetzal.

C9a. At the time of this data collection, what is the exchange rate of local currency to one U.S. dollar? <OEXCHRATE>

6 Quetzals = 1.00 USD

C10. What is the current standard wage labor rate per day in this site?
Specify number only in local currency (e.g., 25). Round this value to the nearest whole number.

For women <OLABORFEM>: _____ For men <OLABORMALE>: Q 20

C10a. What was the standard wage labor rate per day in this site five years ago?
Specify number only in local currency (e.g., 25).

For women <OLABFEM5>: _____ For men <OLABMALE5>: _____

C11. Are maps available that depict the topography of the site or components of the site? <OTOPOMAP>
Mark only one answer

(1) _____ No

(2) _____ Yes

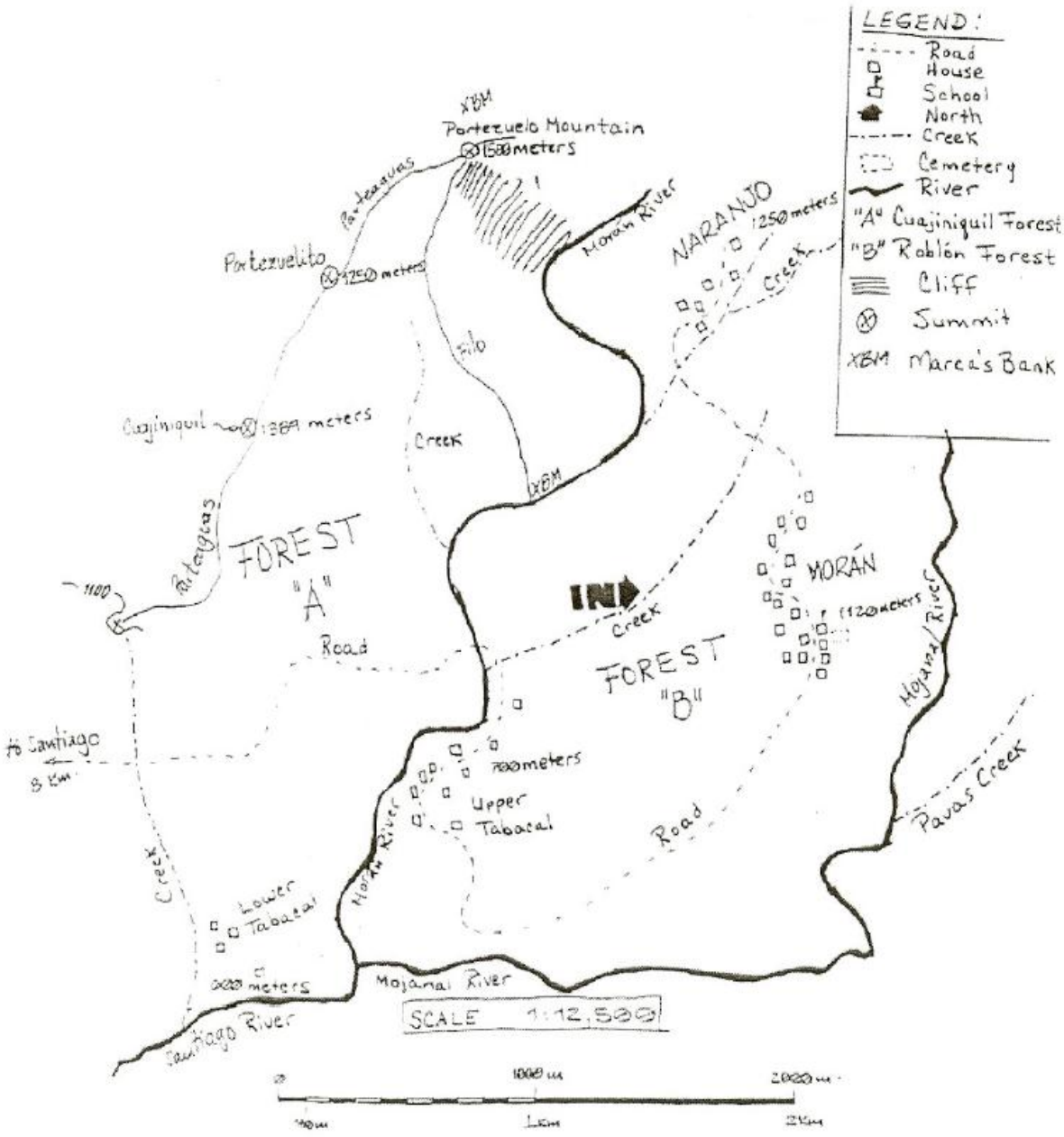
C11a. If yes, where? *(long text)* <OTOPODESC>
Please furnish a complete citation for the map, including its name, number, scale, publisher, and publication date. Please indicate if map is readily available and, if not, where copies can be found.

The topographical maps we used are available from the Military Geographic Institute in Guatamala city. The scale of these maps is 1:50,000

▶ This is a priority variable. Please make sure this question is answered.

C12. Please draw a Site Overview Map.

On this map, supply any significant physical features of the area, such as rivers, lakes or ponds, trails, etc. Label all features. Draw the settlement boundaries and label within each boundary the settlement name. If there is more than one forest, draw each forest boundary and label within each boundary the forest name. Please depict information about the terrain and forest (if applicable) inside and outside the forest boundaries. For example are their agricultural fields next to, inside, and/or outside the forest boundaries, buffer zones, and/or settlements? (For additional mapping information, see IFRI mapping instructions in section IV, C4.) If this map provides a large enough picture of the forest boundaries (enough room to mark forest harvesting boundaries, forest plot locations, etc.), then trace an additional copy of this map. The extra copy can then be used as the outline for the Forest Feature Map in Form F, question B1. Community-drawn maps of each settlement area (or site) will be attached to this page to augment the information in the Site Overview Map drawn here.



▶ This is a priority variable. Please make sure this question is answered.

D. POLICY AND LEGISLATION INFORMATION

►D1. Are there, or have there been, any recent major policy shifts that affect the utilization of forests by local users? *(long text)* <OPOLSHIFT>

Legislative Decree no. 49-90 created the Sierra De Las Minas Biosphere Reserve. The following articles of this law are the ones that have the most impact on the study site.

1. **The Sierra De Las Minas biosphere reserve is created as a protected area with an area consisting of approximately 236,000 hectares covering parts of five departments of the republic.**
2. **The Sierra De Las Minas biosphere reserve is created as a protected area with an area consisting of approximately 236,000 hectares covering parts of five departments of the Republic.**
3. **The Biosphere Reserve consists of four zones. The first zone is the Nuclear Zone, the second is the Multiple and Sustainable Use Zone, the third is the Recooperation Zone, and the fourth is the Buffer Zone.**
4. **Nuclear Zone. The principle objectives of the Nuclear Zone are the following:**
   - **to preserve the natural environment,**
   - **to preserve the biological diversity, and**
   - **to preserve the water sources of the zone.**

   The zone also wants to promote scientific research and ecotourism in the areas suitable for this as long as these activities do not negatively affect area ecosystems. Special attention needs to be spent on conservation education. The Nuclear Zone consists of approximately 105,700 hectares.
5. **Zones of Multiple and Sustainable Use and the Buffer Zone. Zones of Multiple Sustained Use of Recooperation and of Buffer have as their objectives the protection of the Nuclear Zone, the restoration and the sustainable use of its natural resources without negatively and permanently affecting its diverse ecosystems. The Multiple Use Zones will have an area of approximately 34,600 hectares. The Zone of Recooperation will have an area of approximately 4,200 hectares. The Buffer Zone will have an extension of approximately 91,800 hectares.**
6. **Administration. The general administration of the Sierra De Las Minas biosphere reserve is the responsibility of the Directive Council, which consists of the following entities and sectors: a) The Executive Secretariat of CONAP, which is its Chair; b) the Nature's Defenders Foundation, which will be the Executive Secretariat; c) a representative of the Councils of Urban and Rural Development of the departments whose territory is in the Reserve; d) the representative of property owners and the owners of lands contained within the area; e) a representative of the indigenous communities of the areas**
7. **Prevention. Reserve management can take actions to prevent the operation of industries or potentially contaminating activities that threaten to extinguish any of the flora or fauna of the area. Nature's Defenders also is empowered to limit those activities that might cause an observable alteration in the ecological conditions of the Reserve.**

►D2. Are any policies pending that may impact the Forest User Group/Forest Associations and/or other governance relationships? <OPOLUGRP>

(1) _____ No

(2) _____ Yes, in a positive way

(3) _____ Yes, in a negative way

(4) X Yes, in both positive and negative ways

►D2a. If yes, please describe. *(long text)* <OPOLDESC>

The creation of the Sierra De Las Minas Biosphere Reserve can have negative, as well as positive, impacts on the people of Moran-Naranjo. Existing law calls for establishment of local committees for the management of natural resources. This type of committee may be very useful for the management of resources that heretofore have not been well managed. A committee has not been established for the management of the natural resources in Moran-Naranjo. Currently, the people of Moran-Naranjo believe that the creation of the reserve has restricted their behavior. They are particularly afraid of the penalties they may incur through the use of forest resources.

► This is a priority variable. Please make sure this question is answered.

GEN. GENERIC QUESTIONS FOR USE BY RESEARCHERS

Please write your question(s) and the answer(s) where indicated below. **Enter the methodology and all questions together into the database under** <OWKSPMEMO>. Enter each answer into the database under the data name specified for each answer below. See Section II of the Field Manual for more detailed instructions.

Please describe why you are asking the generic questions below and/or what methodology you used to collect the data provided below. *(long text)* <OWKSPMEMO>

Question 1 (answer requires a whole number):

Answer to question specified by researcher *(integer)* <OGENSNUM1> _____

Question 2 (answer requires a whole number):

Answer to question specified by researcher *(integer)* <OGENSNUM2> _____

Question 3 (answer requires a whole number):

Answer to question specified by researcher *(integer)* <OGENSNUM3> _____

Question 4 (answer requires a whole number):

Answer to question specified by researcher *(integer)* <OGENSNUM4> _____

Text question 1:

Answer to question specified by researcher *(text)* <OGENTEXT1>

Text question 2:

Answer to question specified by researcher *(text)* <OGENTEXT2>

▶ This is a priority variable. Please make sure this question is answered.

Text question 3:

Answer to question specified by researcher *(text)* <OGENTEXT3>

Question 1 (answer requires a decimal number):

Answer to question specified by researcher *(decimal)* <OGENLNUM1> _____

Question 2 (answer requires a decimal number):

Answer to question specified by researcher *(decimal)* <OGENLNUM2> _____

Question 3 (answer requires a decimal number):

Answer to question specified by researcher *(decimal)* <OGENLNUM3> _____

Question 4 (answer requires a decimal number):

Answer to question specified by researcher *(decimal)* <OGENLNUM4> _____

Answer(s) to question(s) specified by researcher that require(s) more than 250 characters *(long text)* <OGENMEMO>

III.A.2. FORM F—FOREST FORM: GUIDELINES

A. DEFINITION OF AN IFRI FOREST

A **forest** is defined as an area of at least 0.5 hectares, containing woody vegetation (trees, bushes, shrubs, etc.) exploited by at least three separate households and governed overall by the same legal structure.

The IFRI forest definition was developed to include wooded landscapes that would not traditionally be considered a forest such as a communal agroforestry woodlot of at least 0.5 hectares. Many of the forests included in IFRI sites will be much larger than the minimal size specified here. There is no upper limit to the size of an IFRI forest.

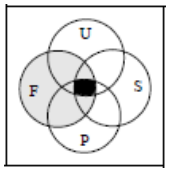
B. PURPOSE OF THE FOREST FORM

The *Forest Form* (Form F) has been designed to collect information about the flora, fauna, and other resources in a forest used by a local community. Form F has also been designed to record the rules of entry, monitoring and maintenance of the forest, and a forester's appraisal of the overall condition of the forest.

The forests included in an IFRI study will depend on the objectives of the particular study. The objectives of each study need to be described in detail (Are they based on monitoring a certain forest for certain changes, comparing forests in different ecological zones, etc.?). A detailed sampling plan of sites will also need to be designed for each study based on the particular research questions of key focus to the study (see Form O, A5; Form F, B1b; and section IV, Table 10).

C. GENERAL GUIDELINES FOR DATA COLLECTION

1. Defining an IFRI Forest



Prior to visiting a site for the first time, field teams will try to acquire scale maps of the forest and surrounding territory. Aerial photographs, land-ownership maps, topographic maps, and other geographic information may be obtained from a wide variety of sources, including geography departments of universities and government agencies that manage natural resources. The actual boundary of the forest of interest may not be represented on such maps, but many pieces of information requested on Form O, Form F, and Form S are contained on such maps. The team leader will determine the size of the forest, its altitude, and associated climate variables.

Products Harvested from Krinat and Bonn Forests by Several User Groups/Forest Associations

2. Data Collection

The team leader is strongly encouraged to take scale maps to the site ahead of actual fieldwork to begin to draw the boundaries of the forest on the map. Walking through the forest with residents, forest officials, or others who can help identify forest boundaries usually enables the team leader to draw a relatively accurate map for the purpose of sampling forest plots and to begin to assess any unusual problems the team may face.

Drawing a map of the forest with local users when the team arrives in the field is the next logical step. This activity often captures forest users' perceptions about the forest, and helps relate use with areas on the map. (IFRI paper map is discussed in section IV, C.4.a). This should be done as a Participatory Rural Appraisal (PRA) exercise in a public place where

▶ This is a priority variable. Please make sure this question is answered.

discussion about the boundaries of the forest, how boundaries are related to surrounding settlements, who uses the forest, and how the forest is used can take place. The map can be drawn on the ground in an open space using a stick and local materials to demarcate various parts, or it can be drawn on a large sheet of paper. If there are distinct subregions of the forest that are reserved for different uses (e.g., rituals, harvesting of particular species, a rotational harvesting program), be sure that these are marked on this map and on the Forest Feature Map (Form F, B1), the Forest Plots Map (Form F, B1a), and the Site Overview Map (Form O, C12). Once the map is drawn by local users, a copy of it can be made and stapled to the Forest Feature Map located on B1 of this form.[1] If possible, a photograph should be taken of the users' map. The outline of the map obtained from official scale maps or drawn in B1 should be traced as the foundation for drawing a sample of forest plots. A record of the sampling process will be kept at question B1b of Form F.

Most of the *Forest Form* will be completed by the field team member trained in forestry, but he or she will frequently recruit local villagers to help with the process of conducting the measurements in the forest plots. It is also useful to recruit an older villager or someone thoroughly familiar with local plants who can help identify the local names and uses of species located in this forest.

In some locations, prior studies will have already identified the local and botanical names of most of the species likely to be encountered. Locating and bringing relevant reference books to the site is strongly recommended. Hiring local experts such as botanists or local foresters is usually necessary for the reliable identification of plant species.

3. Highlights about Data on the *Forest Form*

The master list for all species located in this forest is contained in the *Forest Form*. **Thus, all species listed on the Forest Plot Forms for this forest should be listed on the** *Forest Form*. There may be species listed on the *Forest Form* that are not located in any of the plots (e.g., species that are somewhat rare in the forest and did not happen to be encountered in any of the randomly sampled plots). These species also may be discovered as the research team is coding A2a in Form G. If there is not enough space in C2-C4 of Form F to list all of the species located in this forest, please make additional copies of these pages and carefully staple the continuation sheets onto the coding form for any particular forest. The scientific names of plant species should be recorded in a standard way on each *Forest Plot Form* and in the master list of species in the *Forest Form*. For example, *Blighia unijugata* is the scientific name of a tree found in Uganda. *Blighia* is the genus and *unijugata* is the species. Note that scientific names are typically underlined or italicized in publications. The genus is capitalized, but species names are NOT capitalized (a well-established tradition since the 18th century). When the species of a plant cannot be determined, it is customary to record the genus followed by "sp.", for example, *Blighia* sp. The sp. means the plant is a member of the *Blighia* genus, but that its species could not be determined. When writing about several species of a given genus, the genus name may be followed by spp., the customary abbreviation for species in the plural. Local names of each species should also be recorded whenever they are known. In addition, the Master List of Plant Species (C2) includes a space where the **family name** for the species can be recorded. This is included in the data collection form to help with areas that have a very wide diversity of species. However, at this time this family name is not entered in the IFRI database, and is only used as a reference for the researcher.

Social characteristics of forests will also be recorded on the Forest Form. Rules about forest ownership, entry into the forest, monitoring, and maintenance of the forest will be addressed by researchers using questions in sections B, D, and E. The Forest Feature Map (B1) and the Forest Plots Map (B1a) should be carefully drawn with as many of the features highlighted on the map as possible.

C2 provides an area for recording all the plant species that have been noted in the forest. All species recorded on *Forest Plot Forms* must be recorded in C2. If data about species is different in Form G, A2a, it should be added in C2 as well.

4. Team Leader Responsibilities

C1 should be checked in relationship to answers in A2a in Form G, and *Forest Product Form* (Form R) questions.

Completion of C2 on-site by researchers and the team leader is essential. Checking the spellings on all plant species in relation to the spellings on Form P is crucial to preparing for problem-free data entry.

C3 should include animals known to be currently present in the forest. Regional lists can be filed with this form, but should not be used to fill in the form.

D1 through D4 should be checked by the team leader in relationship to A2 in Form G.

D. SPECIFIC GUIDELINES BY SECTION AND QUESTIONS

A. History

A1. Please give an approximate age of the forest, even if it is a rough estimate. What is important is whether this is a recently established or planted forest or one that has existed for a long time. The data will usually be treated as categorical, e.g., early stage of regrowth, mature forest, old-growth forest, etc.

A3. Use the paragraph here to describe the origin of a planted forest and estimated age of this forest in some detail. If there are developmental changes in this forest, please include the successional stage (e.g., a climax or early successional forest), if this can be ascertained. If the forest has many old and dying trees, describe their abundance and state that the forest appears to be "ancient" or "an old-growth" forest. If tree rings can be used to age any of the more abundant tree species, please include this information.

A5a. Please note if anyone has initiated a maintenance, reforestation, or forest improvement project or activity in this forest. Has anyone planted seedlings, cut timber as a forest management activity, picked up litter, etc.? Any maintenance, reforestation, or improvement activity is included in a "Yes" response.

B0. Major Changes Since Last Site Visit

This section will not be used until a second or later visit to this site is made. At that time, the team leader should carefully read the materials provided from the earlier site visit(s) so it is possible to record any relevant changes such as new trails, management units, or boundaries, landslides, fires, flooding, disease infestation, drought, etc.

B. Forest System General Information

B1. If the Site Overview Map provides a large enough picture of the forest boundaries, a traced copy of the Site Overview Map should be used here. All important features such as streams, trails, forest management units and plots, temples or sacred areas, and locations for overlooking the forest, etc. should be noted on this map.

B3. This section focuses on forest management units. A forest management unit is a section of a forest that has been set aside for certain purposes. Sometimes there is only one unit in a forest that has been set aside for religious purposes or for harvesting and planting purposes that differ from the remainder of the forest. Sometimes, the entire forest is divided into sections that are managed in a similar way but in a rotational pattern. For example, a user group might divide a forest into five sections and harvest major forest products (e.g., large trees for timber) from each section every second year. During a ten-year period, they would harvest the larger trees in all sections, but units in the most recently harvested section would have considerably fewer large trees than units in the section that had been harvested ten years ago.

If there are no management units, enter “N/A” for questions B3a through B3e1. If there are such units, they should be drawn on the Forest Feature Map at B1. If all of the units are approximately similar and the only difference between them is when harvesting occurs, the answer to question B3e is "No." But, if a section is set aside as a permanent reserve, for example, and never harvested or a section is set aside as a plantation of exotic species, the answer to B3e would be "Yes," and a text description of how units are specialized would be entered at B3e1.

If there is a system whereby the units are harvested in a sequential order, the answer to B3f is "Yes" and description of the rotation of harvesting through the management units should be entered at B3f1. Please list the names (or numbers) of each

management unit in B3g. On the *Forest Plot Form* (Form P), make sure that plots located in a particular management unit are identified as being in one of the units listed at B3g.

B8. To record the vegetation type of the forest, list the most appropriate general vegetation formation as listed in *Appendix 1—Form F*. Write down the appropriate letter and number combination. For example, Namungo's Forest is A3 (Closed Forest Formation Class, tropical evergreen seasonal forest.)

B8a. Write out the whole forest classification and follow it with any other regional or local classifications that are available and currently used by local scientists and or managers. For Namungo's Forest, a regional classification found in Howard (1991) permitted a more complete description: medium-altitude Piptedeniastrium-Albizia-Celtis type. If a published, national-, regional-, or local-level forest classification is available and will provide a more complete classification of the forest, be sure to include this information and a list of references for the details. Copies of any classification schemes should be sent to UMich so a more complete set of options may be created for the IFRI database.

C. Species and Resources in the Forest

C2, C3, C4. Make sure all plant species found in forest plots are recorded in C2. Record animal species in C3 and other resources in C4. C2, C3, and C4 will be the master lists of species/products for each forest in a site. In C2 and C3, you may find that forest users do not report a use for a particular species. This may be true. It may also mean that the particular individuals with whom you have talked do not use the species or only use it for particular purposes. Conversations with other respondents may reveal further uses. Some of the possible uses of the species in C2 may include: fodder, fuelwood, medicine, construction materials (beams, poles, rafters, planks), handicrafts, tools and implements (such as ploughs and plough handles, shovel handles, axe handles, pestles, etc.), walking sticks, food, green manure, composting mulch, etc. In C3, some of the possible uses may include food, clothing, and bedding. In C4, some possible uses of inorganic products may include construction, tools, implements, etc. If only part of a species or product is used, please indicate its use in the "use" columns. If no "use" column is marked, this will indicate that the species or product is not "harvested." A thorough discussion with forest users will need to be conducted to record this data accurately.

D. Rules Related to Entry / E. Rules Related to Maintaining/Monitoring the Forest

Sections D and E of the form relate to rules **about the forest itself rather than rules about specific forest products.** Rules about products are recorded on Form R.

D1. This question is not coded for each product, but asks for rules-of-entry for **nonconsumptive** uses of the forest.

E1. This question includes rules related to maintaining and monitoring the forest. These answers should be checked in conjunction with answers on Form R, especially under technology. Include a description of the rule. If a specific product is mentioned in the rule, the team leader should make note of its product.

F. Forester's Appraisal of the Overall Condition of the Forest

A researcher trained in forestry must complete section F **after the team inventories all forest plots.** It asks for a professional judgment about various aspects of this forest.

ENDNOTE TO SECTION III.A.2

1. If the map is sketched out primarily by men, the researchers should also find time to ask the women users to sketch out their version of the forest map. The differences in the two maps should be discussed with both male and female forest users, and the results of the discussion incorporated into the final drawing of the map. Copies of both maps will be attached to Form F.

Appendix 1—Form F Part of the Formation Classification Scheme Adapted by UNESCO (1973)

FORMATION		DESCRIPTION
A	**Closed Forest Formation Class**	**Dominants 5+ m tall, crowns interlocking**
1	Mainly evergreen forest	Individual trees may shed leaves, but canopy as a whole remains green
2	Tropical ombrophilous forest (= tropical rain forest)	Dominants mainly broadleaved, evergreen, with drip tips; - neither cold- nor drought-resistant
3	Tropical and subtropical evergreen seasonal forest	Number of drought-deciduous trees intermediate between above and below
4	Tropical and subtropical - semideciduous forest	Most upper canopy trees drought-deciduous; sclerophyllous; leaves without drip tips
5	Subtropical ombrophilous forest	Local variant, grading into tropical rain forest
6	Mangrove forest	Intertidal location in tropics and subtropics; dominated by evergreen sclerophyllous broadleaved trees with stilt roots or pneumataphores; vascular epiphytes rare
7	Temperate and subpolar evergreen ombrophilous forest	Occurs in extremely oceanic, frost-free climates of Southern Hemisphere, as in *Nothofagus* or *Podocarpus* forests of New Zealand
8	Temperate evergreen seasonal broadleaved forest	Dominated by hemisclerophyllous evergreen trees; rich in herbaceous undergrowth, but few epiphytes and lianas; grades into above and below
9	Winter-rain evergreen broadleaved sclerophyllous forest	Dominated by sclerophyllous, evergreen trees with little understory but some lianas
10	Tropical and subtropical evergreen needleleaved forest	Dominated by needleleaved or scaleleaved evergreen trees; vascular epiphytes and lianas absent
11	Temperate and subpolar evergreen needleleaved forest	As above, but to the north
12	Mainly deciduous forest	Majority of trees shed foliage simultaneously in connection with an unfavorable growing season
13	Tropical and subtropical drought-deciduous forest	Foliage shed during dry season (usually winter)
14	Cold-deciduous forests with evergreen trees	Foliage shed during frost season; deciduous trees dominant but evergreens present as in hemlock-hardwood forest
15	Cold-deciduous forests without evergreen trees	Deciduous trees absolutely dominant, vascular epiphytes absent
16	Extremely xeromorphic forest	Dense stands of xeromorphic trees, with succulents and xeromorphic shrubs, often grading into woodland (below)

continued on following page


This is a priority variable. Please make sure this question is answered.

Appendix 1—Form F, continued

FORMATION		DESCRIPTION
B	**Woodland Formation Class**	**Dominants 5+ m tall, crowns not usually touching, but canopy cover 40+%; herbaceous layer may be present**
1	Mainly evergreen woodland	Dominants evergreen
2	Mainly deciduous woodland	Dominants variously deciduous
3	Extremely xeromorphic woodland	Similar to xeromorphic forest, but trees less dense
4	Scrub formation class	Dominants shrubs or dwarf trees 0.5-5 m tall
5	Mainly evergreen scrub	Includes chaparral
6	Mainly deciduous scrub	Includes riparian thickets
7	Extremely xeromorphic (subdesert) shrubland	Very open stands of shrubs with xerophytic adaptations; some plants with thorns
8	Dwarf-scrub and related communities	Dominants less than 0.5 m tall; includes arctic-alpine tundra, bogs, heaths
C	**Herbaceous Vegetation**	**Dominated by graminoids or forbs; more or less continuous cover; woody synusia less than 40% cover**
1	Tall graminoid vegetation	Dominant graminoids 2+ m tall when in flower; forb cover less than 50%
2	Tall grassland with tree synusia 10-40% cover	An open woodland with graminoid cover greater than 50%
3	Tall grassland with tree synusia less than 10% cover	Savannas, sometimes with shrubs
4	Medium tall grassland	Dominant graminoids 0.5-2 m tall when in flower; forb cover less than 50%
5	Short grassland	Dominant graminoids less than 0.5 m tall when in flower; forb cover less than 50%; includes meadows, some types of tundra
6	Forb vegetation	Forb cover greater than 50%; graminoid cover less than 50%

Source: Barbour, Burk, and Pitts, 1987

▶ This is a priority variable. Please make sure this question is answered.

IFRI FORM F

FOREST FORM

A forest is defined as a total surface area of at least 0.5 hectares containing woody vegetation exploited by at least three separate households and governed overall by the same legal structure. This form has been designed to collect information about the vegetation in the forest area that the local community uses, maintains, processes or sells.

The forest may be owned and managed by the community, by the local, state, or national government, or by a private individual or corporation. More than one distinct group may have the right to gather products from the forest: users from more than one settlement, different groups within the same settlement, and settled and nomadic groups are some possible combinations. In such cases, the researcher will fill out more than one User Group Form for the same forest. It is also possible that the same group will have rights over more than one forested area. Thus the same group may collect products (fodder, fuelwood, timber, green manure, and so forth) from two or more community, government, or private forests. In such cases the researcher will fill out more than one Forest Form. On each Forest Form, questions about (1) the history of the forest, (2) the major physical characteristics of the forest including questions about its boundaries and size, (3) the product-species that are used from the forest, and (4) rules related to entering and monitoring the forest need to be completed.

Research ID: 005 Country ID: GUA Site ID: 001

Date of site visit (mm-dd-yr): 07-31-96

Date(s) data collected for this form (mm-dd-yr): 09-27-96

►**Name of forest <FNAME>:** El Sitio

►**Name of district and subdistrict(s) (if applicable) <FLOCATION>:**

Name of person filling out this form: Pablo Moreno

Name(s) of person(s) with whom discussions were held: : Ramon Orellana and CIRIACO

Location(s) of discussions (fields, home of respondent, place of business, etc.): home .

►**Has this forest been coded before? <FCODED>**

(1) X No
(2) _____ Yes
(3) _____ Uncertain
(4) _____ Yes, with a different name *(If this response is checked, write old and new names in B0.)*

►**How many Forest Plot Forms were completed? <FPLOTNUM>** 43

Please give approximate age even if a rough estimate of natural, mature forest. In natural, mature forests, the age should be that of the oldest living trees ←

A. HISTORY

A1. Approximately how old is this forest? <FHOWOLD> 17 (in years)

This will usually be a rough estimate. What is important is whether this is a recently established or planted forest or a natural forest that has existed for a long time. These data should be treated as categorical (e.g., young, climax, ancient).

►**A2.** **Was this forest originally planted? <FPLANTED>**

Please mark "Yes" if there have been any human efforts to plant new trees among existing old ones.
Mark only one answer.

(1) X No *(Skip question A2a and proceed to question A3.)*
(2) _____ Yes

►**A2a.** **If yes, who planted this forest? <FINITWHO>**

(1) _____ Government agency or officials
(2) _____ A nongovernment agency <FINITNGO>: _____
(3) _____ Local residents or farmers by using their own labor and capital
(4) _____ Local residents or farmers by hiring workers
(5) _____ Local communal or forest association
(6) _____ Other *(describe)*: <FINITOTH>: _____

► This is a priority variable. Please make sure this question is answered.

►A3. **Describe the history of this forest.** ***(long text)*** **<FINITWHY>**

If the forest is *a primary forest, please indicate successional stage (e.g, climax forest), and an indication of the extent to which* its *trees have been harvested If the forest was planted please describe why* it *was first created and by what means this was achieved.*

We consider this to be a climax forest that is a product of natural regeneration. It consists predominantly of conifers, especially Pinus Oocarpa. A timber company cut down approximately 45, 000 trees 18 years ago in the area known as El Sitio. This forest also contains a large number of oak trees (Quercus sp.) The inhabitants of Moran, El Naranjo, and Tabacal use oak trees for firewood.

► This is a priority variable. Please make sure this question is answered.

A4. Was there donor assistance if this forest system was planted? <FINITDON>

Mark only one answer. N/A

(1) _____ No

(2) _____ Yes

►A4a. If yes, who was the donor? <FINITDWHO> _

►A5. Has there been any reforestation/improvement project related to this forest? <FIMPROV>

Mark only one answer.

(1) x_____ No

(2) _____ Yes

►A5a. If yes, describe briefly who initiated it, when, and what was done. *(long text)* <FIMPROVWWW>

Please include information on thinning and selective harvesting. If selective harvesting is currently practiced, what size classes are being cut and how many trees of which species are being removed on a per year basis? (An estimate is adequate.)

N/A

Please complete the last part of this history section after undertaking the forest plot measurements and after a discussion with several older forest users who are familiar with the earlier condition of the forest.

A6. Please list any plant species that were harvested from this forest approximately **5** years ago that are no longer available, and list the reasons for their disappearance. {F_SPECIE} <F_NUMYEARS>=5

Name of Species		
Botanical name <F_BIONAME>	Local name <F_LOCNAME>	Reason for disappearance <F_REASON>
	pashte	
Valeriana asp.	valeriana	
Tagetes lucida	pericon	

Please check the spelling of each local and botanical name with the spelling in the Master List of Plant Species in C2. They should match.

A7. Please list any plant species that were harvested from this forest approximately **10** years ago that are no longer available, and list the reasons for their disappearance. {F_SPECIE} <F_NUMYEARS>=10

Name of Species		
Botanical name <F_BIONAME>	Local name <F_LOCNAME>	Reason for disappearance <F_REASON>
N/A	N/A	N/A

Please check the spelling of each local and botanical name with the spelling in the Master List of Plant Species in C2. They should match.

▶ This is a priority variable. Please make sure this question is answered.

A8. Please list any plant species that were harvested from this forest approximately **15** years ago that are no longer available, and list the reasons for their disappearance. {F_SPECIE} <F_NUMYEARS>=15

Name of Species		Reason for disappearance <F_REASON>
Botanical name <F_BIONAME>	Local name <F_LOCNAME>	
N/A	N/A	N/A

Please check the spelling of each local and botanical name with the spelling in the Master List of Plant Species in C2. They should match.

B0. MAJOR CHANGES SINCE LAST SITE VISIT

►**B0.** **Have there been any major changes in the forest system since the last visit, and if so, what are they?** ***(long text)*** **<FHISTCHNG>**

Do not complete if this is the first visit to this site to record information for the IFRI database.

N/A

Please do not answer until second visit to the site. On the second or subsequent visits note changes in the area, and only if major changes occurred.

←

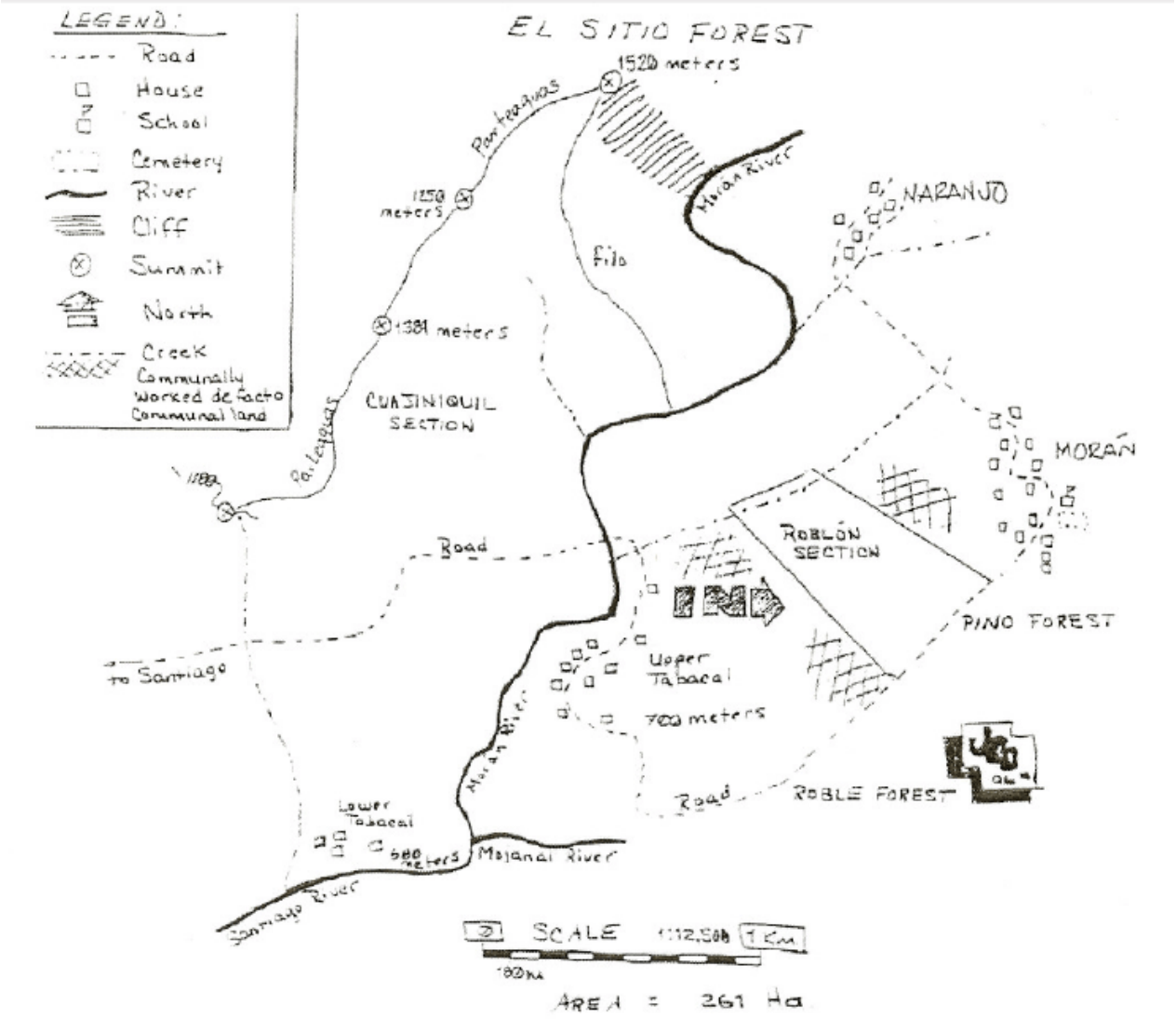
► This is a priority variable. Please make sure this question is answered.

B. FOREST SYSTEM GENERAL INFORMATION

B1. Forest Feature Map

Draw a map of the forest using scaled maps as references. If the site overview map drawn in the Site Overview Form provides a large enough picture of the forest boundaries, simply trace or copy that map and use it here. If the Site Overview Map does not provide enough detail to be able to identify this particular forest's boundaries and trails, forest plot locations, etc., then do not trace the Site Overview Map, rather, draw a map of the individual forest here, and label all important features (e.g., streams, trails, forest management units or plots, temples and sacred areas, and important locations for overlooking the forest). If a plantation(s) is depicted on the map, please indicate on the map the year in which it was planted, and the types of species planted. This is not the map drawn by the community. Please file the Community Map of the forest with the Forest Feature Map.

This map will be used later to identify harvesting boundaries when completing the Forest-User Group Relationship Form. Please make sure the information here matches instructions above.

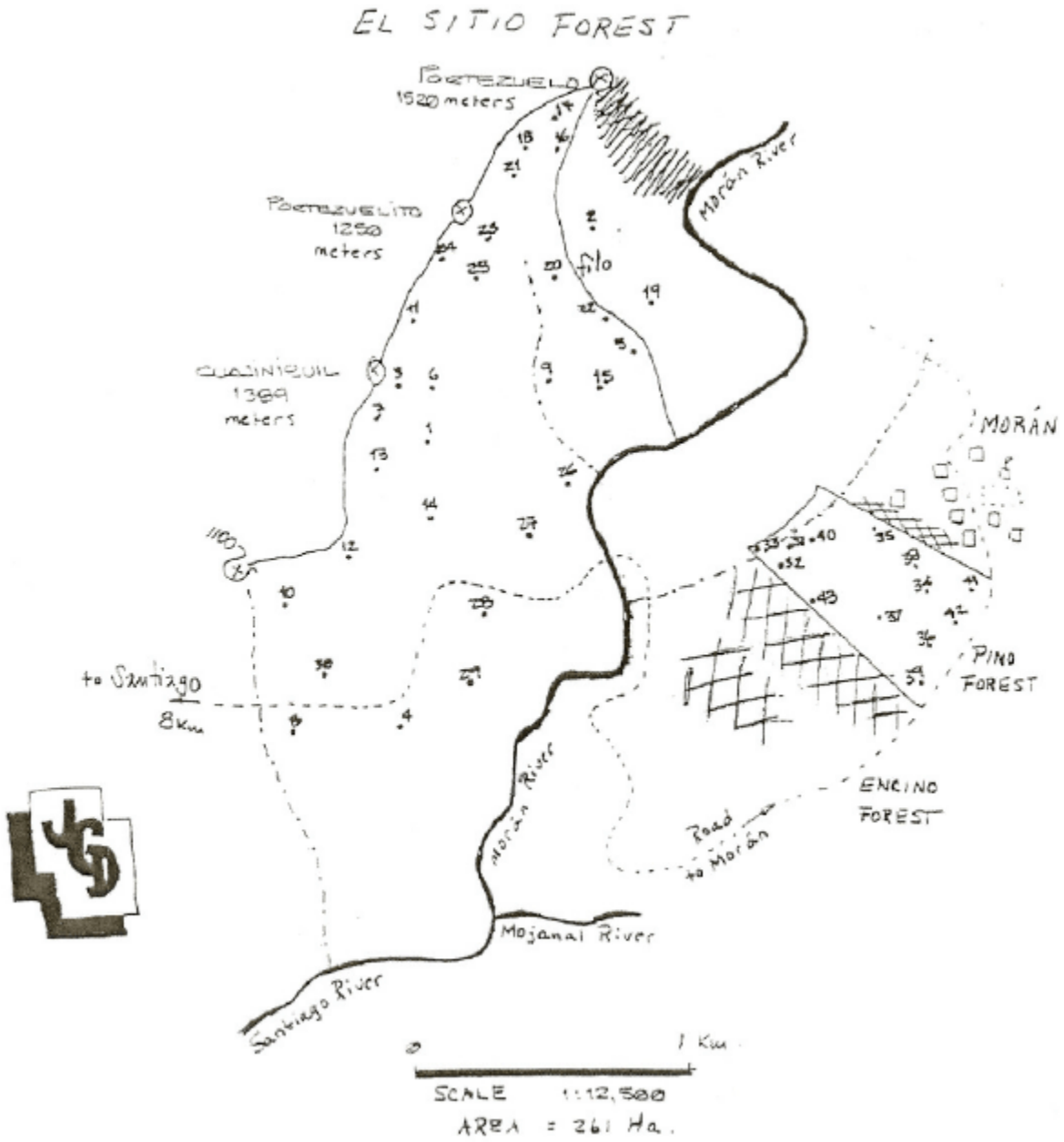


▶ This is a priority variable. Please make sure this question is answered.

Bla. Forest Plots Map

Trace the Forest Feature Map drawn in *question Bl to develop forest plot locations.*

Fallow the instructions given in *the Field Manual* in *Section liLA.3., Farm P Guidelines, on how to obtain a random sample of plots.* This *includes the construction of a grid, the development of Plot Identification Numbers, and the selection of plots to* visit *The randomly chosen plots should be marked on this map. Thus, this Farest Plots Map will be used in conjunction with the Forest Plot Forms*.



▶ This is a priority variable. Please make sure this question is answered.

►B1b. **On this page, please describe the sampling logic and method used to determine the number of plots drawn for this forest, any stratification used, and any other information that others will need in doing analysis based on this sample of plots.** ***(long text)*** **<FSAMPLE>**

We used a random samplingframe to locate plots over the space locals identified as their communalforest. We then placed a transparent grid over our map of the study area and used a randomnumberstable to select numbersfor our x and y coordinates. This allowed us to locate plot locations on our map. If the table generated a set of numbers outside the forested area, we used another set of numbers to find a plot located within the forested area of the map. We used the performance curve to determine the numberof plots we needed to sample (see Plot Form guidelines for the formula). We chose to sample enough plots to minimizevariation on the height of pine trees.

►B2. **What is the size of the forest?** **<FSIZE>**

Please write the area in terms of hectares, or some local unit of area if area in hectares is not known. If you use a local unit, find out how many local units of area are equal to a hectare.

311_____ hectares

If area is not known in hectares, supply the number and the (local) unit of measurement here _____

►B3. **Has this forest been divided into forest management units?** **<FUNIT>**

The answers to B3–B3g here should correlate to answers for A5–A5b on the Forest Plot Form.

Mark only one answer.

(1) __x__ No — If no, skip to question B4.

(2) _____ Yes

►B3a. **If yes, how many?** **<FUNITNUM>** N/A

► This is a priority variable. Please make sure this question is answered.

B3b. Please draw the boundaries of these units (and label them within the boundaries) on the Forest Feature Map developed in question B1, and write the year in which each forest management unit was planted.

Refer to the Forest Feature Map in question B1. N/A

B3c. Are these units approximately equal in size? <FUNITEQUAL>

Mark only one answer.

(1) _____ No N/A

(2) _____ Yes

B3d. Are the boundaries of these units related to ecological regions (such as catchment areas)? <FUNITBOUND>

Mark only one answer.

(1) _____ No N/A

(2) _____ Yes

B3e. Are any of these units permanently distinguished from others for special uses? <FUNITDIFF>

Mark only one answer.

(1) _____ No N/A

(2) _____ Yes

►B3e1. If yes, please describe. ***(long text)*** **<FUNITDDESC>**

N/A

► This is a priority variable. Please make sure this question is answered.

B3f. Is there a system of regeneration and harvesting that rotates through these units? <FUNITCYCLE>

Mark only one answer. N/A

(1) _____ No

(2) _____ Yes

►**B3f1. If yes, please describe.** ***(long text)*** **<FUNITCDESC>**

N/A

B3g. List the names and numbers of these units as used by the users of the forest or assigned by the field team.

(text) <FUNITINFO>

If users of the forest or forest owner do not have names for these units, please assign names.

N/A

► This is a priority variable. Please make sure this question is answered.

►B4. What is the topography of the land on which this forest is located? <FTOPOGRAPH>

Mark only one answer.

(1) _____ Primarily flat
(2) _____ Mostly flat with some rolling terrain
(3) _____ Primarily rolling terrain
(4) _____ Mostly rolling terrain with some steep portions
(5) X_____ Primarily steep

B4a If (5) is marked above, what is the steepness of the slope in degrees (if known)? <FSTEEP> 35°

►B5. Who is the legal (de jure) owner of the land on which this forest is located? <FOWNLAND>

Mark only one answer.

(1) _____ National government
(2) _____ Regional (or state) government
(3) X_____ Local government
(4) _____ Settlement(s) or village(s)
(5) _____ Section or quarter of a settlement or village
(6) _____ Private individual(s) or family
(7) _____ Private corporation(s)
(8) _____ A cooperative
(9) _____ Religious order or temple
(10) _____ No one (completely open access)
(11) _____ Other types of owners or multiple types of ownership *(describe)*: <FOWNOTH>

►B5a. Who is responsible (de facto) for the operational management of this forest? <FOWNOP>

Mark only one answer.

(1) _____ Government agency
(2) _____ Local group of users
(3) _____ Private owner
(4) _____ Nongovernment organization (NGO)
(5) _____ Joint management between local group and a government
(6) _____ Joint management between local group and private owner(s)
(7) _____ Joint management between local group and an NGO
(8) _____ Other *(describe)*: <FOWNOPOTH>

B5b. For the person(s), organization(s), or group(s) responsible for the operational management of this forest, please rank up to three primary purposes of operational management. <FOWNPURP>
Multiple answers may be applicable.

(1) _____ Strict protection
(2) _____ Biodiversity protection
(3) _____ Watershed
(4) _____ Timber production
(5) _____ Carbon sequestration
(6) _____ Agroforestry

► This is a priority variable. Please make sure this question is answered.

(7) _____ Nontimber forest products
(8) _____ Nonconsumptive benefits (e.g., recreation)
(9) _____ Other *(describe)*: <FOWNPURPOTH>

B5c. What is the official legal designation of this forest? *(brief text)* <FDESIGNATE>

For example, government reserve forest, community forest, government park, etc.

Buffer zone of the Sierra de las Minas Biosphere Reserve

►B6. Does the legal owner of this forest also hold the rights to harvest all of the forest products from this forest? <FOWNRIGHTS>

Mark only one answer. MIC

(1) _____ No (Please designate who owns rights to the harvest of particular forest products on the Forest-User Group Relationship Form, question A2.)
(2) _____ Yes

►B7. Can the owner of the forest land sell all or part of the forest land to other individuals or groups? <FOWNSELL>

Mark only one answer. MIC

(1) _____ No
(2) _____ Yes, parts of the forest land
(3) _____ Yes, all of the forest land

►B8. What is the vegetation type of the forest that is being investigated? <FVEGTYPE> A-10

From the partial list of vegetation classifications contained in Appendix 1—Form F Guidelines (Section III.A.2) of the Field Manual, write the number and letter combination that corresponds to the type most characteristic of this forest.

►B8a. If no appropriate vegetation type is listed in Appendix 1—Form F Guidelines (Section III.A.2) of the Field Manual, or if there is more detailed information available than listed in Appendix 1—Form F, please write out the general forest type or further information here. *(brief text)* <FVEGDESC>

N/A

►B9. Has the density of trees on the forest land changed in the past five years? <FTREEDENS>

Mark only one answer.

(1) X No, it has remained the same
(2) _____ Yes, it has increased
(3) _____ Yes, it has decreased

► This is a priority variable. Please make sure this question is answered.

►B9a. **If yes, list the 3 most important reasons cited by users as the reasons for change in the density of trees.** **<FTREEDENSY>**

(1) N/A .
(2) N/A .
(3) N/A .

►B10. **Has the density of shrubs and bushes on the forest land changed in the past five years?** **<FBUSHDENS>**

Mark only one answer.

(1) X No, it has remained the same
(2) _____ Yes, it has increased
(3) _____ Yes, it has decreased

►B10a. **If yes, list the 3 most important reasons cited by users as the reasons for change in the density of the shrubs/bushes.** **<FBUSHDENSY>**

(1) N/A .
(2) N/A .
(3) N/A .

►B11 **Has the density of the ground cover on the forest land changed over the past five years?** **<FCOVDENS>**

Mark only one answer

(1) _____ No, it has remained the same
(2) _____ Yes, it has increased
(3) X Yes, it has decreased

►B11a. **If yes, list the 3 most important reasons cited by users as the reasons for change in ground cover.** **<FCOVDENSY>**

(1) _____
(2) _____
(3) _____

►B12.

Was most of the vegetation in the forest planted, or is it a result of natural growth? **<FVEGORIGIN>**

Mark only one answer.

(1) _____ Most of the woody vegetation was planted, and the forest is a result of initial plantations and/or tree nurseries made by the forest department and/or local users

(2) _____ People have planted woody vegetation, but their efforts have been aided by natural regeneration and seeding

(3) _____ People plant woody vegetation sometimes, but most vegetation occurs as a result of natural growth

(4) X People seldom plant woody vegetation, and the forest is a result of natural growth

► This is a priority variable. Please make sure this question is answered.

►B13. During the last five years, has there been any change in the area over which vegetation exists/existed? <FVEGCHANGE>

As opposed to earlier questions which asked about the density of vegetation, this question simply asks if the area of forest changed. Changes may have come about because of encroachments, excessive use, changes in legislation about land-use patterns, and so forth.

Mark only one answer.

(1) X No, the forest area has remained the same
(2) _____ Yes, the area of the forest has increased
(3) _____ Yes, the area of the forest has decreased

B14. If the forest area has increased, what are the reasons for the increase in the area? <FINCREASE_>

Multiple answers may be applicable. N/A

(1) _____ Because of local, regional, or national legislation to bring more area under woody vegetation
(2) _____ Because of informal woody vegetation planting locally
(3) _____ Because of local efforts to protect a larger area
(4) _____ Other reasons (describe) <FINCOTH>: _____

►**B15.** **If the forest area has decreased, it is primarily because of:** **<FDECREASE>**

Mark only one answer. N/A

(1) _____ Overuse of forest products
(2) _____ Clearing for agriculture
(3) _____ Encroachments on forest land
(4) _____ Other reasons (describe) <FDECOTH>: _____

B16. Are there points within the forest where the main flow of forest products can be controlled? (Examples of such points may be a place from which most of the forest area can be seen/surveyed; a path which users must take to extract products from the forest; a stream that users must cross to reach the forest and so forth.) If there are such points, describe them. *(long text)* <FFLOWCTRL>

The "Portezuelito" mountain next to Portezeulo (see map in question B1 of this form) permits seeing the rest of the forest in El Sitio.

► This is a priority variable. Please make sure this question is answered.

B17. If multiple harvesting processes are used within the forest (e.g., wood cutting, livestock grazing, nut, fruit and honey gathering), do any of the techniques for harvesting one product interfere with the availability of another product, or make harvesting another product more difficult? Explain in detail. (One example of interference may be that if there are tree species from which both fruits and fodder can be used, then lopping the trees for fodder may reduce the amount of fruits available from the trees; similarly, multipurpose tree species, if chopped for firewood, cannot provide fodder or fruits). *(long text)* <FINTERFERE>

N/A

C. PRODUCTS/SPECIES THAT ARE USED FROM THE FOREST

C1. What forest products/species are being harvested from this forest? <FPRODUCTS_>

Please note that products "harvested" could include such nonconsumptive goods as an area for sacred worship.

Multiple answers may be applicable.

(1) X Trees
(2) X Bushes
(3) X Grasses
(4) _____ Leaves on ground
(5) _____ Climbing leaves
(6) _____ Soils
(7) _____ Stones
(8) X Minerals
(9) X Water
(10) X Animals
(11) _____ Areas for sacred worship
(12) _____ Recreation
(13) _____ Other *(describe)* <FPRODOTH>:_____

▶ This is a priority variable. Please make sure this question is answered. Rev. 12-11

C2. What are all of the plant species in the forest that have been noted? C2 will be the master list of plant species found in the forest. Plant species include trees, grasses, shrubs, leaves, fruits, nuts, flowers, and so forth. On the following table, name the species (local and botanical names, if possible). What is the reason why the species is important? What are the most important uses of the species? (If the "use" column(s) is/are not used, this will indicate that the species is not "harvested"). If the researcher can find no present use, record abundance only.

Master List of Plant Species {F_ORGAN} <F_TYPE> = "P" (PLANT)

What is the family name of this plant species?	Name of Species		Reason why it is important<F_IMPORT>	Is it abundant? Mark "**1**" f**or No**, "**2**" **for Yes** <F_ABUNDANT>	Use <F_USES>	Use <F_USES>	Use <F_USES>
	Botanical <F_BIONAME>	Local <F_LOCNAME>					
	Achimenes	unknown	N/A	1	N/A		
	Adiantum sp.	unknown	N/A	1	N/A		
	Anemia hirsta (l)	unknown	N/A	1	N/A		
	Anthericum	unknown	N/A	1	N/A		
	Borreria	unknown	N/A	1	N/A		
	Calciandra	chochoroca	Food	2	Livestock feed		
	Carex polystachya	Zacatillo	Fodder	2	Livestock feed		
	Cassia	Tamarindillo	N/A	1	N/A		
	Cologania	Unknown	N/A	1	N/A		
	Crotalaria purshii	Chipilín de monte	N/A	1	N/A		
	pmGoCrotalaria sp.	Chipilín de zope	N/A	1	N/A		
	Cyperus manimae HBK	Coyolillo	N/A	1	N/A		
	Unknown A	unknown	Fodder	2	Livestock feed		
	Unknown B	unknown	N/A	1	N/A		
	Unknown C	unknown	N/A	1	N/A		
	Unknown D	unknown	N/A	1	N/A		
	Unknown E	unknown	N/A	1	N/A		
	Unknown F	unknown	N/A	1	N/A		
	Unknown G	unknown	N/A	1	N/A		
	Unknown H	unknown	N/A	1	N/A		

continued on following page

What is the family name of this plant species?	Name of Species		Reason why it is important <F_IMPORT>	Is it abundant? Mark "**1**" f**or No**, "**2**" **for Yes** <F_ABUNDANT>	Use <F_USES>	Use <F_USES>	Use <F_USES>
	Botanical <F_BIONAME>	Local <F_LOCNAME>					
	Unknown I	unknown	N/A	1	N/A		
	Unknown J	unknown	N/A	1	N/A		
	Unknown K	unknown	N/A	1	N/A		
	Unknown L	unknown	N/A	1	N/A		
	Unknown M	unknown	N/A	1	N/A		
	Unknown N	unknown	N/A	1	N/A		
	Unknown O	unknown	N/A	1	N/A		
	Desmodium triflorum	unknown	N/A	1	N/A		
	Drymania villosa	llovizna blanca	N/A	1	N/A		
	Elaphoglossum sp.	unknown	N/A	1	N/A		
	Eleusine indica	pata de gallo	N/A	1	N/A		
	Eriosema diffusum	oreja de burro	N/A	1	N/A		
	Festuca megalura	pajon	fodder	2	Livestock feed		
	Heterotheca	unknown	N/A	1	N/A		
	Hyparrenia ruffa	jaragua	N/A	1	N/A		
	Hyptis verticillata	unknown	N/A	1	N/A		
	Lantana camara	cinco negritas	N/A	1	N/A		
	Leucothoe Mexicana	guaya billo	N/A	1	N/A		
	Mimosa pudica	zarza	N/A	1	N/A		
	Mimosa sensitiva	sarza	N/A	1	N/A		
	Mimosa sp.	subin	N/A	1	N/A		
	Oplismenus sp.	lajilla	N/A	1	N/A		

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▶ This is a priority variable. Please make sure this question is answered.

What is the family name of this plant species?	Name of Species		Reason why it is important <F_IMPORT>	Is it abundant? Mark "**1**" f**or No**, "**2**" **for Yes** <F_ABUNDANT>	Use <F_USES>	Use<F_USES>	Use <F_USES>
	Botanical <F_BIONAME>	Local <F_LOCNAME>					
	Oxalis sp.	trebol	N/A	2	N/A		
	Paspalum Conjugatum	grama	fodder	2	Livestock feed		
	Paspalum sp.	pajon	fodder	2	N/A		
	Pinus oocarpa	pino	It is a tree	2	ocote	wood	
	Psidium guajaba	guayaba	N/A	2	N/A		
	Pteridium aquilinum	chispa	N/A	1	N/A		
	Quercus	encino negro	It is a tree	2	firewood		
	Quercus	huite	It is a tree	1	firewood		
	Quercus tristis	encino amarillo	It is a tree	2	firewood		
	Rhynchosia discolor	choreque choreque	N/A	1	N/A		
	Richardia scabral	unknown	N/A	1	N/A		
	Scleria coriacea	coyolillo	N/A	1	N/A		
	Selaginella sp.	helecho	N/A	1	N/A		
	Setaria geniculata	pajon	fodder	2	N/A		
	Sida acuta	espobillo	N/A	1	N/A		
	Tagetes filifolia	anis de chucho	N/A	1	N/A		
	Valeriana	valeriana	Medicinal plant	1	medicine		

▶ This is a priority variable. Please make sure this question is answered.

C3. What other resources are found in the forest? C3 is the master list of animals found in the forest. Animals include elephants, monkeys, birds, fish, and so forth.

On the following table, name the species (local and scientific names, if possible). Why is the species important? What are the most important uses of the spe- cies? (If no "use" column is used, this will indicate that the species is not "harvested.") If the researcher can find no present use, record abundance only.

Master List of Animal Species {F_ORGAN} <F_TYPE> = "A" (ANIMAL)

Name of Species		Reason why it is important <F_IMPORT>	Is it abundant? Mark "**1**" **for No**, "**2**" **for Yes** <F_ABUNDANT>	Use <F_USES>	Use <F_USES>	Use <F_USES>
Scientific <F_BIONAME>	Local <F_LOCNAME>					
Didelphis marsupialis	tacuacion	food source	1	Need a permit		
Myr mecophagh	anteater	pest control	1	N/A		
Conepatus semistriatus	skunk	pest	2	N/A		
Lutra longicaudis	groundhog	N/A	1	N/A		
Tamandua mielero	honey bear	N/A	1	N/A		
Dasypus novemcinctus	armadillo	food source	1	Need a permit		
Urocyon ~~cia~~PMcinereoargentus	wildcat	pest	1	N/A		
Procyon lotor	raccoon	food source	1	N/A		
Mustela frenata	weasel	pest	2	N/A		
Mazama Americana	kid	food source	1	Need a permit		
Agouti paca	badger	food source	1	Need a permit		
Herpetotheres cachinnus	guaro falcon	N/A	2	N/A		
Falco peregrinus	pilgrim falcon	N/A	2	N/A		
Circus cyaneus	rastrera eagle	N/A	2	N/A		
Harpihaliaetus sditarius	solitary eagle	N/A	1	N/A		
Cathaytes burrovianus	buzzard	N/A	1	N/A		
Sarcoramphus	king vulture	N/A	2	N/A		
Zenaida asiatica	white-legged dove	food source	2	Need a permit		

▶ This is a priority variable. Please make sure this question is answered.

C3. ***Master List of Animal Species, continued***

Name of Species		Reason why it is important <F_IMPORT>	Is it abundant? Mark "**1**" **for No**, "**2**" **for Yes** <F_ABUNDANT>	Use <F_USES>	Use <F_USES>	Use <F_USES>
Scientific <F_BIONAME>	Local <F_LOCNAME>					
Columba Fasciata	collareja dove	food source	2	Need a permit		
Columbina passerine	tortolita pechipunteada	food source	2	Need a permit		
Aratinga canicularis	parakeet	pest	2	N/A		
Scolapaz aurifrons	cheje	pest	2	N/A		
Feocecyx velox	cignamonte	N/A	2	N/A		
~~Colius~~PM Colinus Virginianus	quail	N/A	2	N/A		
Crotalus viridis	rattlesnake	N/A	2	N/A		
Boa constrictor	boa constrictor	N/A	2	N/A		

C4. What other resources are found in the forest? Possible entries include living and nonliving resources such as minerals, stones, water, or mushrooms. On the following table, write the name of the product (local and botanical names, if possible and where relevant), why it is important, and the most important uses of the product. (If the "use" column(s) is/are not used, this will indicate that the product is not "harvested"). If the researcher can find no present use, record abundance only.

Master List of Other Important Resources {F_INORG}

Name of the product <F_PRODNAME>	Reason why it is important <F_IMPORT>	Is it abundant? Mark "**1**" **for No**, "**2**" **for Yes** <F_ABUNDANT>	Use <F_USES>	Use <F_USES>	Use <F_USES>
lime	Used domestically	1	To cover torilla-making boards	Paint homes	agricultural

D. RULES RELATED TO ENTRY

These rules are not product specific.

Note that these rules are *forest specific* not product specific

►D1. Which of the following attributes must local residents have in order to enter this forest for recreational, religious, or other nonconsumptive uses: <FRESATTRI_>

Note: this question pertains to nonconsumptive uses.

Multiple answers may be applicable.

(1) x Anyone (literally anyone) can use this forest for nonconsumptive uses
(2) _____ Anyone who is a citizen of this country
(3) _____ Anyone who is a citizen of this state or district
(4) x Anyone who lives in a nearby village
(5) _____ Anyone who has joined particular organizations
(6) _____ Anyone who is a member of a particular ethnic group or caste
(7) x Anyone who is a member of a particular extended family
(8) _____ Anyone who has shares in a particular enterprise
(9) _____ Other (describe) <FRESOTH>: _

►D2. If more than one group uses this forest, are rules for using this forest well defined between different groups? That is, are there rules that specify the actions that different groups follow? <FRULEDEFIN>

Keep in mind that the rules may not be written down, but may still have strong force because individuals in the different groups recognize the rules.

Mark only one answer.

(1) x No
(2) _____ Yes

►D2a. If yes, do the different groups generally follow the prescribed rules? <FRULEFOLL>

Mark only one answer. N/A

(1) _____ No
(2) _____ Yes

D3. If mobile groups use this forest, indicate the length of time for which they gather products from the forest or use the forest for nonconsumptive purposes (in months) <FMOBILETIM>: N/A

►D4. Describe here any further information the researcher has about the structure of rights of various individuals or groups to the general use of the forest. Code information about harvesting rules on the relevant *Forest Product Form* (Form R). *(long text)* <FUSERIGHTS>

In El Sitio, user rights are de facto open access for community members because all users can harvest and/or extract products from the forest. The amount and use of a forest product have to comply with the Master Plan for the Buffer Zone of the Sierra de las Minas Biosphere Reserve.

► This is a priority variable. Please make sure this question is answered.

E. RULES RELATED TO MAINTAINING AND MONITORING THE FOREST

E1. Do rules restrict any of the following kinds of changes that may occur in the forest? If so, please describe.

Change	Mark "**1**" **for No**, "**2**" **for Yes**	If yes, please describe <FRESTRICT>:
Maintenance/improvement	►**<FMAINT>** 1	(Which organization(s) define this rule or rules?)
Infrastructure changes (roads, bridges, ditches, etc.)	►**<FINFRA>** 1	
Types of seedlings or seeds that may be planted	►**<FSEEDS>** 1	
Amount of wild game that could be trapped or killed in order to control degradation of the forest	►**<FWILDGAME>** 1	
When fires may be started	►**<FFIREWHEN>** 2	Informal consensus among community members when they and to burn the pure forest to improve grasslands for grazing
Where fires may be started	►**<FFIREWHERE>** 2	Same as described above
Methods of weeding in relationship to the product	►**<FWEEDING>** 1	
Other *(describe here)* <FRULEDESC>:	►**<FRULEOTH>**	

► This is a priority variable. Please make sure this question is answered.

E2. What types of penalties are imposed on users if they break a maintenance or monitoring rule related to this forest the first time? How about the second time? How about if they break a maintenance or monitoring rule many times?

For each column, check the relevant rows that apply. Observation is required on the part of the field team in regard to this question.

Multiple answers may be applicable. *Blank spaces will mean not applicable.*

Penalties	**First time** ►<FPENTYPE1_>	**Second time** ►<FPENTYPE2_>	**Many times** ►<FPENTYPEN_>
(1) Verbal chastisement	X	X	
(2) A cash fine less than the equivalent of one day's work			
(3) A cash fine equal to one day's work			
(4) A cash fine greater than one day's work but no more than one week's work			
(5) A cash fine greater than one week's work equal to penalty committed			
(6) Temporary restriction on harvesting rights from this forest			
(7) Required labor input			
(8) Public apologies			
(9) Permanent suspension of harvesting rights from this forest			
(10) Discretionary decision by local user group			
(11) Discretionary decision by a government office			
(12) Other *(describe here)*: <FTYPEOTH> See below			

Nature's Defenders (DN) makes a decision based on the information supplied by its resident extension agent. DN can then notify the authorities to apply the relevant law.

E3. Who decides what kind of penalty is appropriate when a maintenance or monitoring rule about this forest is observed to be broken the first time? How about the second time? How about when a maintenance or monitoring rule is observed to be broken many times?

Multiple answers may be applicable. *Blank spaces will mean not applicable.*

Who	**First time** ►<FPENWHO1_>	**Second time** ►<FPENWHO2_>	**Many times** ►<FPENWHON_>
(1) A guard patrolling for a local forest association			
(2) A guard patrolling for a government forestry department			
(3) A vote of members of a user group at a meeting			
(4) A vote of members of a user group and other authorized users of this forest at a meeting			
(5) An official of a user group			
(6) A government official in an administrative setting			
(7 A judge in a formal court setting			
(8) An official from another association	X	X	X
(9) Other *(describe here):* <FWHOOTH>			

► This is a priority variable. Please make sure this question is answered.

E4. Are harvesters of forest products from different user groups readily observed by each other while harvesting? <FOBSERVED>

Mark only one answer.

(1) ____ No

(2) X___ Yes

►E5. If a cash fine is imposed, who collects the fine? <FFINEIMP>

Mark only one answer. MIC

(1) _____ The guard who apprehends a rule breaker
(2) _____ An official of the user group
(3) _____ An official for the forest association
(4) _____ An official for a forestry department
(5) _____ A local government official
(6) _____ A national government official outside forestry department
(7) _____ An official from another association *(name the association)* <FOFFICIAL>:
_____
(8) _____ A fine is not imposed

►E6. How is this cash fine used? <FFINEUSED_>

Multiple answers may be applicable. MIC

(1) _____ A general source of revenue to local user group or association (Association)
(2) _____ A general source of revenue for local government
(3) _____ A general source of revenue for forestry department
(4) _____ A general source of revenue for national government (the fine is deposited in some form of a general fund and does not come back to the forestry department)
(5) _____ Other *(describe)* <FFINEOTH>: ____

►E7. If penalties are imposed, what is the level of compliance by the users? <FCOMPLY>

Mark only one answer. MIC

(1) _____ No one complies with the penalties imposed on them
(2) _____ Few users comply with the penalties imposed on them
(3) _____ About half the users comply with penalties imposed on them
(4) _____ Most users comply with penalties imposed on them
(5) _____ Almost all users fully comply with penalties imposed on them
(6) _____ No penalties are imposed

►E8. What types of records are kept concerning penalties imposed and compliance with them? <FRECORDS>

Mark only one answer. MIC

(1) _____ No records or only scanty records kept
(2) _____ Forest guards keep a notebook
(3) _____ User group keeps a notebook
(4) _____ Local forestry association keeps record books
(5) _____ Government officials keep record books
(6) _____ Other

► This is a priority variable. Please make sure this question is answered.

►E8a. If records are kept, are these records easily accessible to the general public? <FRECACCESS>

Mark only one answer.
(1) _____ No
(2) _____ Yes MIC

F. FORESTER'S APPRAISAL OF THE OVERALL CONDITION OF THE FOREST

This section should be completed by the person on the field team with professional training in forestry after all of the forest plot data has been compiled and substantial time has been spent in the forest.

In your best judgment, given the topography and ecological zone in which this forest is located, how would you judge the following attributes of this forest?

►F1. The density of vegetation in this forest is: <FVEGDENSE>

Mark only one answer.
(1) _____ Very sparse
(2) _____ Somewhat sparse
(3) X_____ About normal for this ecological zone
(4) _____ Somewhat abundant
(5) _____ Very abundant

►F2. The species diversity in this forest is: <FSPECIEDIV>

Mark only one answer.
(1) _____ Very sparse
(2) _____ Somewhat sparse
(3) X_____ About normal for this ecological zone
(4) _____ Somewhat abundant
(5) _____ Very abundant

►F3. The commercial value of the forest is: <FVALUECOM>

Mark only one answer.
(1) _____ Substantially above normal
(2) _____ Above normal
(3) X_____ Normal
(4) _____ Below normal
(5) _____ Substantially below normal

►F4. The subsistence value of the forest is: <FVALUESUB>

Mark only one answer.
(1) _____ Substantially above normal
(2) _____ Above normal
(3) X_____ Normal
(4) _____ Below normal
(5) _____ Substantially boelw normal

► This is a priority variable. Please make sure this question is answered.

►F5. The type of conversation measures adopted in relation to this forest are: <FConserve>

Mark only one answer.

(1) _____ Too restrictive, more could be harvested from the forest without endangering its sustainability over time

(2) _X_____ About the right level of conservation

(3) _____ Too lax, if harvesting continues at this rate, the sustainability of the forest is endangered.

(4) _____ Nonexistent

F6. Please comment on your estimate of the most serious problems the forest users and those responsible for this forest will face during the next five years. *(long text)* <FPROBLEMS>

F7. Please comment on your estimate of the greatest opportunities the forest users and those responsible for managing this forest will face during the next five years. *(long text)* <FOPPORTUN>

► This is a priority variable. Please make sure this question is answered.

GEN. GENERIC QUESTIONS FOR USE BY RESEARCHERS

Please write your question(s) and the answer(s) where indicated below. ***Enter the methodology and all questions together into the database under <FWKSPMEMO>.*** *Enter each answer into the database under the data name specified for each answer below. See Section II of the Field Manual for more detailed instructions.*

Please describe why you are asking the generic questions below and/or what methodology you used to collect the data provided below. *(long text)* <FWKSPMEMO>

Question 1 (answer requires a whole number):

Answer to question specified by researcher *(integer)* <FGENSNUM1>_____

Question 2 (answer requires a whole number):

Answer to question specified by researcher *(integer)* <FGENSNUM2>_____

Question 3 (answer requires a whole number):

Answer to question specified by researcher *(integer)* <FGENSNUM3>_____

Question 4 (answer requires a whole number):

Answer to question specified by researcher *(integer)* <FGENSNUM4>_____

Text question 1:

Answer to question specified by researcher *(text)* <FGENTEXT1>

Text question 2:

Answer to question specified by researcher *(text)* <FGENTEXT2>

▶ This is a priority variable. Please make sure this question is answered.

Text question 3:

Answer to question specified by researcher *(text)* <FGENTEXT3>

Question 1 (answer requires a decimal number):

Answer to question specified by researcher *(decimal)* <FGENLNUM1>_____

Question 2 (answer requires a decimal number):

Answer to question specified by researcher *(decimal)* <FGENLNUM2>_____

Question 3 (answer requires a decimal number):

Answer to question specified by researcher *(decimal)* <FGENLNUM3>_____

Question 4 (answer requires a decimal number):

Answer to question specified by researcher *(decimal)* <FGENLNUM4>_____

Answer(s) to question(s) specified by researcher that require(s) more than 250 characters *(long text)* <FGENMEMO>

III.A.3. FORM P—FOREST PLOT FORM: GUIDELINES

A. DEFINITION OF A FOREST PLOT

Plots are demarcated areas useful for studying the ecology of a forest. IFRI researchers use them to identify the trees, saplings, and herbaceous matter found in the forests they are examining. By carefully determining the number and distribution of plots, IFRI researchers can hypothesize how local populations use (or misuse) forest resources. Plots, in other words, are the key link between the social and institutional data collected on most forms and the biological data collected on the Plot form.

Plots can take the shape of circles or squares. IFRI researchers rely upon round plots. Some researchers using IFRI protocols draw square plots if forest density poses a problem for measurement. These guidelines explain the methods used to produce both and discuss different ways to sample the forest.

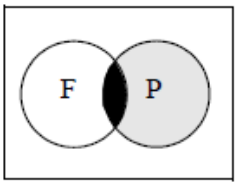
Forest plots should **not** be marked with an obvious tagging system that signals to users that something is different about the plot. In most instances, research conducted at the site in future years will involve new random samples. Teams using GIS or other means to record plot samples without obvious physical demarcation may be able to use permanent forest plots that are repeatedly sampled.

B. PURPOSE OF THE FOREST PLOT FORM

The purpose of the *Forest Plot Form* (Form P) is to record the names, extent of cover, and sizes of plant species within each forest. The information collected in each plot will be aggregated to describe the forest as a whole. Importance values of tree species based on density, frequency, and dominance, as well as diversity indices, may be readily calculated from these data. Biodiversity, size class structure, and abundance of plants ranked as priority species by local user groups may also be calculated. The data from Form P will also be analyzed with the data from Forms G and R (see III.A.7 and III.A.8) to assess social institutions, such as rules about entering the forest, harvesting, or tenure, and how the use of rules sustains or does not sustain the quality of the forest.

C. GUIDELINES FOR DATA COLLECTION

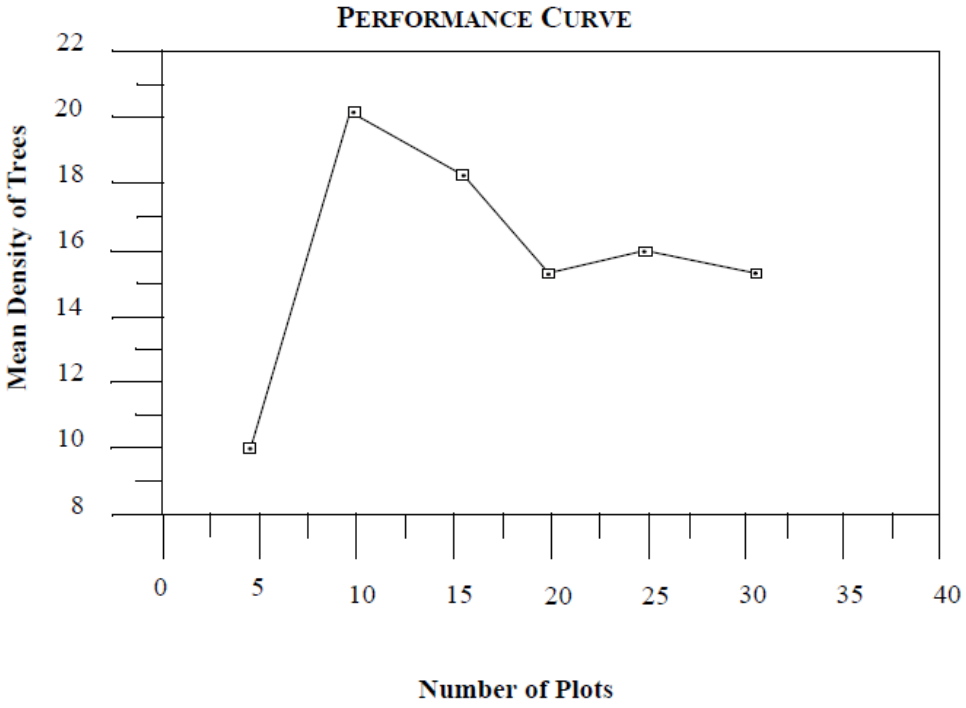
1. Determining Number of Forest Plots (sample size)



The number of plots that must be completed to obtain a representative sample will depend on variation in the forest, forests to which this forest will be compared, and how confident the researcher wants to be about his or her measurements.

As a rule of thumb, we recommend that **a minimum of 30 plots be completed** in all natural forests in the size range of 0.5 to 200 hectares. If the forest is homogeneous or very small (less than 20 hectares), as is the case for many plantations, agroforestry systems, and even some natural forests, fewer than 30 plots will be sufficient. If the forest being studied is highly variable due to differences in natural landscape such as altitudinal zonation or drainage patterns, or is extremely large in size (larger than 200 hectares), more plots will be required to describe the whole forest adequately. IFRI teams should use a **Performance Curve** or **Two-Step Sampling** to determine the statistically acceptable number of plots to complete in a forest.

A performance curve (see Figure 6) is a graphical plot of the average value of a given trait (e.g., the mean number of trees per plot, or mean DBH) as a function of the number of samples. By comparing the mean values for 10, 15, 20, 25, etc., plots, one may determine the optimal number of plots required to describe the forest. As more samples are taken, the true population mean is approached and the curve flattens. When the change in the mean becomes very small with the addition of another sample, we assume that our sample has nearly approached the true population mean.



A sample size of 20 is suggested by this curve because the variation around the mean becomes very small once 20 plots have been sampled.

A more statistically rigorous approach is two-step sampling. With this technique, an initial sample, using a small set of plots (e.g., 10) is taken. Based on how variable a trait is in this initial sample, one can calculate how many more plots will be needed
to achieve a certain level of statistical reliability. This approach is based on the concept of confidence intervals.

The general formula for a confidence interval is:

$$\bar{X} \pm t \cdot \frac{S}{\sqrt{N}}$$

Eq.1

where ("x-bar") is the sample mean, S is the sample standard deviation, N is the sample size, and t is the value obtained from the t-table for a certain number of degrees of freedom and a particular probability level. (For two-step sampling, we use an infinite number of degrees of freedom; the t value at the 0.05 probability level is 1.96.) Note that for a given standard deviation,
an increase in the sample size (N) will decrease the size of the confidence interval. We can use this relationship to determine the number of samples needed to achieve a given level of precision.

For example, suppose you have sampled ten, 10-meter radius plots from the forest and found an average of 15 trees per plot, with a standard deviation of 5.0. We want to be 95% certain that we are within ±2.0 of the true mean. Are ten plots enough to obtain a sample mean ±2.0 of the true mean (μ)? Given the variability in our 10 plots, how many more plots do we need? In other words, we want to solve the following confidence interval equation:

$$2.0 = 1.96 \cdot \left(\frac{5.0}{\sqrt{N}}\right)$$

Eq.2

In general terms, we write:

$$L = t \cdot \left(\frac{S}{\sqrt{N}}\right)$$

where L is one-half of the desired confidence interval, and t, S, N are defined as before. Solving for N, we get:

$$N = \left(\frac{(S)^2 \cdot (t)^2}{(L)^2} \right) \qquad \text{Eq. 3}$$

In our example:

$$N = \left(\frac{(5)^2 (1.96)^2}{(2)^2} \right) = 24.01$$

Thus, we will need to take 14 more plots (10 + 14 = 24) to achieve our desired level of precision. Note that if we had been satisfied with a lower level of precision, e.g., 95% sure of being ±3.0 of the population mean, then we would have needed to take only one more sample. The researcher can choose the level of precision to be achieved. The level chosen will typically depend on the problem, the variability of the population, and the cost of sampling. For trees per plot, we suggest ±1 or ±2 trees.

Determining Number of Plots for Planned Comparison

How many samples a researcher takes also depends upon the kinds of comparisons that he or she plans to make. Comparisons are usually of the following types:
1) comparing aspects of two different forests at the same time; or
2) comparing the same forest at different times.

The question typically asked is: How big a sample size is needed to show that a true difference $\alpha(D)$ exists, that it is significant at level α, with a probability of P? The answer lies in the coefficient of variation $(cv = s/\bar{x})$ and percentage differences between sites. The sample size required (n) is found by iteratively solving the following formula until a stable solution is obtained:

$$n \geq 2 \cdot \left(\frac{CV}{D} \right)^2 \cdot \{ t_{\alpha,v} + t_{2(1-P),v} \}^2$$

where

n = number of plots

s = standard deviation

$\bar{x}$ = sample mean

CV = coefficient of variation $(cv = s/\bar{x})$

D = the smallest % difference that it is desired to detect

v = degrees of freedom of the sample standard deviation $(\sqrt{MS_{within}})$ with α groups and n replications per group (calculated by $2(n-1)$)

α = significance level (such as 0.05)

P = probability of rejecting the null hypothesis when it is in fact false. This is the intended power of the test.

$t_{\alpha,v}$ and $t_{2(1-P),v}$ = values from a two-tailed t-table with v degrees of freedom and corresponding to probabilities of α and $2(1-P)$, respectively. *Note:* if $P = \frac{1}{2}$ then $t_1 = 0$.

Let's say, for example, that the researcher knows the rules for harvesting differ in two forests. The researcher suspects that tree density differs as a result and thinks that a 20% difference has biological significance. In this case, the researcher must be sure that he or she has collected enough plot data to be able to reject a null hypothesis of equality 80% of the time on the

basis of a 20% difference in density between the two populations sampled:

Forest	Density Trees/Plot	Standard Deviation	CV	Mean CV
1	12.5	3.7	29.6%	29.15%
2	10.8	3.1	28.7%	

Using the formula:

Is $n \geq 2 \cdot \left(\frac{CV}{D}\right)^2 \cdot \{t_{\alpha,v} + t_{2(1-P),v}\}^2$

First, try these numbers:

$n = 30, v = 58, \alpha = 0.05, \ 1-P = 0.20, D = 20\%, CV = 29.15\%$

Look up t values in a two-tailed t table or use a statistical calculator or a spreadsheet.

- note we used the average of the two CV values (To be more conservative, use the largest CV as the estimator.)
- note we need to calculate t values for $v = 2(n-1)$ in this case

$$v = 2(30-1)$$
$$= 58$$

- $t_{2(1-0.80),58} = t_{0.4,\,58}$ These values may be obtained from any standard statistical table for t distributions.

$$30 \geq 2 \cdot \left(\frac{29.15}{20}\right)^2 \cdot \{2.001716 + 0.847863\}^2$$

$$30 \geq 4.2486125\{2.001716 + 0.847863\}^2$$

$30 \geq 34.49915$ NO, $N = 30$ isn't enough

These calculations indicate that we need to examine more than 30 plots to conclude that a 20% difference in tree density reflects underlying differences between these two forests. To be more precise, we need 34 plots to be able to reject a null hypothesis of equality 80% of the time.

Second, try these numbers:

$n = 35, v = 68, \alpha = 0.05, \ 1-P = 0.20, D = 20\%, CV = 29.15\%$

$$35 \geq 2 \cdot \left(\frac{29.15}{20}\right)^2 \cdot \{1.995468 + 0.846939\}^2$$

$$35 \geq 4.2486125\{1.995468 + 0.846939\}^2$$

$$35 \geq 4.2486125\{8.079277\}$$

$35 \geq 34.32572$ YES!

When a forest is clearly divided into ecological zones or into botanically different management units, the size and proportion of each unit should be noted on Form F. Random sampling should result in plots being distributed in proportion to the zones. Performance curves may be required for each zone.

When the forest studied becomes too large—in excess of 200 hectares—it is possible that the rules and users will differ so much between its zones that each of them may be properly considered an IFRI forest. This is a decision that an IFRI team should make carefully. It should be made after spending several days talking with locals, reviewing the Field Manual and having a discussion identifying strengths and weaknesses of dividing a large forest into zones or simply considering it to consist of adjacent forests.

Because of the potential variability inherent in forests, each IFRI team should write down its sampling design and logic in question B1b in Form F(<FSAMPLE>). This is for the researchers' records, and for others who will use the data and who must
understand the strengths and limits of the sample. For example, in Namungo's Forest in Uganda, the researchers knew that about 15% of the 40-hectare forest had been cleared for a plantation. Four of the 30 randomly selected plots (13%) fell in the cleared zone, showing that random design was in proportion to the management units in the forest. Performance curves on mean DBH and mean number of trees per plot suggested that 20 to 25 plots would have been sufficient. Thus, the research team felt confident that 30 plots was representative and adequate for statistical comparisons.

Key Questions for the Research Team When Designing a Forest Sampling Plan
1. What are the general characteristics of this forest? (see *Appendix 1–Form F*)
2. What are the ecological zones in the forest?
3. Do sections of the forest have distinctly different rules for harvesting and/or are they managed differently?
4. What are distinct landmarks around/in the forest?
5. Are there agricultural plots in the forest?
6. How steep is the terrain in the forest?
7. How large is the forest?
8. What are the boundaries of the forest?

2. Data Collection: Selecting and Finding Forest Plots

There are multiple ways to sample the forest. The following techniques are recommended for use with IFRI protocols.

A. The Grid Method

This method requires placing a grid over a map of the forest and, using a random number table (see *Appendix 1–Form P*), selecting coordinates of a "random point" in the forest. For large maps, one will need to draw a grid on a large sheet of tracing paper or plastic. Grid cells will need to be scaled to the forest. Determine the real scale of your grid and include it on the Forest Plots Map (Form F, B1a).

Using the table of random numbers, list the numbers encountered that are within the values on the grid. For example, if the grid is 30 by 30 units, the researcher will list numbers from 1 to 30 that are encountered. For example, a set found by reading the first two numbers of the sets provided in a random number table include:

04 12 29 02 21 05 26 11 20 10

These should be arranged to determine whether the points are in the forest or not, as follows:

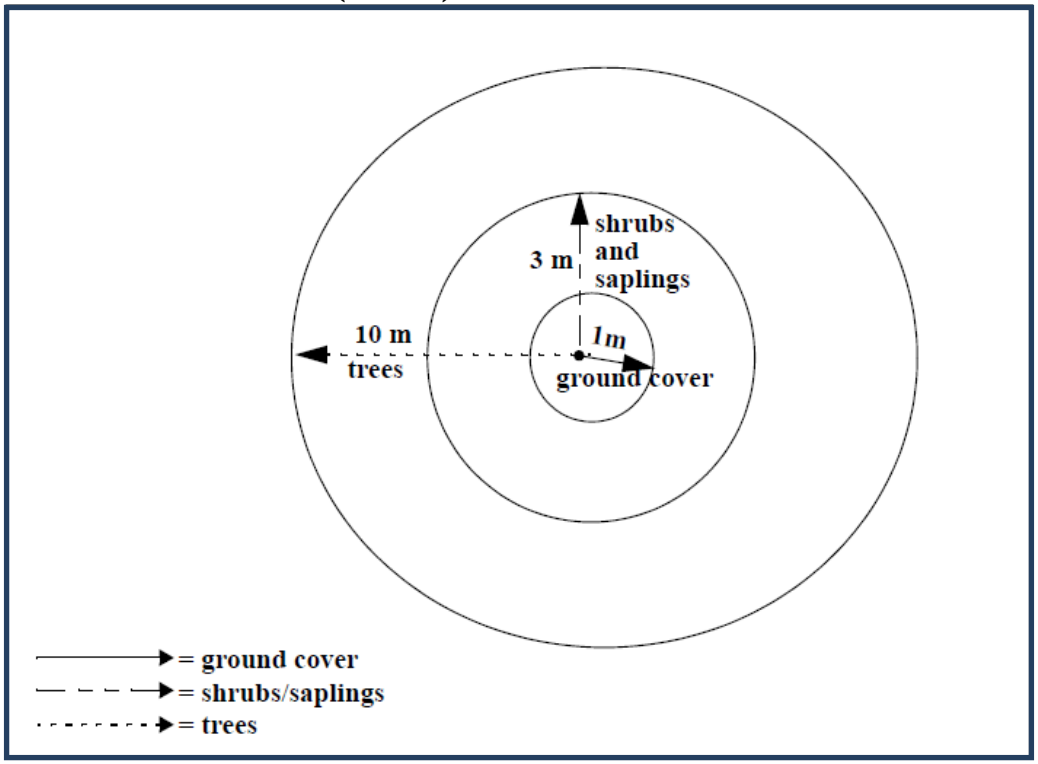
Order Drawn	Row	Column	In Forest	Number of Valid Points
1	04	12	yes	1
2	29	02	yes	2
3	21	05	no	
4	26	11	yes	3
5	20	10	yes	4

Continue to draw numbers until you have 5 to 10 more points than needed. All worksheets should be kept in case the researcher needs to draw even more plots once the variables have been measured on the Forest Plot Forms, and if the researcher discovers far more diversity than initially expected.

Once the plot coordinates are selected, the challenge is to find them in the forest. The team will locate the random points in the forest by using established landmarks such as streams, trails, or large trees that have been marked on the map. If the forest is small, it may be possible to pace off and mark two reference lines crossing the forest perpendicular to each other. Once one plot is found, teams can use compass bearings and paces to reach the other plots.

Once the researcher reaches the randomly selected point, mark the center with a stick or surveying flag, and mark the boundary of the 1-meter radius circle. The other two circles can be easily marked off by walking around the center stake at radial distances of 3 m and 10 m. When walking the boundary of each circle, the perimeter can be marked with sticks, cloth strips, flags, plastic, or other materials. Once the plot is demarcated, proceed with measuring and counting plants starting in the small circle and working outward. Avoid trampling seedlings and wildflowers in the center circle. Record the data on the appropriate sheet provided for each circle (B1, C1, and D1). See Figure 7 for a depiction of round forest plots.

FIGURE 7
DIAGRAM OF RADIAL DIMENSIONS (METERS) FOR CONCENTRIC CIRCLES OF A FOREST PLOT



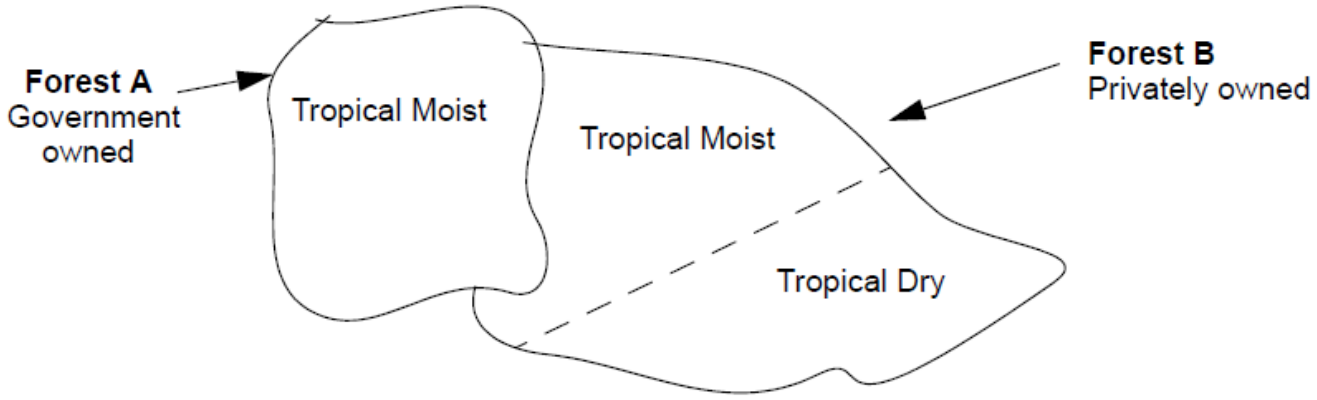
B. The Transect Method

CIPEC stratifies samples along two dimensions: forest type and institutional regime. By forest type, CIPEC refers to the broad ecological conditions that characterize a forest. CIPEC concentrates on three broad forest types: tropical moist, tropical dry, and temperate deciduous. By institutional regime, it refers to the property rights governing a forest. It distinguishes among three types of ownership regimes: private, communal, and public (government-owned).

If researchers want to know whether property rights affect forest conditions, they must measure plots in each of the forest ownership regimes in a site, for example, private and government-owned. If the government and private forests present differences in biological and physical dimensions, researchers must also stratify along these differences. Otherwise differences will be difficult to attribute to property rights. Researchers must walk through the forests of interest to determine the range of variation that exists. Remotely sensed images can also help to identify similarities and differences between forests.

The example in Figure 8 serves as an illustration. Suppose Forest A is a government-owned forest and that Forest B is a privately owned forest. Forest A is a tropical moist forest. Forest B contains both tropical moist and tropical dry sections.

FIGURE 8
THE TRANSECT METHOD



If researchers want to know the overall condition of forest types in the site, regardless of the type of property rights, then samples should be taken from both moist and dry forests. In such a design, plots from the moist forests in A and B are aggregated. If researchers want to understand how property rights affect these forests, their sample needs to contain plots in Forest A and the tropical moist section of Forest B. By holding forest types constant, the researcher can investigate the consequences of property rights on forest conditions.

Variations in forest types also need to be part of the sample stratification. CIPEC researchers are also asked to pay close attention to a forest's different stages of succession. Other factors that might affect a sampling strategy include elevation, slope, aspect (orientation), and soil variations. Researchers must carefully observe and judge forest conditions to ensure that all plots are representative of the part of the forest being sampled.

Researchers can use different methods to travel to the plots they have selected randomly. If topography and undergrowth make an area difficult to traverse, it may make sense to draw a transect. Distances from the plot to the transect can be calculated from the IFRI grid map method used to select plots. The transect can then be established on the ground and used to travel to each plot. If the site permits easy movement, teams can move from one plot to another by taking compass bearings and walking directly to the next plot. Another method is to travel to plots from a landmark.

After researchers determine the location of a plot, they create nested plots of 1-, 5-, and 18-meter squares which share a common point. This is displayed in Figure 9. Researchers should begin by marking the plot's first point with a chaining pin. From this pin, they take the slope aspect. The first 18-meter boundary line should follow this aspect downslope by using a

compass to mark the direction. The next step requires placing a second chaining pin at the end of this first line. Researchers should then draw the next line perpendicular to the right of the first line. Researchers should use a compass to establish the 90 degree angle. The third line is also perpendicular and to the right. The last line should complete the square and bring the team back to the original plot point. The result should be a plot consisting of 18-meter sides with two sides perpendicular and two sides parallel to the slope aspect.

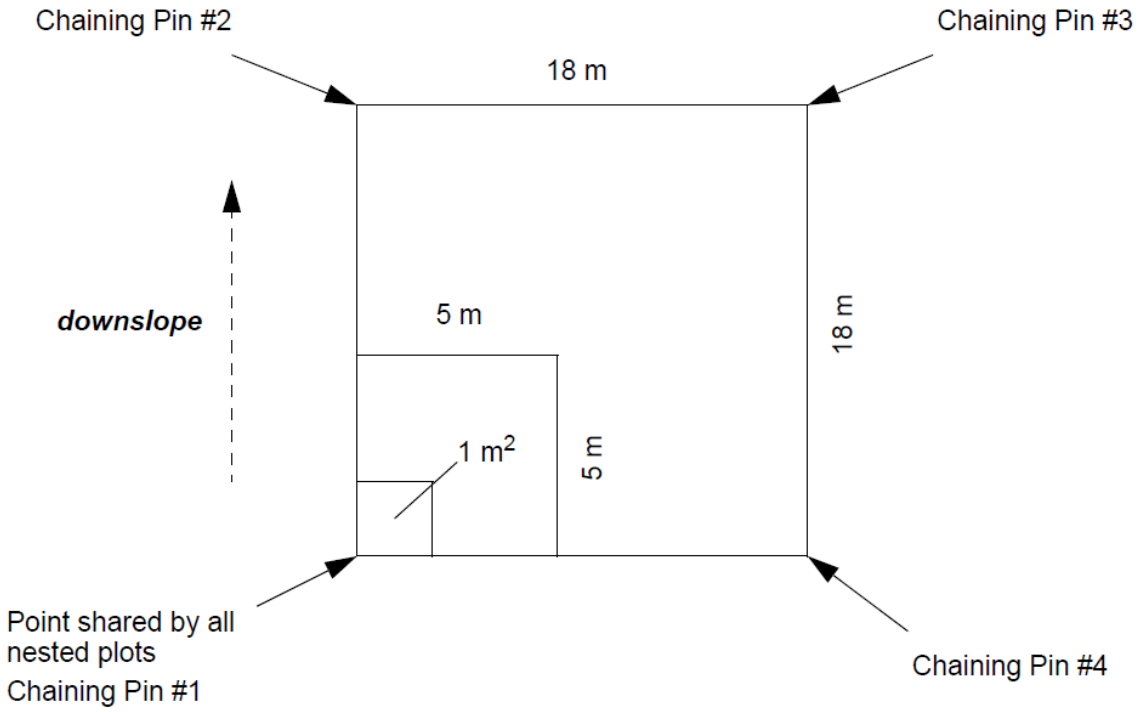
Errors in determining 90-degree angles tend to be additive and common. Use of this method may lead researchers to draw a fourth line at some distance from the initial chaining pin. If this becomes a problem, researchers may find it easier to lay an accurate square by returning to the initial point after establishing the first two sides of the square plots. They can do this by laying out the next line from the first chaining pin, walking perpendicular to the slope and parallel to the second line by using the same compass direction used to lay the second line. They then place a chaining pin in the ground and turn 90 degrees to the left to mark the fourth line to connect the third and second lines. If there is no apparent slope, draw the first line due north.

From the original plot point, researchers then construct two additional nested squares of 5- and 1-meter sides. As Figure 9 indicates, all should share the corner marked by the first chaining pin. Researchers should be careful in all phases of the plot's boundary construction not to step in the 1-meter square because this is the plot in which they measure groundcover.

If a plot that is randomly chosen falls in an inaccessible area, another randomly generated plot should be chosen to complete the sample. If a plot falls onto an area without the kind of forest vegetation important to the research team, they should note what is located in the plot, and choose another random plot for forest mensuration.

In dense forests, tying a colorful ribbon to branches above the chaining pins will help researchers see the plot corners and identify trees that fall inside or outside of the plot. If they are using the transect method, researchers should always mark the point on the transect from which they depart to find a plot. This ensures that they can return to the same point to locate the next point along the baseline from which to find another plot.

FIGURE 9
DIAGRAM OF CHAINING PINS



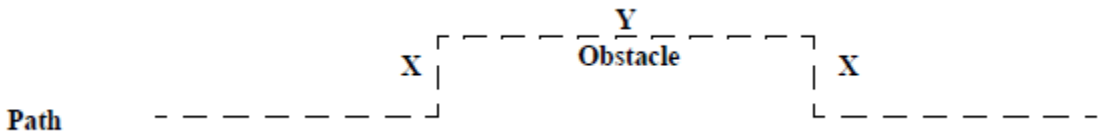
Sampling Forest Plots in Very Steep Terrain: In very steep environments, researchers may use an alternative method for randomly sampling the forest. It ensures that all elevations are weighted equally in those forests where changes in elevation are important for determining species diversity and density of trees. In this method, one must first use an altimeter to determine the range in elevation. Equal distances of elevation are used to create horizontal grid lines through the forest in one direction and a compass is used to determine a central line through the forest in a perpendicular fashion.

For example, if the forest varies by 300 m from the lowest to the highest elevation, the team leader could use a distance of 20 m (or, in other words, 15 elevations spread evenly across the slope). Starting at the approximate center of the lower boundary of the forest, the research team will determine a transect that splits the forest into approximately two equal parts. A compass will be used to help the team keep to a central transect as they move from lower elevations to higher elevations.

Prior to locating the first plot, the team will select a random number from a random number table, such as the one located in *Appendix 1–Form P*, and identify a series of three-digit numbers. If the first digit is even, they will go to the right; if it is odd, they will go to the left. The distance to be traversed to the right or the left will be located in the second and third digits. If the forest is large enough, the research team will use the same logic with a four-digit number.

Problems on the Way to Plots

If you are pacing toward your plot and your pathway is blocked, simply avoid the problem by going around it in a measurable fashion.



Keep track of the number of paces taken along the alternate path (Y). If you take X number of paces away, you should take X number back to the original path.

In some cases, it will be impossible or inappropriate to make measurements at the location that has been identified as a "valid point" on the map. For example, it may be that this point is in the middle of a pond, or that it is on a nearly vertical cliff. Record the reason for skipping a point, and proceed on to the next point identified. Do not skip a point because of forest traits such as thin trees, bush-covered areas, or cut-over patches. If a point cannot be sampled because of a geographical feature (lake, pond, cliffs, etc.), **be sure to estimate the area and location of such landscape features on the forest map.**

If it is impossible to reach a plot, make a note that another plot was selected due to inaccessibility. This problem should be noted on the *Forest Form* at B1b. Explain what land formation or problem prevented sampling at the randomly selected plot location. Steep cliffs, killer bees, waterfalls, volcanoes, etc. are all valid reasons for selecting another random plot location. It will be important to know how often plots were changed due to inaccessibility (i.e., 5% or 40% inaccessible plots), so please keep field notes and describe in B1b.

3. Highlights about Questions on the Forest Plot Form

The soil sample in A1 should be collected in the center of the plot, or where it is physically possible to obtain a good A and B horizon sample. Additional tests of pH levels and other chemical analyses can be conducted on soil in each plot depending on available equipment. Saving a soil sample with the A horizon in one bag, and B horizon in another for future analysis (when financially feasible) is also a possibility. Table 7 offers a helpful guide to completing soil questions in the field. Having this table available during plot sampling could save time for non-soil scientists.

Careful attention initially to how the forest is managed (A5 and A5a) will save time during plot sampling later. The instructions for sampling ground cover, woody stems, and tree information must be carefully considered by each research team member. If researchers are in a hurry to finish forest mensuration and do a sloppy job of identifying and counting species, the data is greatly compromised. The team leader must monitor forest mensuration, because the incentive to skip over attention to detail is immense. Coding all data directly on the data sheets at the time of mensuration is essential.

When the scientific names of plant species are known, both the genus and species names should be written on all *Forest Plot Form*s and on C2 in Form F. For example, *Blighia unijugata* is the scientific name of a tree found in Uganda. *Blighia* is the genus and *unijugata* is the species. Note that scientific names are typically underlined or italicized in publications, and that species names are NOT capitalized (a well-established tradition since the 18th century). When the species of a plant cannot be determined, it is customary to record the genus followed by "sp."; for example, *Blighia* sp. The sp. means the plant is a member of the *Blighia* genus, but that its species could not be determined. When writing about several species of a given genus, the genus name may be followed by spp., the customary abbreviation for species in the plural. Local names of each species should also be written, if known. Local names should be written in lowercase letters.

After all forest plots are completed, the research team must carefully follow the instructions for coding unknown species on pages III.A.3-16 and -17. This will save time in the data entry process.

The formulation of the master species list in C2 of the Form F must be completed, along with the process of trying to identify unknowns, before leaving the field.

4. Team Leader Responsibilities Before Leaving the Site
The team leader plays a critical role in monitoring the collection of forest plot data and making sure that data are clearly printed on Form Ps, unknowns are sorted and discussed, and the master species list is completed in C2 on Form F.

C2 will be complete only after forest plots are finished and questions on the *Forest-User Group Relationship Form* (Form G) and the *Forest Product Form* (Form R) are answered. Forest users may mention a species name in Form G that is not noted in forest plots. The plant may be a rare species, and therefore not found in the plots. On the other hand, if the plant is relatively common, this could be a key indicator to a team leader that plots were hurriedly completed or insufficient in number.

Spellings on the master species list (C2, Form F) and in B1, C1, and D1 in Form P must match.

D. SPECIFIC GUIDELINES BY SECTION AND QUESTION

Top of First Page

The *Plot Identification Number* is simply the number that identifies the randomly selected plot. Teams should know ahead of time which plots they are visiting.

A. Conditions of the Plot

A1. A soil description will be completed for each plot. Check with district offices for soil descriptions that may have been completed previously in the forest of interest. A professional soil analysis is quite time consuming and requires laboratory services. For this reason, a complete soil analysis for the IFRI Research Program is optional. (If students or researchers trained in soil science are available at the CRC, a high quality assessment of the soil and field chemical analysis could be conducted in representative locations in the forest.)

Preparation of the soil sample hole: Use a soil corer to extract a sample of 30-40 cm. Describe this process: Was the soil easy or difficult to dig and why? Be consistent in describing the soil in the O, A, and B horizons, as defined in Table 5.

TABLE 5: DESCRIPTION OF SOIL IN O, A, AND B HORIZONS

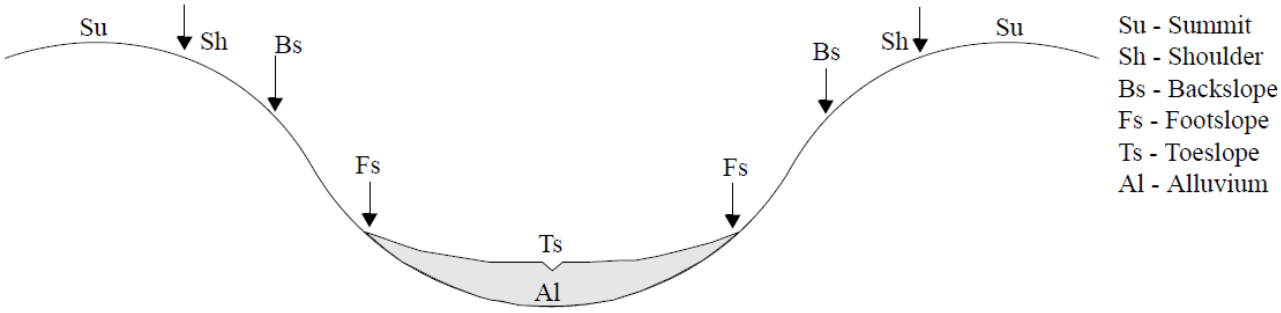
Description of Soil	Horizon
1) Depth of the humus layer or ground litter	O Horizon (surface)
2) Darker mineral layer at the top of the soil	A Horizon (approximately 10 cm below the surface)
3) Subsoil	B Horizon (40-55 cm below surface)

For each soil sample, researchers should note the depths of the humus layer and the A and B horizons, soil color/drainage, texture, and hardness.

Researchers should also recognize that the depths of these horizons can vary substantially and depend upon slope position, nature of the forest and the like. What is important is that they describe soils in each horizon according to the characteristics of the site in a consistent and clear manner.

Location of plot topographically: Record the topographic location of the plot. This involves describing the plot location (i.e., on a ridge, in a valley, or in a floodplain) and a more systematic description of the segment of hillslope on which the plot is located (see Figure 10). Any other site data such as types of rock outcrops, proximity to sheer cliffs or stream channels, and whether the plot is on a step in a stepped landscape will be very useful. As in Figure 10, the researcher can record whether the plot is on a summit, shoulder, backslope, footslope, toeslope, or alluvium.

FIGURE 10
HILLSLOPE PROFILE



Source: Ruhe and Walker, 1968

Surface description and depth: Describe the humus layer (or leaf litter) and give an estimate of the depth and type of the organic material decomposing on the upper surface of the soil (just a few leaves, extremely decayed, etc.).

Depth of A and B horizons: Note that O and A horizons may not be present due to erosion or agricultural production.

Color/Soil drainage: The soil color can give valuable information about the geologic material in which the soil formed, the stability of the local landscape, and the drainage of the soil. Soil color should be described in both the A horizon and the B horizon by matching a moist sample that has been lightly crushed with standard soil color charts (e.g., Munsell Color Chart). If researchers use a color chart, they should record hue, value, and chroma of the chip on the color chart that most closely approximates the moist soil sample (these terms will appear with the color chip). In the **absence of a color chart**, describe general color of the soil in the A horizon and B horizon.

Texture: The soil texture is defined by the percentage of weight of sand, silt, and clay. Skeletal support and permeability are provided by the largest particles (sand); clay provides water and nutrient storage; and silt aids in water storage and weathers to produce additional nutrients and clay. There are four common terms applied to soil texture: clay, silt, sand, and loam. Loam is considered to be a mix made of equal parts of clay, silt, and sand. Texture classes used by the United States Department of Agriculture (USDA) to describe soil are outlined with corresponding general classes in Table 6.

TABLE 6
GENERAL TERMS TO DESCRIBE SOIL TEXTURE

Coarse sandy soils	• Sand • Loamy sand
Moderately coarse loamy soils:	• Sandy loam
Medium loamy soils:	• Loam • Silt loam • Silt
Moderately fine loamy soils:	• Clay loam • Sandy clay loam • Silty clay loam
Clayey soils:	• Sandy clay • Silty clay • Clay

Source: adapted from Barbour, Burk, and Pitts, 1987

In the field, a good estimate of texture can be made by wetting a small amount of soil in the palm of one's hand. The particles that feel grainy and gritty are sand; those that feel silky are silt. If the sample is sticky and can be rolled into a "snake" or flattened between the thumb and forefinger into a flexible ribbon, then there is a high percentage of clay. If the sample is not sticky or is only slightly sticky and no ribbon can be made, there is a low percentage of clay. Use the field test outlined in Figure 11 to estimate the textural class of the soil. Water will be needed to do the test and clean up afterwards.

Hardness of soil: Describe the general consistency of the soil in the A and B horizons. Is the soil moist, dry, hard, firm, easily crumbled (friable), or loose?

In summary, the researcher should answer the questions in Table 7 in order to complete A1 in Form P, and D1 in the *Settlement Form* (Form S):

TABLE 7
QUESTIONS AND EXAMPLES FOR QUESTIONS A1 (FORM P) AND D1 (FORM S)

Question	Example
1. Describe preparation of the soil sample hole. Was it easy to dig down 40 cm?	Soil was easy to dig, except for some large tree roots.
2. Describe location of plot topographically (see Figure 10).	toeslope
3. Describe humus layer. What is on the soil surface? How thick is the litter layer?	2 to 3 cm of decaying leaves; many ants noted.
4. Describe depth of A and B horizons. Are there two distinct horizons?	A horizon = 2 cm B horizon = 3 cm
5. Describe dominant soil color/soil drainage for A and B horizons. Include Munsell Color Chart hue, value, and chroma, if chart is available.	A horizon = 10 yr. 6,4 well-drained B horizon = 10 yr. 5,5 well-drained
6. Describe soil texture for A and B horizons. Use the "in the hand" field method (see Figure 11).	A horizon = sandy loam B horizon = silt loam
7. Describe the hardness of the soil for A and B horizons.	A horizon = moist, loose B horizon = moist, loose

A2. Actively occurring soil erosion should be checked as **minor** when surface vegetation and humus layer is absent and the top soil is noticeably loose as a layer. Erosion should be considered **major** if large gullies are present in barren soil.

A3. The presence of livestock use may be noted by seeing livestock, feces of livestock, signs of grazing on vegetation, and/or presence of tracks. If you answer "Yes" for this question, please make a note beside the answer about the type of evidence you have observed.

A4. Some insect damage on leaves and stems of plants is a normal part of forest ecology. Check "Yes" for this question only when extreme or unusual damage is noted (i.e., trees are covered with termite trails and appear dead, all the leaves of a plant are being consumed by an infestation of insects). Make notes on what you see if you suspect it is abnormal.

A5 and A5a. If this forest is divided into separate sections for management purposes, this should be recorded in Form F and on the map as well as on each of the Form Ps that relate to plots within such sections. Ascertain for each of the sections when the section was last subject to a major harvest and record that information in question A5a. If, for example, a Forest User Group has divided a forest into five units and rotates harvesting of fast-growing species every five years through these sections, this information can be used to interpret why one-fifth of the sample has so few fast-growing species located in it. If the section was last subject to a major harvest 1.5 years ago, please round up to 2. Write the year of planting and species planted on all plantations that are shown on Form F maps (questions B1 and B1a).

A6, A7, A8. This information is required for each plot so that eventually it may be recorded on a GIS map of the forest. Information about the species and sizes of trees may be related to the elevation of the plot, the direction toward which the plot faces (e.g., primarily south facing and northwest facing), and the slope of the plot (normally measured in terms of the number of meters of rise over a 10-meter distance, expressed as a percentage or in degrees). A *clinometer* is typically used for measuring slope (steepness). Please record the slope in degrees.

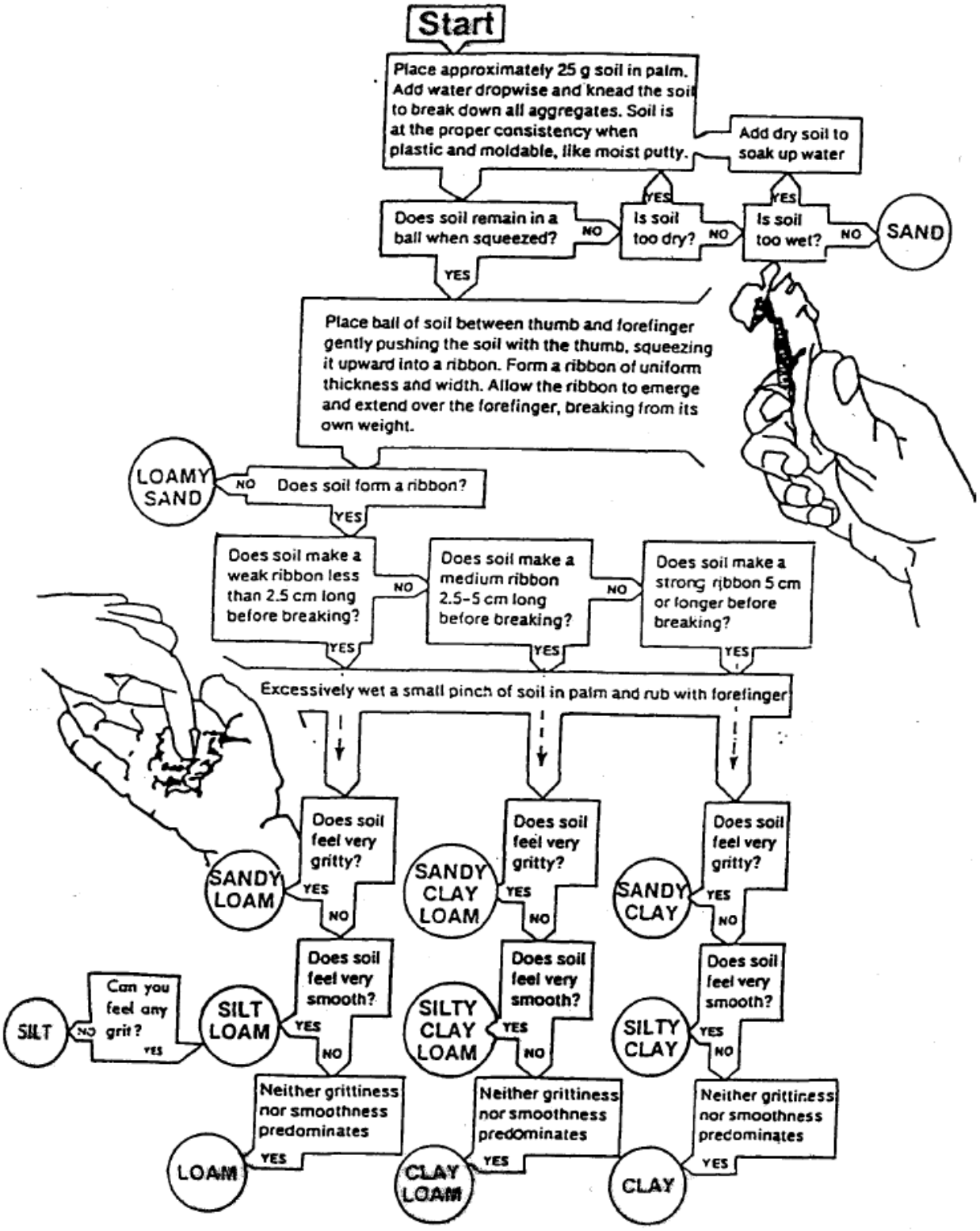
A9. Record observations about plot conditions in this space. This is a good place to record specific conditions of interest to the research team that are not captured by other questions. Relevant information includes the presence of garbage, evidence of harvesting activities (e.g., number of cut stems and whether they are freshly cut), evidence of natural disturbances, proximity to clearings or developments (e.g., a road or house). Take note of any observed species of interest in or around the plot and be specific about its relative abundance, location, and apparent condition

A10. Percentage crown cover is an estimate of the percentage of sky blocked by the leaves of trees and tall shrubs when looking straight up. Stand at the center of the plot, look straight up, and estimate the percentage crown cover. Use Figure 12 to help make your estimate. If it is dry season and many leaves are gone, please make a note in the space provided in A10 (conditions and quality of estimate). For example, the researcher might look up and give an estimate of 65% crown cover, but since it is dry season and some trees have no leaves, one should make a note about the estimate such as: "Estimate made during dry season when about 20% of trees are leafless" or "This is an underestimate because many trees are just beginning to grow their leaves." If you are confident that your estimate has been made when all the trees are fully leaved, then indicate this by writing: "This is a good estimate because trees are fully leaved with mature leaves."

A11. Determine the abundance of epiphytes by looking up and examining the branches of the trees and shrubs in the plot. Epiphytes include bromeliads, ferns, orchids, and other noticeable plants growing *on* the branches. Check the appropriate abundance category as follows:

1. Absent = no epiphytes seen on any of the trees or shrubs in the plot
2. Few = two to five epiphytes noted in the whole plot
3. Abundant = majority of the trees and shrubs have branches heavily covered by epiphytes

Figure 11
INSTRUCTIONAL DIAGRAM FOR DETERMINING SOIL TEXTURE BY FEEL



B. Ground Cover/Seedling Information

B1. Because a different set of plots will usually be sampled during the next field visit, there is no history section. Percentage of ground cover is defined as the percentage of the 1-meter radius circle under the shade or canopy of seedlings and herbaceous plants. For the ground cover measurements, examine the herbaceous plants and woody seedlings in the small circle. Record the scientific and common names for the woody seedlings and the number of stems for each species. IFRI does not require you to identify each herbaceous plant species, and it is sufficient to record the percentages of ground cover for all herbaceous plants (abbreviated as "herbs"), all grasses, and bamboo, but not woody seedlings. Of course, the researcher is encouraged to record the names of as many individual species as funds and time allow. The agreed-upon identification categories are "**Grasses**," "**Herbs**," "**Total Grasses and Herbs**," and "**Bamboo**." When completing the Master Species List (MSL) in the *Forest Form* (Form F), use any of these categories as needed if ground cover species are not recorded individually.

Variation between the estimates of cover made by different team members may be reduced by using a cover estimation guide (see Figure 12). This guide may be laminated and used in the forest while collecting data. Be sure to indicate whether the plant is a tree or shrub seedling (has a woody stem) or is a herbaceous plant (e.g., grass or forb with a non-woody stem) by recording "S" for seedlings and "H" for herbs. If samples can be obtained of each species (preferably flowers, leaves, and berries), carefully identified, and placed in a plant press, this will be very important to describe species discovered in fieldwork and to verify IFRI plot data in over-time studies. The pressed species can be placed between two sheets of contact paper or clear plastic sheets, and saved at the CRC. Arrangements could also be made to create a herbarium at the CRC or share storage space in an established herbarium close to the CRC.

If samples of all identified species can be carefully identified and placed in a plant press (see instructions for B1), this will be very important to the verification of IFRI plot data in over-time studies.

C. Woody Stems, Saplings, and Climber Information

C1. Identify all of the shrubs, saplings, and woody and herbaceous climbers (vines, liana) in the 3-meter radius circle (IFRI Grid Method) or 5-meter square (CIPEC Transect Method). (This includes the ground cover circle.) Record the common and scientific names of the species, whether it is a shrub or a tree sapling, or a woody or herbaceous climber (herbaceous climbers have green stems). If the plant is a tree sapling, measure stem diameter at breast height (DBH) with calipers and estimate the height. (Remember, a sapling has a DBH of 2.5-9.9 cm.) If the plant is a shrub, measure the maximum stem diameter and estimate the height. Stem diameter is used to calculate basal area (BA), which is required for comparing dominance of species in different forests and for estimating biomass. Record stem diameter to the tenth (e.g., 4.6 cm). The database application will permit entry of whole and decimal numbers for the estimated height of the shrub or sapling. This feature is enabled so the researcher can record exact measurements when shrubs and saplings can be precisely measured. This differs from recording the heights of trees and climbers, because the methods of measurement for trees and climbers are not typically accurate enough to record tenths of a meter.

D. Tree Information

D1. Data about trees and woody and herbaceous climbers are to be collected in the largest circle, with a radius of 10 m. (This area of approximately 300 m2 includes the two smaller circles.) For each tree, record its species (common name and scientific name), its DBH, and height estimate. The way one measures DBH depends on the shape of the tree and the slope of the ground. See Figure 13 for an illustration of ways to measure DBH. If calipers and a DBH tape are unavailable, just measure the circumference at breast height and divide by *pi* (3.14) to determine DBH. Record DBH to the tenths place (e.g., 26.3 cm). Record height to the nearest estimated meter.

If a sample of all species documented in D1 could be collected, carefully identified, and pressed (leaves, berries, and flowers), this would be very important to the verification of IFRI plot data in over-time studies.

Identifying Unknown Botanical and Local Names of Plant Species in Forest Plots. We would like to reduce the number of unknown plants (particularly the botanical names) in the IFRI database. To do this, good records and specimens must be kept while conducting the forest plot sampling, with the hope that a botanist, a local person, or others will know the botanical, if not the local, names of unknown plants.

Always collect and press a good specimen of an unknown plant. A simple plant press can be made from layers of cardboard and newspaper strapped together by string or straps. Good specimens consist of:

- Ground cover species—the entire plant including roots and flowers (if available)
- Trees and shrubs—twig with several leaves plus flowers or fruits (if available)

Collect flowers, fruits, or seeds to further aid the botanist in determining the true identification of the unknown species. A good collection of field guides and botanical keys should be part of the field equipment for the plot teams as well.

During the Collection of Forest Plot Data. An identification label should be placed in the plant press with any unknown plant specimen. The identification numbers should be written on the page of newspaper or plant press paper where the specimen is located.
Information on the label should include:

Team Number:	This is the number the research team is assigned prior to conducting research on forest plots. If the research team is team one, then the team will write the number "1" as the first number of the identification.
Plot Number:	This is the number of the plot the research team is sampling. If the research team is working on plot number 4, then the team will write "4" as the second number of the identification code.
Unknown Number:	This is the number of the unknown species. If this is the first unknown species, the researcher will write "1."
Example Code:	The identification code should be written as follows: 1.4.1

At the end of the day the teams should meet and compare their unknown plants. Building in time to do this each day will be very important to the process of accurately completing the Form P and Form F (C2) data sheets. The teams should lay out their specimens and look over the unknowns that each team has gathered. The researchers will write the team number, plot number, unknown number, and whether the species is a seedling, herb, shrub, sapling, or tree on an identification label (a small piece of paper or sticky note), and place it next to the unknown species.

The plants will be laid out in an area where villagers will be able to see them. Members from the other team or villagers may be able to identify some of the species. If they can be identified, the species name should be accurately spelled on Form P and on the master species list in C2 of Form F. Uses of the species should be discussed at this time as well. If the unknown species cannot be identified at this stage, **coding the unknowns for the master species list will not be done until all of the plots are sampled.** Specimens should be placed back in their plant presses with identification labels attached, and reserved for the final coding after all plots are sampled.

After All Forest Plots are Sampled. After all plots are sampled, each team should lay out the entire set of unknown species. The researchers should write the team number, plot number, unknown number, and whether the species is a seedling, herb, shrub, sapling, or tree on an identification label (a small piece of paper or sticky note) for new unknowns. The team leader should then look at all of the species, place all matching species together, and assign a letter to each unknown. For example, a group of matching unknowns could be assigned the code Unknown A; the next unknown will then be assigned the code, Unknown B; the next will be Unknown C, etc. All coded unknowns should be written on Form P and the master species list on Form F as Unknown A, Unknown B, Unknown C, etc.

If the botanical name of a plant is **known**, but the local name is unknown, the local plant species should be given an unknown code in sequence with the other unknowns on Form P and the Form F master species list (C2). For example, in the above example, if a local species name is unknown after botanical Unknown C, then the code in sequence for the local unknown will be Unknown D.

It is very important to remember that this will be the process of coding unknown species, regardless of whether the species are entered into the master species list by computer on-site, or after fieldwork is completed at a research center. All unknown letter codes should be handwritten on both Form P and the Form F master species list (C2).

The unknown species should then be placed back in the plant presses. The research team members should try to find a botanist or other personnel at a botanical garden, etc., to try to identify the remaining unknowns as soon as possible. When the correct genus and species are determined, they should be written on the original Form P, paying careful attention to the spelling. The botanist should write the correct botanical name on the label with the letter code as well. The goal is to have NO BOTANICAL UNKNOWNS, especially for trees and shrubs. Identifying all ground cover and seedlings may be impossible in some cases.

Name of all forest product species from the forest plots must then be handwritten in C2 of Form F. Data about forest species must also be checked on Form G and Form R.

E. Geographic and Positioning Information

If using GPS technology to collect data for this section, all GPS units must be set to the same Datum and Spheroid while collecting data across plots. Researchers who wish to transform the positional data collected here into a reference system for comparison to other sites will need to record the transformation parameters in the *Site Overview Form* (Form O).

E3. "DOP measures satellite geometry quality (i.e., number of satellites received and where they are relative to each other) on a scale from one to ten. The lowest numbers are the best accuracy and the highest numbers are the worst" (GARMIN 1999:28).

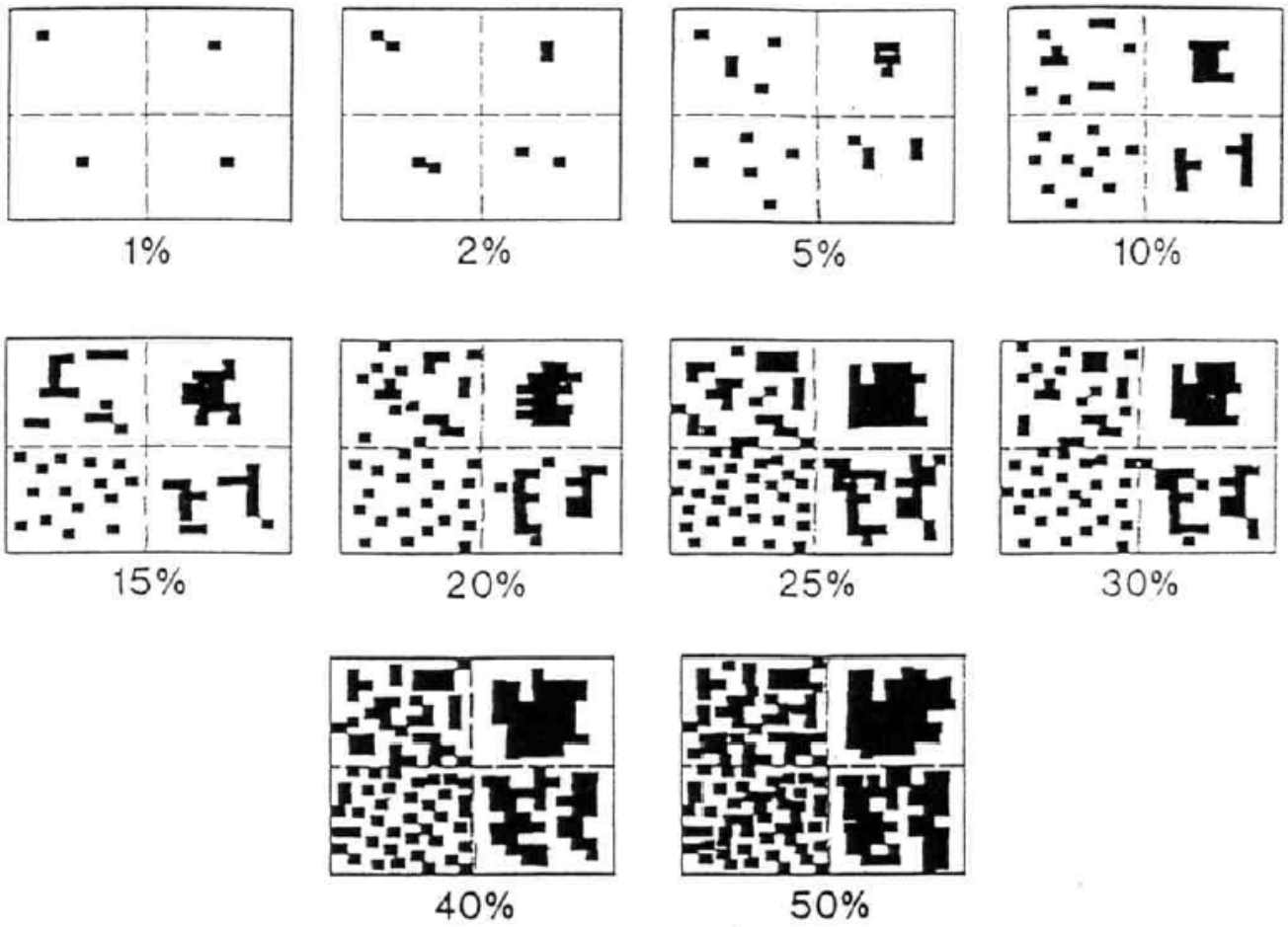
E4. "EPE uses DOP and other factors to calculate a horizontal position error, in feet or meters" (GARMIN 1999:28).

ENDNOTE TO SECTION III.A.3

1. In larger forests, in forests with substantial variety of terrain, or in densely vegetated areas, a systematic sample may be a preferable technique to adequately represent species composition and biomass.

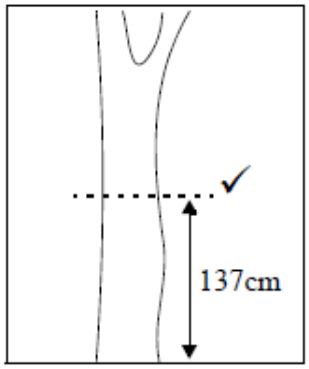
FIGURE 12
GUIDE FOR ESTIMATING PERCENT VEGETATION COVER

Each quarter of any one square has the same amount of black area.

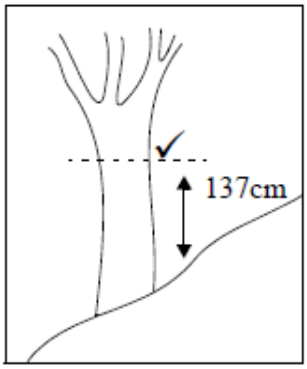


Source: Chapman, 1976

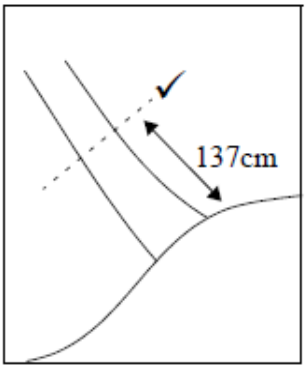
FIGURE 13
DIAGRAMS FOR MEASURING DBH



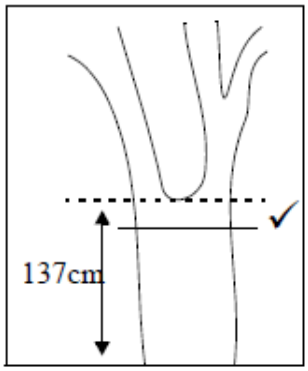
Stem on Level Ground



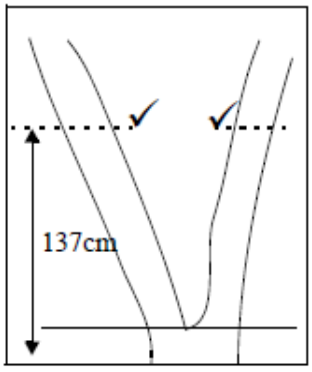
Stem on Uphill Slope



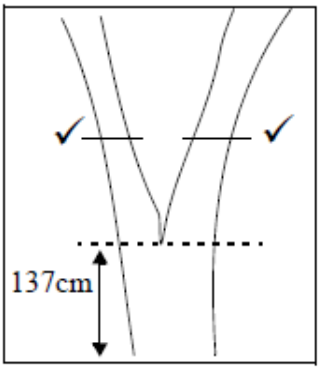
Leaning Stem



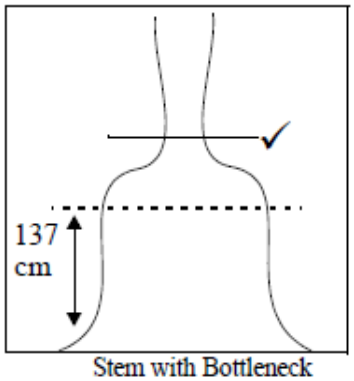
Stem Forking at DBH



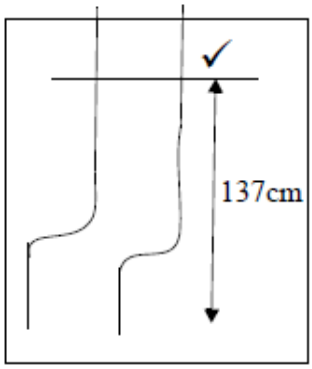
Stem Forking beneath DBH



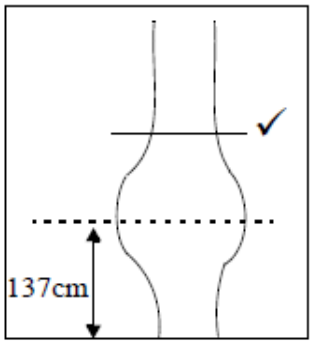
Branching at DBH
(If branching begins below 137 cm, DBH of each stem is measured 107 cm above a line drawn at branching point.)



Stem with Bottleneck
(If 137cm falls in the bottleneck, measure DBH just above bottleneck.)



Stem Bent



Bulging Stem
(If stem bulges at 137 cm, take DBH just above the bulge.)

Source: adapted from Poffenberger et al., 1992, p. 98
Note: Measurements in these drawings were converted from English units and rounded to nearest centimeter.

Appendix 1—Form P *Table of Random Numbers*

72965	92280	85318	98478	05200	26558	04697	63195	41679	24133
25182	09959	91375	97794	50193	25930	47938	95633	22271	15628
78812	39100	81576	84683	47466	04204	86339	31919	83404	48293
87264	75327	92529	25409	52589	20914	58768	46171	32657	89570
21571	57796	67813	88705	52576	51712	12407	00644	81748	04204
98532	11191	63198	79306	04193	00859	83906	30625	67175	37774
38981	76006	33931	22225	00014	37716	67499	90402	08962	88602
11305	19964	22932	62300	64508	32996	05699	06536	22619	89725
96753	89989	67869	65743	65353	55722	91650	77833	05353	05950
28316	27206	32507	96140	83430	75357	57822	75247	93486	20481
24390	09214	19493	94975	71393	54675	51712	00581	11187	73464
23995	32726	41075	32118	63946	62464	60599	81670	73097	78553
41920	60706	55864	70343	61238	06810	53263	07815	56588	29384
78281	15410	26154	70445	27828	38282	29051	13433	84405	82969
92910	17017	92704	25210	63833	04909	02571	58402	62649	86771
29265	89779	95437	51929	75534	70858	54623	99661	87146	16775
60422	65242	57037	95091	25582	76743	95890	09033	08368	62677
42748	43783	94238	97764	64110	68935	21057	14994	94235	53722
39611	11320	52913	20490	84147	59510	45967	93742	71756	09298
74011	92403	54878	91689	20402	20287	05402	16617	86101	28192
49056	17282	52320	73306	91759	85329	88229	62615	25802	28655
06572	13935	69948	12322	84900	85760	67583	36717	75897	39169
32726	45220	41600	61236	55701	08181	26259	49841	88968	83197
13800	03061	28494	09432	95359	92550	11251	76533	51923	34450
09838	95794	39792	06406	81584	49541	20520	91941	43448	91692
86499	23583	61444	72616	78692	50822	10283	23499	17883	21908
19618	23145	32406	91793	50163	72615	61939	18183	20368	51482
04145	26409	44737	98157	14158	94981	66518	84956	65372	00578
44083	35657	49215	93131	41815	34454	46347	02783	27988	86461
13883	40605	76333	56473	27866	16074	00939	05149	14090	70080
08697	34971	19204	70701	56065	23839	45794	62036	07594	36604
86447	56887	61107	63246	88350	51579	95387	03708	16441	64848
37914	39110	60363	95348	96498	17447	18058	36020	57301	50492
08771	12569	06379	51277	88233	45879	89353	82759	16691	20680
65529	84747	61160	19575	98709	23055	37992	82397	62884	63738
53783	03060	00563	21869	41559	85468	37401	81331	62733	10999
40881	01466	66439	92600	95878	43878	76006	93166	20603	76173
81424	81842	17993	63784	39351	41580	89006	47888	92753	45323
47362	92940	89774	05283	49461	21521	72572	37403	90574	22562
79898	44180	49706	58783	47012	90892	89032	56904	56473	38246
98433	36491	48288	53653	77220	82969	70063	58551	20025	83414
79849	94549	69691	11789	43233	46831	08737	25992	11296	69195
26004	14598	80743	25043	45287	35345	46914	71487	10345	48236
46218	40835	82386	91946	14266	77484	02759	92164	77842	21600
49618	10730	47690	44746	09566	36769	39108	47001	62935	10227
66259	25266	88651	56018	68181	45119	91387	37257	83610	53138
65170	81485	14727	22898	63815	17317	68293	06449	91890	49994
82679	72969	04512	11079	95969	87389	46263	96780	78124	04120
37900	90316	47434	60701	89649	51773	26139	39231	72264	17654
27111	31679	71539	61375	58691	20215	91170	44290	91396	90173

This table was prepared using an International Business Machine Corporation (1968:77) algorithm. Larger tables of random numbers are found in Dixon and Massey (1983:446–150), Rohlf and Sokal (1981:72–75), Snedecor and Cochran (1980:463–466), Steel and Torrie (1980:572–575), and Zar (1984:653–656).

Source: adapted from Brower, Zar, and Von Ende (1989: Table 1A.1)

IFRI FORM P

FOREST PLOT FORM

Plots are demarcated areas useful for studying the ecology of a forest. IFRI researchers use them to identify the trees, saplings, and herbacious matter found in the forests they are examining. By carefully determining the number and distribution of plots, IFRI researchers can hypothesize how local populations use (or misuse) forest resources. Plots, in other words, are the key link between the social and institutional data collected on most forms and the biological data collected in the forest(s).

A plot can be any geometric shape. The IFRI manual guidelines explain the methods used for circles and squares. Be sure to ***record the area in square meters below*** *and describe the forest sampling methods used on Form F.*

Using the Forest Plots Map drawn in the Forest Form (B1a), the field researcher should record below the Plot Identification Number that corresponds to this Forest Plot.

Research ID: 005 Country ID: GUA Site ID: 001.

Date of site visit (mm-dd-yr): 07-31-96

►**Name of forest**<FK_Forest>: El Sitio.

►**Plot identification number**<PPin>: 16.

Date data collected for this form (mm-dd-yr) <PPlotDate>: 08-28-96

Record the area (in square meters) of each plot below.

3 ►**Small Plot** <PAREASMALL>

27 ►**Medium Plot** <PAREAMEDIUM>

314 ►**Large Plot** <PAREALARGE>

Name of person filling out this form: Jose Echeverria.

A. CONDITIONS OF THE PLOT

A1. Describe the soil within the forest plot. *(long text)* <PSOIL>
Soils may be sampled in any location in the forest plot. Include a description of this sample by addressing each of the items listed below. Please refer to Tables 5, 6, and 7, and Figures 10 and 11 in Section III.A.3. of the Field Manual.

Preparation of soil sample hole:
Soil is rocky and not deep

Location of plot topographically:
BS

Surface description and depth of humus layer:
Horizon O= 1.5cm

Depth of A and B horizons:
Horizon A= 8cm
Horizon B= N/A

Color/soil drainage (A and B horizons):
Horizon A= 10yr 4/2
Horizon B= N/A

Texture (A and B horizons):
Horizon A= Sandy Loam
Horizon B= N/A

Hardness of soil (A and B horizons):
Horizon A= loose
Horizon B= N/A

A2. Is there evidence of active soil erosion in the forest plot? <PEROSION>

Mark only one answer.

(1) ____ No

(2) ____ Yes, minor erosion; surface vegetation and humus layer are absent

(3) x Yes, major erosion; large gullies are present in barren soil.

A3. Is there evidence of livestock use within the forest plot? <PLIVESTOCK>
Mark only one answer.

(1) ____ No

(2) x Yes

A4. Is there evidence of extreme damage by insects/pests within the forest plot? <PINSECTS>
Mark only one answer.

(1) x No

(2) ____ Yes

►A5. **Is this plot located within a section of the forest that is set aside for specific forest management practices? <PLOCATION>**

The answers to A5–A5b here should correlate to answers for B3–B3g on the Forest Form.

Mark only one answer.

(1) x No

(2) ____ Yes

►A5a. **If yes, how many years has it been since this section of the forest was subject to a major harvesting effort?**

Please use whole numbers. **<PYEARS>** N/A years

►A5b. If yes, what is the name of this unit as listed on the *Forest Form*, B3g? <PMGMTNAME>

N/A

*Information for the following three questions is required for each plot so eventually it may be recorded on a GIS map of the forest. Information about the species and sizes of trees may be related to the elevation of the plot, the direction toward which the plot faces (e.g., primarily south facing or primarily northeast facing), and the steepness of the plot. A **clinometer** is typically used for measuring slope (steepness) in degrees.*

►A6. **Plot elevation in meters. <PELEVATION>:** 1350 meters above sea level .

►A7. **What is the steepness of the slope in degrees? <PSTEEP>** 22 .

► This is a priority variable. Please make sure this question is answered. Rev.12-11

►A8. **If the plot is on a slope, what direction does the plot face? <PORIENT>**

Mark only one answer.

(1)	North	(5)	x South
(2)	Northeast	(6)	Southwest
(3)	East	(7)	West
(4)	Southeast	(8)	Northwest

►**A9.** **Provide any other observations that pertain to plot conditions, e.g., tree falls, evidence of charcoal burning, fire damage, storm damage, etc.** ***(text)*** **<PCONDITION>**

Take note of any observed species of interest in or around the plot and be specific about its relative abundance, location, and apparent condition.

Evidence of fire is present, and trees were felled by locals searching for ocote (the resinous interior of pine trees used for kindling)

A10. What is the percentage of crown cover in this plot? <PCROWN COV> 70 %

A11. Are epiphytes <PEPIPHYTES>

(1) ____ absent?

(2) ____ few?

(3) *x* abundant?

B. GROUND COVER AND SEEDLING INFORMATION

B1. What are the different ground cover plant species in the plot? To obtain the names of all of the species, the field researcher may ask the residents of the village the local name(s) of the species and cross-check the local name with the botanical name. {P_GCOVER}

*Starting at the center of the plot, create a circle with a 1-meter radius. For each woody seedling species in this area, identify the species name and count the number of stems of that particular species in the 1-meter circle. Do this for each woody seedling species. Remember that woody seedlings are defined as young trees, shrubs, or woody climbers with stem diameters less than 2.5 cm or a height less than 1 m. If the researcher chooses to group nonseedling ground cover, grouping choices should be created in the Master Species List ({F_ORGAN}) as follows: "**Grasses**," "**Herbs**," "**Total Grasses and Herbs**," and "**Bamboo**." The researcher is encouraged to record the names of as many individual species as funds and time allow, and if possible, collect a sample of each unknown species. At a minimum, select the aggregate names as suggested here.*

What is the family name of this plant species?	Name of Species		►**Is the species a woody seedling or a herbaceous plant? Write "S" for seedling or "H" for herbaceous plant.** <P_TYPE>	What percent of the 1-meter circle does this species (non-woody seedling) cover? <P_PERCENT>	If the species is a woody seedling, how many seedlings are there? <P_STEMCNT>
	Botanical	Local			
Herbaceous plants			H	33%	
	Pinus Oocarpa Schiede	pino	S	1%	

► This is a priority variable. Please make sure this question is answered.

C. SHRUB, SAPLING, PALM, AND WOODY/HERBACEOUS CLIMBER INFORMATION

C1. Record the local and botanical names of each shrub, sapling, palm, and woody/herbaceous climber found in the circle of 3-meter radius. For shrubs and climbers, record **maximum diameter** and height in metric units. For saplings, record **DBH** and height in metric units. {P_INFO}

Starting at the center of the plot, create a circle with a 3-meter radius. For each sapling, shrub, palm, and woody/herbaceous climber species in this area, answer the questions below. Remember that a sapling is defined as a young tree with a DBH greater than 2.5 cm but less than 10 cm.

What is the family name of this plant species?	Name of Species		►Is this a shrub, sapling, palm, or climber? Write "B" for shrub, "P" for sapling, "L" for palm, "W" for woody climber. <P_TYPE>	►Maximum stem diameter of the shrub or climber, or DBH of the sapling (cm) <P_DBH>	►Estimated height of the shrub or sapling (not -climbers) (m) <P_HEIGHT>
	Botanical	Local			
	N/A				

► This is a priority variable. Please make sure this question is answered.

C1. Shrub, Sapling, Palm, and Woody/Herbaceous Climber Information, continued

What is the family name of this plant species?	Name of Species		►Is this a shrub, sapling, palm, or climber? Write "B" for shrub, "P" for sapling, "L" for palm, "W" for woody climber. <P_TYPE>	►Maximum stem diameter of the shrub or climber, or DBH of the sapling (cm) <P_DBH>	►Estimated height of the shrub or sapling (not -climbers) (m) <P_HEIGHT>
	Botanical	Local			

► This is a priority variable. Please make sure this question is answered.

D. TREE, PALM, AND WOODY CLIMBER INFORMATION

D1. Record the local and botanical names of each tree, palm, and woody climber found in the circle of 10-meter radius. For each tree, record its DBH and height in metric units. {P_INFO}

Starting at the center of the plot, create a circle with a 10-meter radius. For each tree, palm, and woody climber species in this area, answer the questions below. Remember to record only those trees with a DBH greater than or equal to 10 cm. If possible, collect a sample of each unknown species.

What is the family name of this plant species?	Name of Species		►Is this a tree, palm, or woody climber? Write "T" for tree, "M" for palm, or "C" for woody climber. <P_TYPE>	►Maximum stem diameter of the climber, or DBH of the tree (cm) <P_DBH>	►Estimated height of the tree or palm (not -climbers) (m) <P_HEIGHT>
	Botanical	Local			
	Pinus oocarpa scheide	pino	T	38	18.5
	Pinus oocarpa scheide	pino	T	21	10
	Pinus oocarpa scheide	pino	T	43.5	16
	Pinus oocarpa scheide	pino	T	27.5	17.5
	Pinus oocarpa scheide	pino	T	12	7.5
	Pinus oocarpa scheide	pino	T	27	12
	Pinus oocarpa scheide	pino	T	34.5	15
	Pinus oocarpa scheide	pino	T	18	9.5
	Pinus oocarpa scheide	pino	T	17.5	10.5
	Pinus oocarpa scheide	pino	T	24	9.7
	Pinus oocarpa scheide	pino	T	47	14.5
	Pinus oocarpa scheide	pino	T	11	13.2

► This is a priority variable. Please make sure this question is answered.

D1. Tree, Palm, and Woody Climber Information, continued

What is the family name of this plant species?	Name of Species		►Is this a tree, palm, or woody climber? Write "T" for tree, "M" for palm, or "C" for woody climber. <P_TYPE>	►Maximum stem diameter of the climber, or DBH of the tree (cm) <P_DBH>	►Estimated height of the tree or palm (not - climbers) (m) <P_HEIGHT>
	Botanical	Local			

► This is a priority variable. Please make sure this question is answered.

E. GEOGRAPHIC AND POSITIONING INFORMATION

If using GPS technology to collect data for this section, all GPS units must be set to the same Datum and Spheroid while collecting data across all plots. Be sure to specify in the *Site Overview Form* (Form O) which Datum is being used across all plots.

Use decimal degrees or degrees-minutes-seconds for latitude and longitude.

►**E1.** **What is the latitude of this plot?** <PLATITUDE>

_____*(decimal degrees)*

or

_____º _____’ _____" *(degrees-minutes-seconds)*

►**E2.** **What is the longitude of this plot?** <PLONGITUDE>

_____*(decimal degrees)*

or

_____º _____’ _____" *(degrees-minutes-seconds)*

►E3. **What is the Dilution of Precision (DOP) for this position? <PDOP>** _____

Please enter a decimal number from 1 to 10.

►**E4.** What is the Estimated Position Error (EPE) for this position? <PEPE>

_____

GEN. GENERIC QUESTIONS FOR USE BY RESEARCHERS

Please write your question(s) and the answer(s) where indicated below. **Enter the methodology and all questions together into the database under** <PWKSPMEMO>. Enter each answer into the database under the data name specified for each answer below. See Section II of the Field Manual for more detailed instructions.

Please describe why you are asking the generic questions below and/or what methodology you used to collect the data provided below. *(long text)* <PWKSPMEMO>

Question 1 (answer requires a whole number):

Answer to question specified by researcher *(integer)* <PGENSNUM1> _____

Question 2 (answer requires a whole number):

Answer to question specified by researcher *(integer)* <PGENSNUM2> _____

Question 3 (answer requires a whole number):

Answer to question specified by researcher *(integer)* <PGENSNUM3> _____

Question 4 (answer requires a whole number):

Answer to question specified by researcher *(integer)* <PGENSNUM4> _____

Text question 1:

Answer to question specified by researcher *(text)* <PGENTEXT1>

Text question 2:

Answer to question specified by researcher *(text)* <PGENTEXT2>

Text question 3:

Answer to question specified by researcher *(text)* <PGENTEXT3>

Question 1 (answer requires a decimal number):

Answer to question specified by researcher *(decimal)* <PGENLNUM1> _____

Question 2 (answer requires a decimal number):

Answer to question specified by researcher *(decimal)* <PGENLNUM2> _____

Question 3 (answer requires a decimal number):

Answer to question specified by researcher *(decimal)* <PGENLNUM3> _____

Question 4 (answer requires a decimal number):

Answer to question specified by researcher *(decimal)* <PGENLNUM4> _____

Answer(s) to question(s) specified by researcher that require(s) more than 250 characters *(long text)* <PGENMEMO>

III.A.4 FORM S- SETTLEMENT FORM: GUIDELINES

A. DEFINITION OF A SETTLEMENT

A **settlement** is a collection of households located in or around one or more forests. Households in a settlement obtain products, and/or benefit from the forest(s).
A settlement is:
• the primary location where most of the forest users live; and/or
• the location where most of the people who use the forest send their children to school, go to a health center, and/or go to market; and/or
• the place that users of the forest describe as the locus of where they live.
In order to identify the relevant settlements the researcher must have an understanding of what is being harvested from the forest(s) and where the harvesters live. People from at least three households must be using an IFRI forest, but these households can be located in more than one settlement. Settlements can be located within forests, an entire village or town, more than one village or town, highly dispersed, or centrally located. Not everyone in a settlement will be a forest user.

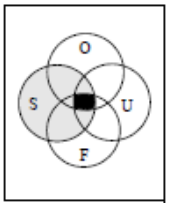
B. PURPOSE OF THE SETTLEMENT FORM

Questions on Form S capture historical, demographic, socioeconomic, and geographical information about a settlement. Form S is crucial to understanding the general location in which forest users live, finding out how easy it is for people to communicate with each other and local forestry officials, determining how heterogeneous or homogenous the population is, and estimating the amount of information that may be available to participants for making decisions about the forest(s) in their community.

Issues that can be analyzed by using the questions on Form S in conjunction with other research instruments are: the role population plays in relationship to forest condition; the relationship between forest condition and the market; and the location of the settlement in relation to administrative services, and how these services are used in forest governance.

C. GUIDELINES FOR DATA COLLECTION

1. Defining a Settlement



When the team leader makes the initial site visit, he or she should carefully assess the size of the forest and, if possible, begin to mark off the boundaries of the forest(s) (see Form O). The team leader should also talk with forest users around the forest about how they define themselves in relationship to the nearest village or town and the forest. The team leader compares the names of villages in the area to the grouping of households and forest users, and discusses settlement boundaries with its members by referring to local maps. Analysis of the number of settlements will continue when the team arrives at the research site and begins the mapping exercise. This form should not be completed until the Site Overview Map is completed. (see Form O, C12).

Key Questions for the Research Team When Defining a Settlement
1. Where do forest users live in relation to the forest?
2. What do people harvest from the forest?
3. What do forest users define as the central location of their community?
4. How many forest users are there? Represented by how many households?
5. Are there three households collectively *using* the forest in this settlement or in a combination of settlements?
6. Where do forest users go to market, a health center, and send their children to school?
7. Are households close together or highly dispersed?

2. Data Collection

The research team can begin to collect data in this form by holding a general meeting with the members of the settlement early in the site visit. This type of meeting includes a discussion of the purpose of the study and the length of time the research team will be staying in the area. Rapid appraisal methods should be employed to elicit information about how the community members define their village, town, or living area. Women, men, and other representative individuals throughout the settlement should be invited to attend meetings. The team should make sure it speaks with the village headman, mayor, or chief, a school teacher, the postman, or a watchman, each of whom may also have a historical perspective and/or special knowledge about the settlement. At least one of the individuals interviewed should be an elderly person, well known to a number of the residents in the settlement, and knowledgeable about the settlement. As with all forms, the researchers will need to carefully review the form to verify information before leaving the site. If the form was initially completed early during fieldwork, it must be checked to verify that information collected late in the site visit is reflected in the responses.

3. Highlights about Questions on the Settlement Form

One of the major challenges to researchers filling out this form will be discovering how the term "household" is defined in each settlement (question A5). Household is used as a unit of analysis for some questions because it is believed that people perceive events and changes more in terms of their impact at the household level than at some larger unit of social aggregation. In gathering demographic data, the historical information collected on this form will be more accurate if recorded at a household level as defined locally. At C1b, researchers are asked to describe the economic activities of most residents. Please include details about the type of economic activity, where it is located, how dependent it is on forest resources, etc.

4. Team Leader Responsibilities Before Leaving the Site

Prior to leaving the site, the team leader should carefully compare the household statistics in A6–A9 with the definition of household in A5, as well as the statistics in B1 to verify whether the information obtained is accurate.

At B3c and B4c, check to see if walking time has been coded (in minutes), regardless of answers in B3b and B4b.

The team leader may also want to check whether the information in C1b is similar to the information in F11 on the *User Group Form* (Form U).

At C2, "NA" should be written in rows 2 and 3 if there is only one ethnic group.

At D1, if a region does not have four seasons, "NA" should be noted in each of the rows that does not apply. "MIC" will be coded by the team leader if information is missing in column one or two, NA or MIC will be noted in column three.

At D1a, the team leader will check the method that is used for determining where the soil sample was collected in this question.

D. SPECIFIC GUIDELINES BY SECTION AND QUESTION

A. History

A1 and A1a. If there is information available about when and how the settlement was established, provide this information here. For example, the settlement may have originated because of its location next to a valuable economic resource, or it may have been part of a planned government resettlement project. The year (e.g., 1871) should be entered in A1. If a specific date is unavailable, try to determine the decade when settlers first came to this place. If the date is completely unknown, no answer should be recorded.

A2. This question tries to elicit whether a myth surrounds the establishment of the settlement. For example, the establishment of a settlement might be tied to the spiritual beliefs of a certain group.

A3. The difference between question A3 and B0 is that A3 asks for changes throughout history. Question B0 asks for major changes since the **last site visit.**A3a. Describe the causes of the changes listed in A3 **as seen through the eyes of the local residents.** A significant increase in population, for example, might be seen as the result of changes in the standard of living, a government development project, or the ending of a family planning program.

A4a. Give as much information as possible about the location and availability of any records relating to the history of the settlement. It is possible that these records could be kept at the settlement itself, at the provincial capital, at the national capital,or at all three locations.

A5, A6, A7, A8, A9. In some societies, household will have the same meaning as "nuclear family," defined as a unit consisting
of parents and their children only. In other societies, a household will consist of several generations (children, parents, grandparents, and great-grandparents) of the same family. In polygamous societies, many wives could be resident in the same "household." At A5 of this form, researchers are asked to provide the local definition of household and give an example of what individuals would be included in one household.

B0. Major Changes Since Last Site Visit

B0. If this is a second or later visit to this settlement, describe the **major** changes that have taken place in the settlement since the last visit. Examples may include significant increases or decreases in population or significant changes in the economic activity of settlement residents. Researcher should carefully read the materials provided from the earlier site visit(s) so it is possible to record relevant changes.

B. Demographic

B1. Compare the settlement population in terms of the local definition of household with the settlement population in terms of the number of nuclear families and the number of individuals. As stated above, "nuclear family" is defined as a family unit consisting of parents and their children only. Thus, a household that consists of several generations of the same family will contain several nuclear families. Record the population in terms of households using the definition from A5 on this form.

B3a, B3b, B4a, B4b. "Most residents" in these questions is defined as the greatest proportion of residents. The team should question numerous individuals to answer these questions.

B3c, B4c. Please provide the walking time estimate in **minutes** for both the driest and the wettest seasons. One hour and 30 minutes, for example, will be written as 90 minutes.

C. Settlement Social-Economic Status

C1a. If option (1) or (2) is checked for C1, be sure to answer this question. This question attempts to discover the level of self-sufficiency of the settlement residents. For example, a settlement where most of the residents consume their own food crops for ten months of the year may be more self-sufficient than the settlement where most residents consume their own food
crops for five months of the year.

C1b. Describe in as much detail as possible the major economic activities of the residents as well as the degree to which these activities are dependent on the forest. This question helps determine how much the settlement relies upon the forest for its economic well-being, and where the forest products are used. If residents own and operate farms as a private economic activity,
researchers should describe its relation to the forest.

C2. Ideally, the information needed to answer this question should be first found in an authoritative published source, such as a government census. This information should then be taken to the settlement for verification. **A note about the source of information should be written in the margin.**

D. Geography

D1. The information about soil within a settlement may be obtained from the agriculture ministry of the national or provincial government, the agriculture department at a nearby university, or from local farmers. Please note recommendations about how to analyze soil for the **settlement** in section III.A.3., Form P Guidelines, if this information is not available through the above mentioned organizations. The key here is to determine the dominant landscape element that the settlement occupies and to describe the soil. If the settlement occupies numerous parts of the landscape (i.e., floodplain, footslopes of mountains, and steep backslopes), the **dominant** landscape should be chosen. Question D4 could be used to further describe the parts of the landscape that the settlement occupies. Topographic maps may be useful to delineate the extent of the settlement and the different landscape elements present. This information will give the researcher a general understanding of soil composition in the settlement. Additional tests of pH levels and other chemical analyses can be conducted on soil in the settlement depending on available resources.

D2. The most likely source of this information is a geography or ecology book that contains a classification detailed enough to describe the vegetation around the settlement of interest. If this source of information is not available, contact a professor at a nearby university, an official at a nearby agricultural station, or an official of the forestry ministry. These sources should be checked prior to leaving the answer blank. Please refer to *Appendix 1–Form F* in section III.A.2 under "herbaceous vegetation."

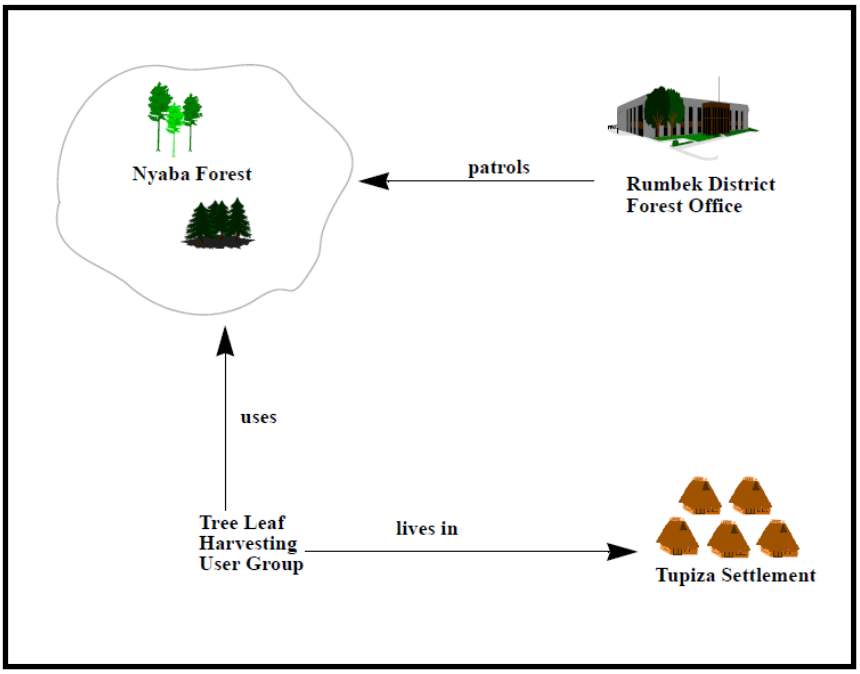
D4. Provide a general description of the physical features, such as bodies of water, hills and mountains, and extent of vegetation around the settlement area.

D5. Ideally, an altimeter should furnish this information. It records the average elevation of the settlement. When an altimeter is not available, obtain a relief map of the settlement or contact the government surveying agency for the correct figure.

D7. Exact numbers for this question may be difficult to obtain, but the attempt should be made to be as accurate as possible. For the purposes of this question, "very close" is defined as within five kilometers of the forest. This question can be used to help define how distance affects forest product use and quantity harvested.

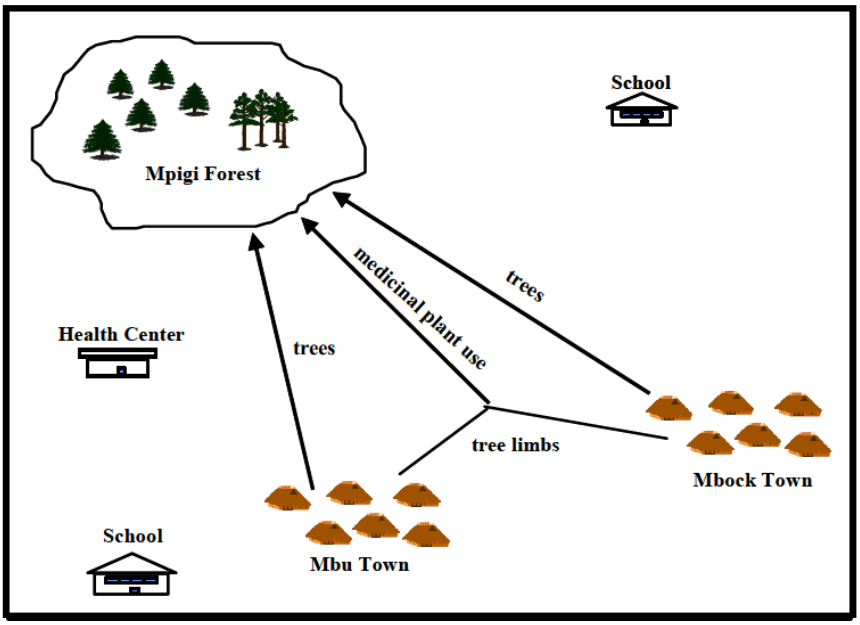
BOX 4: EXAMPLES OF SETTLEMENTS

a) A simple site may include just one settlement, with users living in one community and using one forest product. Site and Settlement have unique names.



Argo Site

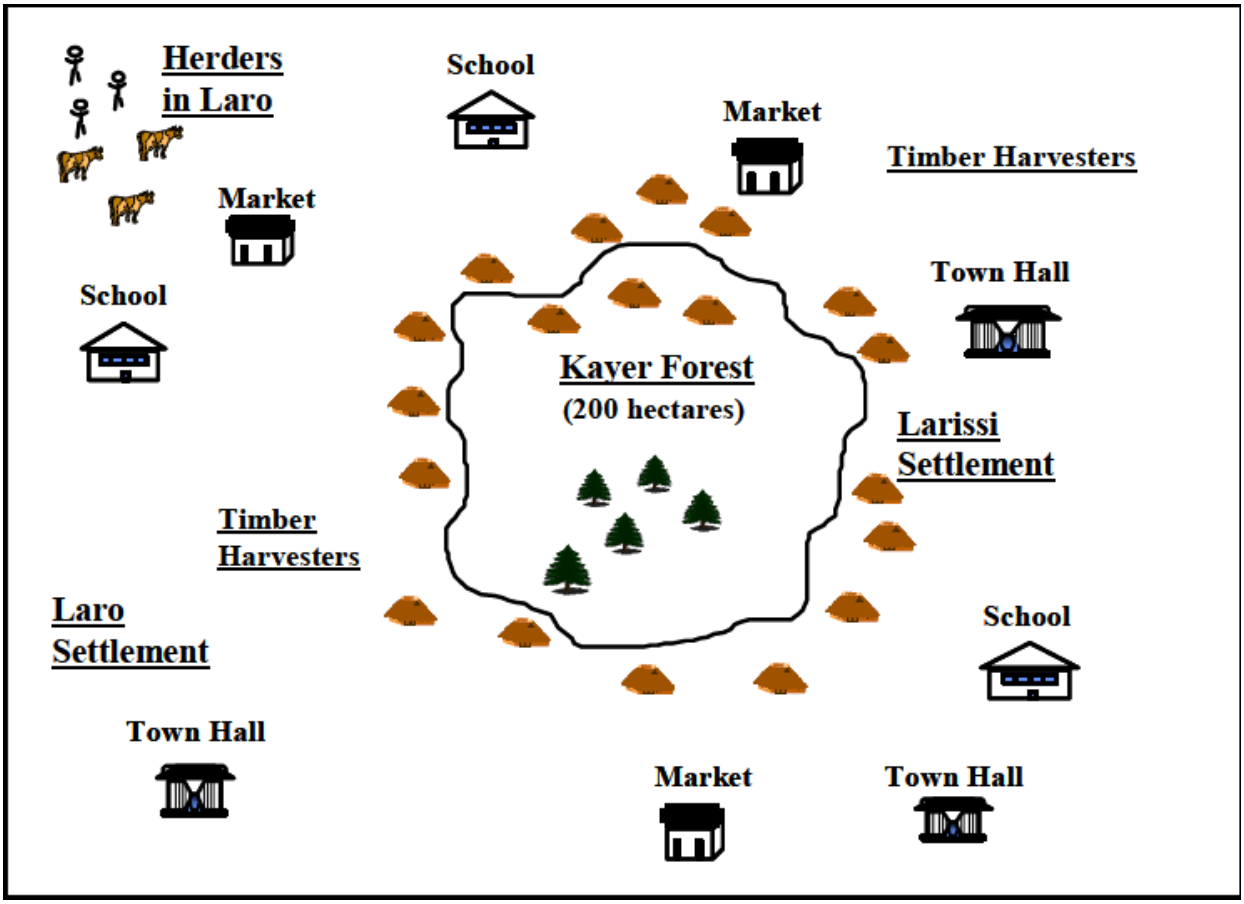
b) It is possible that there will be more than one settlement per site and that three households may be a combination of households using the forest from two settlements with the same rights to harvest. For example, firewood gatherers from Mpigi Forest may live in Mbu and Mbock and have the same rights to enter the forest to harvest dried tree limbs. Mbu and Mbock may have two different schools for children, different markets, and separate health and administrative centers. In this case, researchers will code two *Settlement Forms* (Mbu Town and Mbock Town) but only one user group form..



Mbu and Mbock Sttlements

BOX 5: EXAMPLE OF SETTLEMENT

It is possible to have forest users living around the forest and/or within the forest. In this case, finding out where the children go to school, to a local health center, and/or to market will be key indicators about where one settlement will differ from another. Asking forest users to describe where they see the central location of their living arrangement is also an important question. In this case, there are two settlements: Larissi and Laro.



Larissi and Laro Settlements

IFRI FORM S

SETTLEMENT FORM

A settlement is a collection of households located in or around one or more forests, especially because households in the settlement harvest or obtain products and/or benefits from the forest(s). This form has been designed to capture historical, demographic, socioeconomic, and geographical information about a particular settlement. There may be a number of settlements utilizing a particular forest or forests, and therefore, one of these forms will be completed for each settlement studied.

Many of the questions ask for specific numbers (e.g., number of individuals in settlement, average number of times individuals go to market). Try to get as accurate a response as possible. If the group of individuals being questioned disagree on the number, continue discussion until a sense of convergence toward a reliable estimate is gained.

►**Research ID** <RID>: 005 ►**Country ID** <CID>: GUA ►**Site ID** <SID>: 001

Date of site visit (mm-dd-yr): 07-31-96

Date(s) data collected for this form (mm-dd-yr): 07-31-96 through 09-26-96

►**Name of settlement** <SNAME>: Morah- Naranjo .

Name(s) of forest(s) used: El Sitio

►**Name of district and subdistrict(s) (if applicable)** <SDNAME>: Municipality of Río Hondo,department of Zacapa

Name of person filling out this form: Clark Gibson

Name of person(s) with whom discussions held: _____

Location of discussions (fields, home of respondent, place of business, etc.): _____

►**Has this settlement been coded before?** <SCODED>

(1) x No

(2) _____ Yes

(3) _____ Uncertain

(4) _____ Yes, with a different name (If this response is checked, write old and new names in B0.)

The closest approximation should be noted here ←

A. HISTORY

A1. What year did this settlement come into being? <SYEAR> 1880

Enter the full year (for example, 1871). If unknown, provide as close an approximation as possible.

A1a. How did this settlement come into existence? *(long text)* <SEXISTENCE>

If factual information is available, report here; if not available, skip this question and go to A2.

► This is a priority variable. Please make sure this question is answered. Rev.12-11

A2. Are there any myths or stories that are prevalent about how this settlement came into existence? What are they? *(text)* <SMYTH>

The history of the settlement is more than 100 years old, and residents mentioned that it was founded in different ways. One version is that a man whose last name was Moran and his wife established themselves on a shore of a river. The residents named the river Moran and the settlement in memory of this man. They explained that the man did not leave a descendent in the settlement because his wife was called by a J:aguar (which is the reason he left the place).

Another version of the founding of Moran suggests that the first inhabitant arrived from Jones and was originally from Morazan Municipality in the Department of EI Progreso. He called the settlement Moran as a short name for Morazan and to distinguish it from his hometown. Naranjo (which is Spanish for orange) was named because of the abundance of orange trees in this site.

A3. What have been the **major changes** that the settlement has seen in the course of its existence (major changes with regard to population, economic activity, etc., as the result of war, droughts, disease, market price changes, development projects, changes of jurisdiction, etc.)? *(long text)* <SCHANGE>

Try to explore all of the possibilities here: change in standard of living, effects of war, effects of an agroforestry project, disease, etc

Twenty years ago a wood company arrived and built an access road to Moran-Naranjo an elimínated a large quantity of trees on Communal lands. Potable water arríved ín 1979. A school was establíshed ín 1956. The Sierra de Las Mínas Biosphere Reserve was establíshed ín 1990.

A3a. What do the local residents see as causes of these changes? *(long text)* <SCAUSES>

Forces external to the community consisting of an arrangement between the individual holding power of attorney for the settlement and the wood company, where the individual with power of attorney received payment for every foot of wood sold. The indivdual with power of attorney is nominated by the municipality to represent the inhabitants of Moran-Naranjo.

With supplies that were furnished by the municipality, voluntary labor from the community built the water project.

Locals built the school. The community requested that the Ministry of Education send a teacher and the material to put a roof on the school.

In 1990, the government declared existence of the Sierra de las Minas Biosphere Reserve and decreed that Nature's Defenders Foundation should be the administrator of the reserve.

A4. Are any published or written records available about the history of the settlement? <SRECORD>

Mark only one answer.

(1) ____ No

(2) *x* Yes

A4a. If yes, where are they available? Please try to provide the location and/or the citation, and be as specific as possible. *(long text)* <SWHERE>

Jose Arnulfo Vasequez Rivas, "Appraisal of the Aldea of Moran, Municipality of Rio Hondo, Department of Zacapa." 1995. Copies can be found at the University of San Carlos of Guatemala, University Center of the East, and at the central office Nature's Defenders

A5. The term "household" is used to mean various groupings in different cultures. Please give the local definition of how the concept of a household is used in this settlement. Give an example of the set of adults and children likely to be considered one household. How many generations might be grouped within this concept? How many adult siblings and/or wives might be considered one household? Has this concept changed, or the average number of individuals likely to be considered one household changed, during the past 20 years? *(long text)* <SHOUSEHOLD>

The household consists of a nuclear family (father, mother, and unmarried women). The household is also referred to as a "house" and can consist of just parents. When ~~children~~CG children marry, they form their own households.

A6. Estimated number of households (as defined in A5) 20 years ago <SHOUSE20>: MIC

A7. Estimated number of households (as defined in A5) 15 years ago <SHOUSE15>: >: MIC

A8. Estimated number of households (as defined in A5) 10 years ago <SHOUSE10>: MIC

A9. Estimated number of households (as defined in A5) 5 years ago <SHOUSE5>: MIC .

B0. MAJOR CHANGES SINCE LAST SITE VISIT

►**B0.** **Have there been any major changes in the settlement since the last visit, and if so, what were they?** ***(long text)*** **<SHISTCHNG>**

Do not complete if this is the first visit to this site to record information for the IFRI database.

N/A

B. DEMOGRAPHIC

B1. What is the current population of this settlement in terms of households (as defined in A5), nuclear families, and individuals?

Please refer to A5 for the definition of household. Nuclear family refers to a unit consisting of parents and their children only.

Note the difference between the nuclear family definition and the household definition in A5, if they are not synonymous. ←

►**Households** <SHOUSEPOP>: 69

Nuclear Families <SFAMPOP>: 69

►**Individuals** <SINDPOP>: 290

►**B2.** **How far is the most frequently used market by most residents in this settlement?** <SMARKET>

Market refers to a location where the residents of the settlement can buy articles of daily necessity as well as sell some of their products such as fodder, fuelwood, or agricultural crops. If there are a number of markets in the vicinity, pick the one that is the most used or the closest.

31 kilometers If distance is not known in kilometers, supply the number and the (local) unit of measurement here: N/A

B3. Where is this market (in a village, town, etc.)? *(long text)* <SMKTWHERE>

Try to be as specific as possible. For example, if this market is in a village, specify the village name and also specify that it is a village. Additionally, specify the direction this market is from the settlement.

The market is located in the municipal capital of Gualan, Department of Zacapa, which is located to the northeast of Moran.

B3a. **On average,** how frequently do most residents of the settlement go to a market? <SMKTFREQ>
Mark only one answer.

(1) _____ Almost every day
(2) _____ Two to four times a week
(3) _____ Once a week
(4) X Once every two weeks
(5) _____ Once a month
(6) _____ Once a season
(7) _____ Once a year

B3b. How do most residents of the settlement travel to the market? <SMKTTRAVEL_>
Multiple answers may be applicable.

(1) x Walk
(2) _____ Bicycle
(3) _____ Motorcycle
(4) x Bus
(5) x Animal-drawn carts
(6) _____ Car/Truck
(7) _____ Boat
(8) _____ Other (*describe*)<SMKTTRAOTH>: _____

B3c. On average, how long does it take a resident to **walk** to the market?
Even if residents do not walk to the market, obtain as close an estimate as possible for the time it would take to walk to the market. Please provide the time estimate in minutes for both the driest and the wettest season.

Minutes in the driest season <SMKTTRADRY>: 540

Minutes in the wettest season <SMKTTRAWET>: 540

If the answer here is given in hours, please translate into minutes.
example: 1 hr 30 min. = 90 minutes

►B4. How far is an administrative center from the settlement? <SADMIN>
An administrative center refers to a location where some government officials reside or where there is a government office that interacts to at least some extent with the settlement residents. If there are a number of administrative centers in the vicinity, pick the closest one.

25 kilometers If distance is not known in kilometers, supply the number and the (local) unit of measurement here: N/A

►B4a. How frequently do most residents of the settlement travel to the administrative center? <SADMFREQ>
Base the response on the primary traveler's average for all households.
Mark only one answer.

(1) _____ Almost every day
(2) _____ Two to four times a week
(3) _____ Once a week
(4) _____ Once a fortnight (two weeks)
(5) x Once a month
(6) _____ Once a season
(7) _____ Once a year

B4b. How do most residents of the settlement go to the administrative center? <SADMTRAVEL_>
Multiple answers may be applicable.

(1) _x_ Walk
(2) _____ Bicycle
(3) _____ Motorcycle
(4) _x_ Bus
(5) _x_ Animal-drawn carts
(6) _____ Car/truck
(7) _____ Boat
(8) _____ Other (*describe*) <SADMTRAOTH>: _____

B4c. How long does it take most of the residents to reach the administrative center by **walking** from the settlement?
Even if residents do not walk to the administrative center, obtain as close an estimate as possible for the time it would take to walk to the administrative center. Please provide the time estimate in minutes for both the driest and the wettest season. If more than one day is required to walk to this center, convert days including time spent resting and sleeping to minutes. For example, a trip that takes one-half day to complete prior to a visit to an administrative center would be written as 240 minutes.

Minutes in the driest season <SADMTRADRY>: 360

Minutes in the wettest season <SADMTRAWET>: 360

If the answer here is given in hours, please translate into minutes.
example: 1 hr 30 min. = 90 minutes

►B4d. In general, how frequently do most residents interact with government officials? <SINTERACT>

This question should be answered from the point of view of all settlement residents, not just a primary few who may interact more frequently.

Mark only one answer.

(1) _____ Very often; government officials live in the settlement
(2) _____ Quite often; government officials visit the settlement almost every day, or residents visit the administrative center almost every day
(3) _____ Often; either government officials visit the settlement or residents visit the administrative center
(4) _____ Sometimes; neither government officials visit the settlement often, nor do residents travel to - administrative centers
(5) _x_ Seldom; possibly once a month
(6) _____ Rarely; maybe once in two or more months
(7) _____ Very rare; once or twice a year

C. SETTLEMENT SOCIAL-ECONOMIC STATUS

►C1. How do most residents of the settlement derive most of their basic income? <SINCOME>
Mark only one answer.

(1) _x_ Subsistence farming
(2) _____ Herding
(3) _____ Operating or owning commercial farms or commercial enterprises
(4) _____ Harvesting products from the forest
(5) _____ Wage labor or employed staff
(6) _____ Other (*describe*) <SINCOTH>: _____

C1a. If (1) or (2) is checked for question C1, for how many months of a year do most residents of the settlement consume their own food crops? <SCONSUME> 12 months

C1b. Describe the economic activities of most residents of this settlement and their dependence on the forest for inputs into their major activities. *(long text)* <SECONACT>

Indicate where most members of the settlement conduct economic activities in relationship to the forest. For example, if they are farmers, do they farm in the forest, next to the boundaries of the forest, in a valley below the forest, or along the forest. Note the types of crops that are grown by many of the residents in the settlement, and the common cropping patterns (monocropping, intercropping).

Check this information with Form G, section III.A.7 ←

The inhabitants conduct subsistence agriculture by cultivating corn and beans, in fields known as milpas, and some vegetables and coffee. Their plots are located on communal and private lands. Communal lands are known as "EI Sitio" and belong to the municipality. Crops are for family consumption. Some individuals sell surplus production to obtain some income. Agricultural fields surround the settlement and the border of the forest. The community uses a large portion of the forested lands around itself as pasture for cattle and beasts of burden.

C2. List the three most predominant ethnic groups/castes of this settlement.

Provide the group name and a percentage of that group in the settlement if possible.

Ethnic group/caste		Percentage of settlement	
<SETHNIC1>	Ladino	<SPERCENT1>	100
<SETHNIC2>	N/A	<SPERCENT2>	N/A
<SETHNIC3>	N/A	<SPERCENT3>	N/A

D. GEOGRAPHY

D1. Describe the dominant soil within the settlement. *(long text)* <SSOILS>

The key here is to determine the dominant landscape element that the settlement occupies and to describe the soil. If the settlement occupies numerous parts of the landscape (e.g. flood plain, footslopes of mountains, and/or steep backslopes), the **dominant** one should be chosen. Please refer to Tables 5, 6, and 7 and Figures 10 and 11 in Section III.A.3. of the IFRI Field Manual.

Preparation of soil sample hole:
Soil layer is not deep and soil is rocky

Location of plot topographically:

BS

Surface description and depth of humus:
Soil in the area is rocky. The humiterous layer is barely discernible.

Depth of A and B horizons:
A= 8cm
B= 7cm

Color/soil drainage (A and B horizons):
A= sandly/loam
B= sandy/clay

Texture (A and B horizons):
A= crumbles easily
B= medium

Hardness of the soil (A and B horizons):

D2. If there is a specific name for the vegetation around the settlement, state the name. <SVEGTYPE>
From the partial list of vegetation classifications contained in Appendix 1—Form F, Section III.A.2 of the IFRI Field Manual, write the letter and number combination that corresponds to the type most characteristic of this settlement.

B2

D2a. If there is no appropriate vegetation type listed in Appendix 1—Form F, Section III.A.2, of the IFRI Field Manual, or if there is more detailed information available than listed on Appendix 1—Form F, please write out the general vegetation type or further information here. *(brief text)* <SVEGDESC>
N/A

D3. Are there large variations in the slope and vegetation around the settlement? <SVARY>

The term "variations" here means clearly visible characteristics that may distinguish one area from another area around the settlement. Example: There could be a steep upward slope with conifers on the north side of the settlement and a downward slope with no vegetation on the east and south sides of the settlement.

Mark only one answer.

(1) _x_ No

(2) ____ Yes

D4. Describe the topography of the area around the settlement: *(text)* <STOPOGRAPH>

Moran is located on the southern side of the Sierra de las Minas. Its slope is between 15° and 30°. It slopes to the south-southeast at 140°. Its topography is broken up.

D5. What is the average elevation of the settlement? <SELEVATION>

Specify the distance from sea level.

1216 meters If elevation is not known in meters, supply the number *and* the (local) unit of measurement here: _____

D6. Is the settlement nucleated or dispersed? <SDISTRIBUT>

Here "nucleated" means that the households in the settlement are more or less concentrated in and around a central location. "Dispersed" means that the households are scattered or spread out so that there may not be a central location.

Mark only one answer.

(1) _x_ Nucleated

(2) ____ Dispersed

(3) ____ Other (describe the type) <SDISTOTH>: _____

D7. On average, how many residents of the settlement reside in or very close to the forest(s) (within 5 km)? What is the average distance residents of the settlement live from the forest? How long on average does it take the residents of the settlement to reach the forest by **walking**? {SETTOFOR}

For each forest the settlement relies on, please enter the appropriate number of residents in column 2. In column 3, provide the average distance in kilometers from the approximate center of this settlement. If information in kilometers is not available, write the number and (local) unit of measurement in column 4. Please write the time estimate in minutes for both the driest and the wettest seasons in column 5.

Name of forest <FK_FOREST>	Number of residents close to forest <LRESIDENTS>	Distance from forest (kilometers) <LDISTANCE>	Number and (local) unit of measurement (if not in kilometers)	Minutes to walk to forest	
				Driest season <LTRAVELDRY>	Wettest season <LTRAVELWET>
El Sitio	290	1.5	N/A	30	30

D8. Select other settlement-owned resources apart from the forest resource that are located in or close to the settlement and used regularly by settlement residents. <SRESOURCE_>

Multiple answers may be applicable.

(1) ____ Irrigation resource (specify the type, such as tubewell irrigation, well irrigation, or canal irrigation) ____<SRESIRRIG>:_____

(2) _x_ Pastures

(3) _x_ Drinking water streams

(4) ____ Fishery resource (may be a lake)

(5) _x_ Other (*describe*) <SRESOTH>: agricultural land in El Sitio

D9. Do any kind of local organizations exist that regulate the use of the other resources by settlement residents? <SORGREG>

Other resources may include a commonly owned/controlled drinking water source, pastures, irrigation water, and so forth.
Mark only one answer.

(1) _____ No

(2) _x_ Yes

► This is a priority variable. Please make sure this question is answered. Rev.12-11

D9a. If yes, specify any organizations (recognized as a formal or informal organization) that have interest in the other resources. *(long text)* <SORGDESC>

The men organize themselves into groups to build fences around their places of work that they choose themselves, since cattle are a threat to their crops.

GEN. GENERIC QUESTIONS FOR USE BY RESEARCHERS

Please write your question(s) and the answer(s) where indicated below. **Enter the methodology and all questions together into the database under** <SWKSPMEMO>. Enter each answer into the database under the data name specified for each answer below. See Section II of the Field Manual for more detailed instructions.

Please describe why you are asking the generic questions below and/or what methodology you used to collect the data provided below *(long text)* <SWKSPMEMO>

Question 1 (answer requires a whole number):

Answer to question specified by researcher *(integer)* <SGENSNUM1> _____

Question 2 (answer requires a whole number):

Answer to question specified by researcher *(integer)* <SGENSNUM2> _____

Question 3 (answer requires a whole number):

Answer to question specified by researcher *(integer)* <SGENSNUM3> _____

Question 4 (answer requires a whole number):

Answer to question specified by researcher *(integer)* <SGENSNUM4> _____

Text question 1:

Answer to question specified by researcher *(text)* <SGENTEXT1>

Text question 2:

Answer to question specified by researcher *(text)* <SGENTEXT2>

Text question 3:

Answer to question specified by researcher *(text)* <SGENTEXT3>

Question 1 (answer requires a decimal number):

Answer to question specified by researcher *(decimal)* <SGENLNUM1> _____

Question 2 (answer requires a decimal number):

Answer to question specified by researcher *(decimal)* <SGENLNUM2> _____

Question 3 (answer requires a decimal number):

Answer to question specified by researcher *(decimal)* <SGENLNUM3> _____

Question 4 (answer requires a decimal number):

Answer to question specified by researcher *(decimal)* <SGENLNUM4> _____

Answer(s) to question(s) specified by researcher that require(s) more than 250 characters *(long text)* <SGENMEMO>

III.A.5. FORM U—USER GROUP FORM: GUIDELINES

A. DEFINITION OF A USER GROUP

A **user group** is a group of people who harvest from, use, and/or maintain one or more forests and who share the same rights and duties to products from the forest(s), even though they may or may not be formally organized. What makes this definition distinct from one that includes a few random individuals collecting miscellaneous items from the forest is that the users know the shared duties and rights that they hold in common for harvesting from the forest. Shared rights and duties may have evolved through customary law and/or be prescribed by a legislative, judicial, or administrative body of a local, regional, or national government. For an individual to share rights and duties with others, general knowledge of the content of these rights and duties and the legitimacy of their enforcement (even if this is infrequent) should be present.

The word "group" often gives one the idea that a formal organization is being defined. In the IFRI research program, using the phrase "user group" does not necessarily mean a formal group. A set of individuals who share similar rights and duties may exist as a **nascent user group**. Nascent user groups do not regularly participate in an arena for discussing, presenting, and/or arranging for the enforcement of rules about a forest or forests. A nascent user group may be a group of women who gather firewood weekly, who have the same rights to enter the forest and harvest fallen tree limbs as firewood. They know their rights for doing so, but they do not necessarily know each other or meet together to discuss harvesting rules or improved harvesting techniques. A *User Group Form* (Form U) is completed for each nascent group, but not a *Forest Association Form* (Form A).

Other groups of users may know each other and meet somewhat regularly on a weekly, monthly, or yearly basis, choose leaders, and develop some of their own rules and policies related to forest use. Such a **user group** is engaged in at least some governance activities. When a group is organized, the IFRI researcher completes two forms to describe that group: (1) Form U and (2) Form A.

Initially, one form collected the information sought on Forms U and A. By including all of the information about more formal organizations on a separate Form A, researchers are more likely to gather complete information about nascent groups on Form U. Substantial space in the database is also saved by completing Form A only for user groups that are more structured and organized. The key point for research teams to remember is that the information needed about a user group is contained on only one form (Form U) if it is a nascent group, but on two forms (Form U and Form A) if it is an organized group.

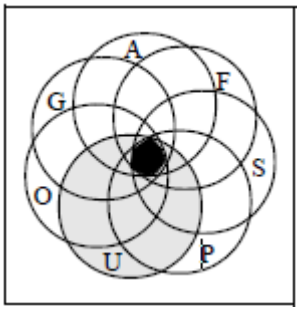
An important difference on Form U is the distinction between the types of forest use. A **forest user** is defined as anyone who makes consumptive or nonconsumptive use of the forest(s). **Consumptive use** could be harvesting grass for forage, cutting trees to sell to a furniture manufacturer, harvesting tree leaves as fodder for cattle, or cutting tree limbs for firewood. **Nonconsumptive use** means "harvesting" (or obtaining) other "products" (or benefits) from the forest(s) such as natural beauty, a place for worship, or a place for recreation. Examples of nonconsumptive uses could be worship at a sacred shrine or walking through the forest, weekly, as recreational activity.

B. PURPOSE OF THE USER GROUP FORM

The purpose of Form U is to document how the use of a forest affects its condition and how the forest itself shapes the behavior of user groups. Form U includes questions about the history of the user group, the relationships of the user group to the settlement and forest, livestock, forest improvement activities, and socioeconomic status of users in the user group. These questions will assist the researcher in defining specific characteristics and activities of users of a forest (or forests) in a given settlement.

C. GUIDELINES FOR DATA COLLECTION

1. Defining a User Group



When the team leader makes the initial visit to the site and identifies the boundaries of the forest, he or she may begin conversations about who uses the forest(s) with the forest owner(s), elder(s), or individual(s) responsible for giving the team leader permission to walk the forest boundaries. User groups that are highly organized with formalized rights for the same forest product may be easier to define than nascent groups that have customary rights that are the same for a general forest product such as trees, but different for products taken from those trees. It is very important for all team members to identify distinctions between rights **per product, per forest,** between legal and illegal actions, and between genders to correctly identify user groups. In some places, for example, customary rights are allocated by gender. While a group may be collecting firewood and appear to be one user group, the women may have rights to certain trees for firewood while the men have rights to other trees. This would be a case for coding two user groups rather than one firewood collection group, because of the distinction customary rights make between genders.

A user group may also be formed from two or more settlements if they all share the same customary and/or legislated rights to use the same forest(s). In this case, the user group is defined by the nature of the rights to use particular forests and not by the settlement in which users live.

Interview as many members of a user group as possible, beginning with the mapping of a site. In situations where a group meeting cannot be organized, individual responses should be tabulated and combined while the researcher writes responses on the coding form.

Key Questions for the Research Team When Defining User Groups in a Site
1. Where are forest users harvesting benefits from the forest(s)?
2. What are forest users harvesting from the forest(s)?
3. Do they meet together to discuss forest use or maintenance of the forest(s)?
4. Do any restrictions exist about entry to the forest(s), the use of the forest(s), and/or the maintenance of the forest(s)?
5. Who decided which restrictions would be imposed on forest users?
6. What are the customary or formalized rights per product per forest?
7. Do the users simply have similar rights or have they formed together to design policy, formulate rules, and/or discuss forest use?

2. Data Collection

As the research team begins to work in a site, they should determine the total number of user groups that harvest from the forest in that area by holding discussions with village elders, conducting a mapping exercise with members of the site, and/or organizing a village meeting to introduce the research team. This will give the team a sense of the time that they will need to devote to the site and the level of complexity of the study. If, for example, the research team discovers that there are ten user groups utilizing three forests in a site, this will be an indicator that the study will be more complex than if there were only two user groups and one forest. Ideally, the assessment of user groups should include a team member who is from the local area.

If this is a pilot study, researchers are strongly encouraged to select a site with a smaller forest and fewer user groups. This strategy will give researchers the opportunity to become familiar with the research instruments because patterns of interaction are complex.

In very complex sites the team leader needs to compile a list of all user groups and select a sample from this list that is as representative as possible of the complete list of user groups.

The questions on this form are asked about the formal, informal, or nascent user groups. Therefore, the field team may find some of the questions difficult or impossible to complete for informal or nascent groups. List only those activities and characteristics that apply.

▶ This is a priority variable. Please make sure this question is answered.

3. Highlights about Questions on the User Group Form

Determining whether a nascent or formal user group exists is important to decide whether to complete only a Form U or both a Form U and a Form A.

The research team will also need to discuss both consumptive and nonconsumptive uses with forest users. Historically, nonconsumptive uses have not been included as valued uses of a forest, leading to unfortunate misconceptions about the value forest users place on the forests that they use. Worship within forests is an integral part of forest use in many cultures. It may be one factor associated with the longevity of some forests.

Assessment of the number of households within a user group versus number of individuals is also important to note on Form U. Numerous questions are asked about both the total number of households and the total number of individual members.

4. Team Leader Responsibilities before Leaving the Site

The team leader must carefully lead the research team through questions about what constitutes a user group and what does not. He or she should be fully aware of the types of debates that can happen in the field as forest boundaries and forest use are assessed. It will be highly likely that questions will arise about which user groups should be counted in the site review, particularly if the team is researching a larger forest. The team leader plays a critical role in helping the team decide how to resolve these situations.

The team leader must carefully check the *User Group Form* (Form U), specifically for the following items:

1. A3 and B1 to make sure that if any response other than 12 in A3 or 1 in B1 is marked, Form A will be completed.
2. All statistics in B2 through B3a.
3. Whether B4, D1, E1, E2, and F17 are coded correctly. Each blank space in these questions requires the team leader to analyze what information should be coded in these spaces.
4. The name of the settlement at the top of Form U matches the name of a settlement on one of the Form Ss completed for a site.

D. SPECIFIC GUIDELINES BY SECTION AND QUESTION

A. History

The questions in this section seek information about the history of the user group named on this form. If this is the very first IFRI visit to this site, fill out the entire section. If this is not the first site visit, then omit this section and fill out only question B0 in the next section.

A2. Please give an approximate date if the exact date of when the user group was first formed is not available. This date may relate directly to when customary or legislated rules for using the forest were established.

A3. If response 12 is coded in A3 and response 1 is coded in B1, there should **not** be a Form A for this user group.

B0. Major Changes Since Last Site Visit

If this is a second or later visit to this site, please describe the **major** changes that this user group has undergone since the last IFRI site visit. For example, the researcher could note changes in size, composition, status, and forest transformation activities.Researcher should carefully read the materials provided from the earlier site visit(s) so it is possible to record relevant changes.

B. Characteristics of the User Group

B1. Please be careful when answering this question. Study the answers provided and check the appropriate response. If the user group is formally organized in any manner with respect to forest use, consider answers (2) through (7). Check answer (1) only if there is no organized decision or rule making in this user group. For instance, in Example 2 (Figure 3, section II.C), User Group 1 from Settlement 1 has a local organization created with limited focus primarily on the forest [answer (6)]. But

User Group 2 from Settlement 2 does not have any formal organization [answer (1)]. Therefore, for User Group 1, the researcher will fill out Form U and Form A; for User Group 2, only Form U will be filled out.

B2 through B2d. This set of questions has a total of five answers. Remember that any children should be included in the total number of individuals in a user group. Thus, for example, the number of female children in the user group (B2b) would be included in the number of individuals who are females in the user group (B2a).

B4. The table in this question may be difficult to fill out if the user group is informal. If formal, then the researcher may be able to check a few of the listed activities. Check only those cells that are appropriate to the nature of the user group. If they never complete the task, check column 4. A row that is unmarked will be considered as missing data.

C. User Group Relationship to a Settlement and a Forest (in General)

This section contains questions about the relationships of the user group to its settlement and a forest in general and some of the factors that may affect this relationship. Some of the questions relate to the extent of dependence on the forest by the user group. For example, the fact that most of the individuals in this user group are employed full time or have other means of livelihood may reduce their dependence on forest products. Also, please keep in mind that some of the questions in this section refer to **individuals** while others refer to **households**.

In this section, researchers obtain qualitative data because, in reality, it is difficult to obtain precise quantitative measures of dependence unless a household survey is developed. Given the time constraints of a site visit and the size of each of the coding forms, a household survey in all sites is not required. If a team needs specific and precise quantitative data on dependence, then a household survey can be developed and added as a supplemental form and analyzed with the IFRI coding forms.

C1. Before answering this question, determine what the local definition (or equivalent) of a "household" is and then proceed. See A5 on Form S.

C2 through C5. Note that each of these questions refers to **individuals** in a user group.

C5. If "no" is coded in C5, go on to section D.

D. Livestock

D1. This is a general question and refers to the total number of animals owned by members of a user group. Add up the total number of animals of each kind owned by all individuals in the group and fill out the first column. The table presented here requires the researcher to fill out four columns and as many rows as there are different types of animals owned by various individuals of the user group. After filling out the first column, rank the three most important types of animals in the second column. Column two does not require completing more than three cells. Researchers determine the importance of the animals based on the responses of **most** of the individuals in this user group. The third and fourth columns ask the researcher to fill out the numbers of animals of each type that feed within or outside the forest. If columns one, three, or four are blank, they will be counted as missing-in-case. In column two, missing data will be counted as not applicable (if data are missing from the other rows).

D4. Answer "Yes" if there are grazing areas outside the forest(s). Refer to questions D4a–D4e for examples of such areas.

D4a–D4e. Please be careful when answering these questions. They refer to grazing in relationship to ownership of property, not habitat.

E. User Group Improvement Activities in the Forest

The questions in this section refer to activities undertaken by individuals in the user group. It may be difficult to answer some of the questions if this group is relatively informal.

F. User Group Socioeconomic Status

The questions in this section are of a sensitive nature. Researchers may not be able to receive answers from respondents for some questions by direct questioning. Broad questions, such as "Tell me how you define wealth and its relationship to forest users," will elicit more information than "Do you consider yourself to be wealthy?"

F4-F6c. These questions relate to the degree of wealth/poverty of either **individuals** or **households** of the user group. Wealth (or poverty) is measured by different standards in different locations around the world. Cash or monetary equivalents may be inappropriate ways to measure wealth. Cattle, camels, certain tree species, etc. may be more descriptive of wealth. Complete the questions keeping local definitions of wealth and poverty in mind.

F11. This question is aimed at the occupational structure of the user group. Describe what the majority of the individuals in this user group do for a living. You may use percentages or proportions to answer this question, though percentages are preferable. If any of the individuals have more than one means of livelihood, list the most common combinations in F12.

F12. This question asks for a list of the most common combinations of occupations for individuals of this group. For example, an individual can both farm and make charcoal, or farm and own a tea shop.

F13-F16b. These questions try to elicit information about the extent of dependence on the forest by most of the **households** in the user group. When food is not available from agriculture, households may be more dependent on forest products. If most of the households have surplus food crops, then the pressure on the forest for food may be less.

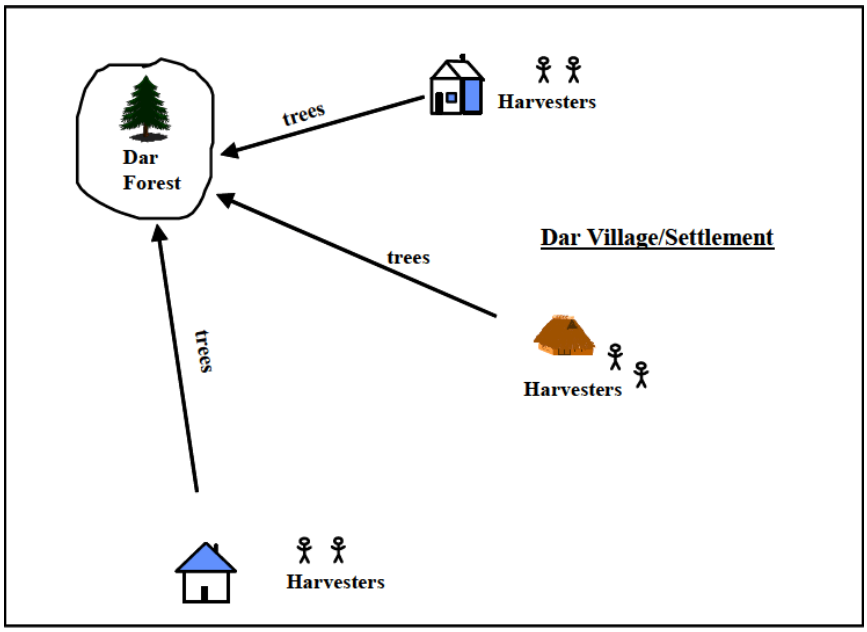
F17-F17c. These questions try to determine the standard of living of **individuals** or **households** in the user group. Please study the lists carefully for the most frequently found combinations of house and roof. If only the most frequent kind or only the most frequent and second-most frequent kinds are answered, the team leader MUST check with researchers about why the other(s) was/were not answered and mark it/them MIC or NA.

F19-F19c. These questions ask the researcher to assess the nature of issues related to conflict within this user group. These questions should be answered only after the researcher has talked to a number of individuals within the user group. It also may be useful to talk to one or two individuals who know about the user group, but are not part of it.

▶ This is a priority variable. Please make sure this question is answered.

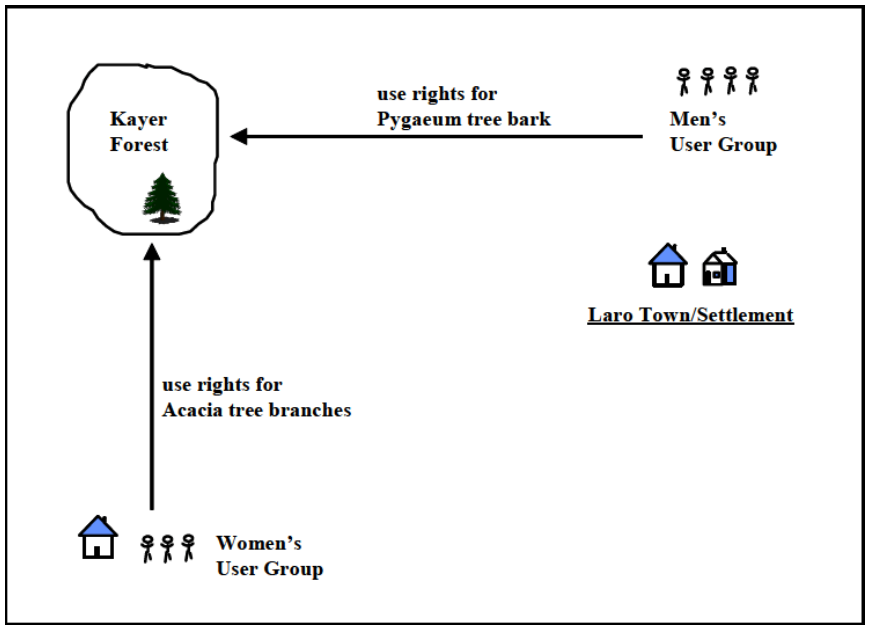
BOX 6: EXAMPLES OF USER GROUPS

a) A user group can be synonymous with an entire village/settlement. However, the name given to the user group *should not* be the same as the name of the village/settlement or forest. For example, forest users from the village of Dar legally harvest trees from Dar Forest. The forest can be harvested at any time, so all have the same rights of access. Users do not necessarily know about each other's harvesting patterns and do not formulate rules together, but harvest trees from the forest. This is a case of a nascent user group that harvests trees, but has no formal organizational structure.In this case, Form S, Form U, and Form F should be clearly marked: Dar Settlement, Dar Forest, and Liara User Group. Researchers should not complete a *Forest Association Form* in this case. They should code other research instruments as they collect more information.



Liara User Group

b) Another example of the type of user group that a research team might find is one whose members have different rights of access per forest product (e.g., different boundary, position, and allocation rules). For example, the women in Laro may only be able to harvest Acacia tree branches for firewood—not Acacia fruit, which belongs to the forest gods. The men in Laro may only be able to harvest bark of the Pygaeum tree for medicinal processing—not the trunk or branches. The rules of harvesting have been handed down by custom and enforced by the village chief for centuries. Thus the users have the legal right to harvest, but no formal organization. In this case, researchers will complete two Form Us, one Form F, and one Form S. They will not fill out a *Forest Association Form*, but will complete a *Forest Governance Form* for the traditional authority structure as represented by the village chief. They should code other research instruments as they collect more information.

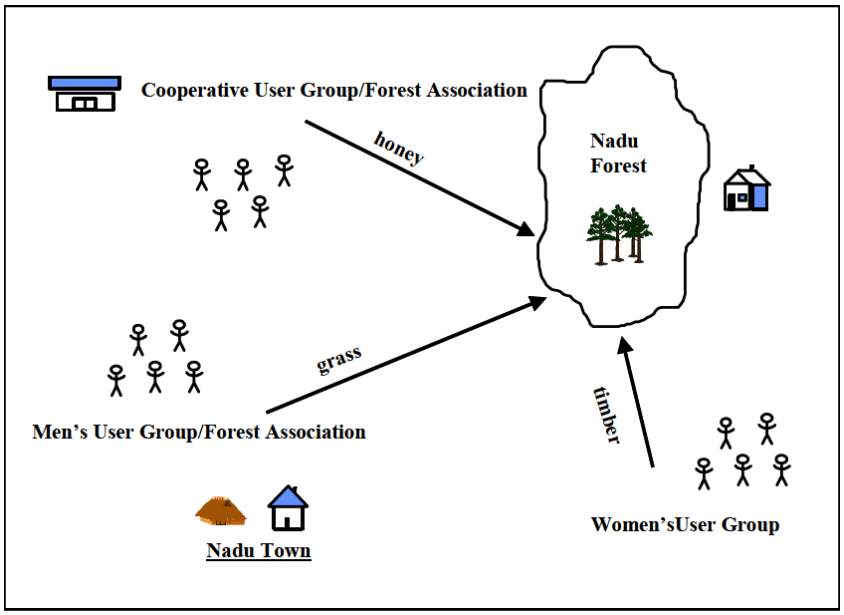


Women's and Men's User Groups

▶ This is a priority variable. Please make sure this question is answered.

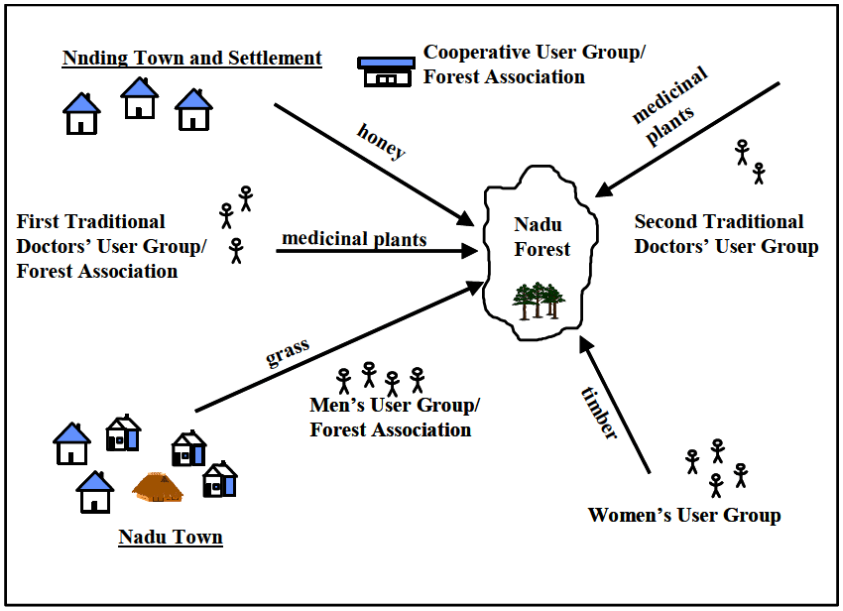
BOX 7: EXAMPLES OF USER GROUPS

a) The users in another case may include: (a) women from the town of Nadu who cut timber but do not know other timber harvesters and do not meet together to discuss rules about harvesting, yet they know that they can only cut timber once during the first week of each month; (b) women and men who collect honey from trees in the forest and meet once a month as a honey cooperative; and (c) men who harvest fodder for cattle in the winter months only and have a meeting twice a month about where cattle should graze, where individuals should harvest fodder, and how to sanction those who allow cattle to overgraze. In this case, researchers should complete forms for two formal user groups (Cooperative User Group and Men's User Group) and one nascent user group (Women's User Group). They should complete three Form Us, two Form As, and one Form F. Other research instruments will be completed as the field team completes their study.



Cooperative, Men's, and Women's User Groups

b) A fourth possibility is an example of a user group that consists of members from two or more settlements. In this example, the Traditional Doctors from Nnding and Nadu Settlements are harvesting from one forest. They meet together once a year to talk about availability of rare ground cover species and how to design rules that ensure the quality and quantity of medicinal plant species. It is important, in this case, for the research team not only to interview at a very local level but also to discover what is happening in neighboring villages and towns in relationship to the defined settlements in this site. Perhaps there are more doctors who share these rights of access for harvesting medicinal plants. In this case, researchers will complete four Form Us, one Form F, and two Form Ss. Other research instruments will be completed as the field team completes their study.



First Traditional Doctors' User Group/Forest Association (in addition to other User Groups/Forest Associations)

▶ This is a priority variable. Please make sure this question is answered.

IFRI FORM U

USER GROUP FORM

*A user group is a group of people who harvest from, use, and/or maintain a forest and who share the same rights and duties to products from a forest(s); they may or may not be formally organized. A **forest user** is defined as anyone who makes consumptive or nonconsumptive use of the forest(s). This form has been designed to capture information about any user group that makes consumptive (e.g., harvesting trees) and/or nonconsumptive use (e.g., walking in the forest) of a particular forest or forests. One User Group Form should be filled out for each user group sharing the same rights to the same forest(s).*

Give the formal name of the user group if it has one. If the user group does not have a formal name, the field researcher needs to assign a name to each user group. The name should not contain the name of the settlement nor be associated with a particular product harvested from the forest(s).

Research ID: 005 Country ID: GUA Site ID: 001.

Date of site visit (mm-dd-yr): 07-31-96.

Date(s) data collected for this form (mm-dd-yr): 07-31-96 through 09-26-96.

►**Name of user group** <UNAME>: La Bamba.

Name(s) of settlement(s) where most individuals in this user group live <ID> Moran-Naranjo.

Name(s) of forest(s) used <ID>: El Sitio.

Name of person filling out this form: Clark Gibson.

Name(s) of person(s) with whom discussions held: community majority

Location of discussions (fields, home of respondent, place of business, etc.): homes and fields

At least three people should be interviewed on all Form U questions.

►**Has this user group been coded before?** <UCODED>

Mark only one answer.

(1) × No

(2) _____ Yes

(3) _____ Uncertain

(4) _____ Yes, with a different name *(If this response is checked, write old and new names in B0.)*

A. HISTORY

Fill out this section if this is the first field visit. If the structure of the group has changed over time, a new User Group Form should be filled out on subsequent visits. However, if the structure has not changed, but sections of the history need to be updated, add additional information below on subsequent visits.

Remember that the word "group" does not necessarily mean formal organization. It means those individuals sharing the same customary or legal rights to products for the forest(s).

►**A1.** **Briefly describe this user group.** ***(long text)*** <UDESCRIBE>

Note: Begin with a general description and add more details. Some details may include where the group lives, cultivation of similar crops, or following similar occupations. Specify what makes this group distinct from other user groups if there is more than one group that uses the forest. Please include whether the group lives at this location permanently or is a transhumant (pastoral or herder) group.

The user group consists of all the inhabitants of Moran and Naranjo. All of the community's members are basically subsistence agriculturalists. They practice agriculture on private and communal lands. "EI Sito" is the name the community has given to communal lands that belong to the municipality. The municipality assigns an individual with power of attorney to represent the inhabitants and communal lands before any relevant government body. Approximately 20 years ago, a wood company used the forest and removed a considrable number trees, which have since regrown. In 1990, the area was declared part of the Sierra de Las Minas Biosphere Reserve. Since the beginning of 1995, Nature's Defense Foundation has had an extension agent in Moran. Because the user group is formed by all the members of the settlement, please consult the settlement form for more details on the settlement.

► This is a priority variable. Please make sure this question is answered.

►A2. **When was this user group first formed? <UYEAR> (year)** MIC

← Give an approximate date if known. If unknown, mark MIC or -1

►A3. **What was the most important reason for forming this group? <UREASON1>**
Mark only one answer.

← Be sure to mark only one answer when this instruction is

(1) _____ Provide primary individual products for member use on subsistence level

(2) _____ Provide primary products for members' livestock

(3) _____ Provide income for members on subsistence level (through sale of forest products)

(4) _____ Provide social interaction for members while carrying out an individual task

(5) _____ Provide income for the group on commercial, national level through production

(6) _____ Provide income for the group on commercial, regional level through production

(7) _____ Provide income for the group on commercial, local level through production

(8) _____ Religious purposes

(9) _____ Government program

(10) _____ International project

(11) _____ Location

(12) *x* The group was never self-consciously formed, users simply have similar rights

(13) _____ Recreation

(14) _____ Other *(describe)* <UREAS1OTH>: _____

►A3a. **What was second most important reason for forming this group? <UREASON2>**
Mark only one answer.

(1) _____ Provide primary individual products for member use on subsistence level

(2) _____ Provide primary products for members' livestock

(3) _____ Provide income for members on subsistence level (through sale of forest products)

(4) _____ Provide social interaction for members while carrying out an individual task

(5) _____ Provide income for the group on commercial, national level through production

(6) _____ Provide income for the group on commercial, regional level through production

(7) _____ Provide income for the group on commercial, local level through production

(8) _____ Religious purposes

(9) _____ Government program

(10) _____ International project

(11) _____ Location

(12) *x* The group was never self-consciously formed, users simply have similar rights

(13) _____ Recreation

(14) _____ Other *(describe)* <UREAS2OTH>: _____

►A4. **Is the group's present structure the same as it was in the beginning? <USTRUCTURE>**
Mark only one answer.

(1) _____ No

(2) _____ Yes

► This is a priority variable. Please make sure this question is answered.

►A5. How has the user group changed over time? ***(long text)*** **<UHOWCHANGE>**

In the space provided, please describe the kinds of changes experienced by the user group. For example, the size of the group could have increased because of new families in the settlement or because two user groups were united to form one group. Another example could be a change in composition of the user group—from being dominated by one caste, gender, or ethnic group to less or no dominance from any of these groups. In addition, if this group has recently achieved formal status, describe some of the important reasons for this change in status.

The user group has undergone constant growth. There has been immigration to Jones, La Espinilla, Tabacal, and nearby small communities. Part of the population has migrated to the Peten, the United States, and to coastal zones.

B0. MAJOR CHANGES SINCE LAST SITE VISIT

►B0. Have there been any major changes in the user group since the last visit, and if so, what were they? ***(long text)*** **<UHISTCHNG>**

Do not complete if this is the first visit to this site to record information for the IFRI database.

N/A

► This is a priority variable. Please make sure this question is answered.

B. CHARACTERISTICS OF THE USER GROUP

►B1. What is the nature of the user group? <UNATURE>

If any of the answers 2 through 6 are checked, be sure to complete a Forest Association Form (Form A).

Mark only one answer.

(1) [x] The user group is identifiable without formal organization (no *Forest Association Form* filled out)

(2) [ ] The user group is organized as a cooperative

(3) [ ] The user group is organized as a nonprofit organization

(4) [ ] The user group is organized as a for-profit organization

(5) [ ] The user group is organized as a family or clan

(6) [ ] Other
<UNATUREOTH>: _____

►B2. What is the number of individuals in the user group? <UINDNUM> 290

Make sure B2a plus B2c equals B2.

B2a. How many individuals in the user group, including adults and children, are female? <UINDFEMALE> 138

B2b. How many children in the user group are female? <UCHILDFEM> 90 e.g. 72

B2c. How many individuals in the user group, including adults and children, are male? <UINDMALE> 152

B2d. How many children in the user group are male? <UCHILDMALE> 90

►B3. What is the number of households (as locally defined) in this group? <UHHNUM> 69

B3a. How many women-headed households (as locally defined) are in this group? <UHHFEMALE> 8

B4. When, and how, do individuals in the user group interact?
If a row is unmarked it will be counted as missing-in-case.

When / How	On tasks within the forest(s): *Check only one answer per line in this section.*				On tasks outside the forest(s): *Check only one answer per line in this section.*			
	(1) Year round	(2) Seasonally	(3) Occasionally	(4) Never	(1) Year round	(2) Seasonally	(3) Occasionally	(4) Never
(1) Cooperative harvesting	►<UHARVIN>				►<UHARVOUT>			
			X			X		
(2) Cooperative processing	►<UPROCIN>				►<UPROCOUT>			
			X				X	
(3) Cooperative marketing/sales	►<UMKTIN>				►<UMKTOUT>			
				X				X
(4) Financial contracts	►<UCONTRIN>				►<UCONTROUT>			
				X		X		
(5) Monitoring/sanctioning	►<USANCTIN>				►<USANCTOUT>			
			X		X			
(6) Maintenance	►<UMAINTIN>				►<UMAINTOUT>			
				X			X	

C. USER GROUP RELATION TO A SETTLEMENT AND A FOREST (IN GENERAL)

►C1. Approximately how many households (as locally defined) in this user group have members who work outside the settlement? <UHHOUT> 5

← See definition of household in Form S Guidelines, and on question A5 of Form S.

C2. How many **individuals** in the user group work outside the settlement? <UINDOUT> 5.
For this question, include all **individuals** in the user group who work outside *the settlement—whether in cities, in local towns, or in other settlements.*

C2a. How many of these **individuals** are women? <UINDOUTFEM> 0

Note that C2, C2a, C3, C4, and C5 specifically refer to individuals ←

►C3. How many of the individuals in the user group (men and women) are employed in full-time jobs? <UINDOUTFUL> 0

C4. How many of the **individuals** in the user group who work outside the settlement AND who are employed full time live locally? <UINDOUTLOC> 0

Locally refers to people who return to their homes every day.

► This is a priority variable. Please make sure this question is answered.

►C5. Do members of the user group receive any type of assistance from family or friends who do not live locally? <URECASST>

Mark only one answer.

(1) ____ No *(Skip questions C5a through C5e1 and proceed to section D.)*

(2) X Yes

If yes, answer questions C5a–C5e1, based on this lead-in: Do non-local family and friends:

►C5a. Send remittances to members of the user group? <UINDREMIT>

Mark only one answer.

(1) ____ No

(2) X Yes

C5b. Help members of the user group find jobs? <UINDJOBS>
Mark only one answer.

(1) ____ No

(2) X Yes

C5c. Help members of the user group procure agricultural inputs (seeds, technology, fertilizers, other)? <UINDAGR>

Mark only one answer.

(1) ____ No

(2) X Yes

C5d. Help members of the user group when they visit the settlement? <UINDHELP>

The help could be in the form of cash.

Mark only one answer.

(1) ____ No

(2) X Yes

C5e. Help through other means? <UINDOTH>

(1) X No

(2) ____ Yes

Mark only one answer.

C5e1. If yes, describe. *(text)* <UINDDESC>

N/A

► This is a priority variable. Please make sure this question is answered.

D. LIVESTOCK

D1. Approximately how many types of animals are owned by the **individuals** in the entire user group? {U_ANIMAL}

►Type of Animal <U_ANTYPE>	►How many? <U_ANNUM>	►Rank top 3 in importance (1 is most important) <U_ANRANK>	How many graze in the forest(s)? <U_ANGRAZE>	How many are enclosed in an area but are fed fodder that is cut inside the forest(s)? <U_ANFODDER>
(1) Cattle	225	3	225	0
(2) Water buffalos	N/A			
(3) Sheep	N/A			
(4) Goats	N/A			
(5) Camels	N/A			
(6) Donkeys and mules	35	1	35	0
(7) Horses	35	2	35	0
(8) Poultry	1200	4	0	0
(9) Rabbits	N/A			
(10) Pigs	4		4	0
(11) Other *(describe)*: <UANOTH>	120		0	0

↑ Note that when asked "how many," this should be the total sum for the user group ↑

D2. Why is the top-ranked animal in the question above seen as most important? For example, the water buffalo could be seen as most important because it provides milk, is used for plowing, and provides dung for fertilizer and fuel. *(text)* <UANTOPWHY>

Beasts of burden are very important for the transport of grains and firewood, because these resources are harvested far away from settlements

►**D3.** **How many individuals in the user group own livestock?** <UINDANOWN> 69

For questions D4–D4e, note that "forest(s)" refers to forest(s) in general, not specific forest(s) used by the user group.

►**D4.** **Do other grazing areas exist in this site outside the forest(s) in this site?** <UGRAZEOUT>
Mark only one answer.

(1) ____ No

(2) X Yes

► This is a priority variable. Please make sure this question is answered.

D4a. If communally owned agricultural plots in the site are used for grazing, they are: <UAGPLOTCOM>
Mark only one answer.

(1) _____ Available all year

(2) X Available part of the year

(3) _____ Available infrequently

►D4b. If privately owned agricultural plots in the site are used for grazing, they are: <UAGPLOTPRIV>
Mark only one answer. N/A

(1) _____ Available all year

(2) _____ Available part of the year

(3) _____ Available infrequently

D4c. If common pasture lands in the site are used for grazing, they are: <UPASTURECOM>
Mark only one answer.

(1) X Available all year

(2) _____ Available part of the year

(3) _____ Available infrequently

D4d. If private pasture lands in the site are used for grazing, they are: <UPASTUREPRIV>
Mark only one answer.

(1) _____ Available all year

(2) _____ Available part of the year

(3) X Available infrequently

D4e. If the public areas in the site are used for grazing, they are: <UFORAGE>
Mark only one answer. N/A

(1) _____ Available all year

(2) _____ Available part of the year

(3) _____ Available infrequently

E. USER GROUP FOREST IMPROVEMENT ACTIVITIES

E1. During the past year, have individuals in this user group adopted any of the following individual technologies that reduce their need for forest products?

Technology	Mark "1" for No, "2" for Yes	If yes, describe: <UTECHDESC>
More efficient wood-burning stoves?	►<USTOVES> 1	N/A
Pressure cookers?	►<UCOOKERS> 1	N/A
Other individual technology that reduces the need for forest products?	►<UNEWTECH> 1	N/A

► This is a priority variable. Please make sure this question is answered.

For questions E2–E2a, note that "forest(s)" refers to forest(s) in general, not specific forest(s) used by the user group.

►**E2.** **Has any individual in this group acted as a leader (entrepreneur)—investing time, energy, and perhaps money—in trying to work out coordinated strategies within the group concerning maintenance, investment in upgrading the forest(s), or harvesting forest products?** <ULEADER>

Mark only one answer.

(1) x No

(2) _____ Yes

►**E2a.** **If yes, what types of activities are undertaken by this individual?** ***(long text)*** <ULEADERACT>

N/A

F. USER GROUP SOCIAL-ECONOMIC STATUS

F1. Name the ethnic groups in the user group and the number of individuals within each ethnic group.
{U_SES} <U_GRPTYPE>="ETHNIC"

Multiple answers may be applicable.

Ethnic group name <U_GRPNAME>	Number of individuals <U_GRPNUM>
Ladino	290 (all)

F2. Name the religious groups in the user group and the number of individuals within each religious group.
{U_SES} <U_GRPTYPE>="RELIGION"

Multiple answers may be applicable.

Religion name <U_GRPNAME>	Number of individuals <U_GRPNUM>
Christian (evangelical, Roman Catholic,and Jehova's Witness)	all

If exact numbers are unknown in F1, F2, and/or F3, give approximate numbers.

► This is a priority variable. Please make sure this question is answered.

F3. Name the castes (or other social hierarchy that is specific to the country) in the user group and the number of individuals in each caste. {U_SES} <U_GRPTYPE>="CASTE"

Multiple answers may be applicable.

Name <U_GRPNAME>	Number of individuals <U_GRPNUM>
N/A	

►F4. **How do individuals in the user group define wealth?** ***(text)*** **<UDEFWEALTH>**

Indicators of wealth include owningbeasts of burden, cattle, a house, the harvesting of corn and beans that cover household needs, coffee, and good health.

← These definitions (F4 and F5) should be obtained by asking individuals in the user group →

►F5. **How do individuals in the user group define poverty?** ***(text)*** **<UDEFPOV>**

Poor peasants of the settlement are those whose cultivation of basic grains can only Cover family consumption. They do not have coffee or cattle. The poorest people need to purchase their grain because they do not have enough land to maintain subsistence. Another indicator of poverty is having lots of children. A family with roughly six or more children is considered poor.

►F6. **Given the local definition of wealth, is there a great difference in wealth among households (as locally defined) in the user group? <UWEALTHDIF>**

Mark only one answer.

(1) X No

(2) ____ Yes

►F6a. **If yes, describe:** ***(long text)*** **<UWLTHDESC>**

N/A

► This is a priority variable. Please make sure this question is answered.

►F6b. **If yes, how many households (as locally defined) in the user group are usually regarded as being wealthy?** <UHHWEALTHY> N/A

►F6c. **If yes, how many households (as locally defined) are usually regarded as being poor?** <UHHPOOR> N/A

►F7. **How many individuals in the user group are literate?** <UINDLIT> 150

Here "literacy" is defined as possessing at least basic reading and writing skills. Information on this question could probably be best obtained from the local teacher or postal delivery person.

►F8. **How many individuals have passed primary school?** <UPRIMEDU> MIC

►F9. **How many individuals have passed high school?** <USECEDU> 1

F10. How many individuals are college educated? <UCOLLEDU> 0

►F11. **Describe the occupational structure of the individuals who are part of this user group. For example, what proportion farm on their own land, are tenants, or are landlords; what proportion gain their livelihood through small-scale -commercial operations; what proportion gain most of their livelihood from cutting wood or making charcoal?**
(long text) <UOCCDESC>

All members of the user group are subsistence agriculturalists. Some families do produce a surplus of corn and beans that they sell. Only one member of the community has as his principal occupation the sale of firewood, and no one considers this person to be rich.

There are three ways to possess land: (1) private with legal title; (2) lands in EI Sitio that are assigned to different members of the group, but such rights are not formalized; (3) the lands in EI Sitio not assigned to a specific member are available for use by all persons. The local definition of possession includes 1 and 2 above, and those people are considered to be owners.

F12. List the most common combinations of occupations: *(brief text)* <UOCCCOMB>

MIC

► This is a priority variable. Please make sure this question is answered.

►**F13.** **How many households (as locally defined) in the user group own agricultural land?** <UHHOWNLAND> MIC

►**F13a.** **Please provide the local definition of "to own" and comment on gender of ownership.** <UDEFGENDER>
MIC

►**F14.** **How many households (as locally defined) in the user group own agricultural land, but the land is not sufficient to meet their subsistence food needs?** <UHHINSUFF> 0

►**F15.** **For how many months of a year do most households (as locally defined) in the user group consume their own food crops?** <UHHEATCROP> 12 **months**

►**F16.** **How many households (as locally defined) in the user group have surplus food?** <UHHSURPLUS> 40

►**F16a.** **Of these households (as locally defined), the surplus food is <u>primarily</u>:** <UHHSURPRIM>
Mark only one answer.

(1) x Grains
(2) _____ Root crops
(3) _____ Animals

F16b. How many **households** (as locally defined) sell food grain? <UHHSELLGRN> 40

F17. What is the most frequent kind of house lived in by the user group? <UHOUSE1>
Mark only one answer.

(1) _____ Stone/concrete/brick house with a roof of concrete/tile/good wood or stone shingles
(2) _____ Stone/concrete/brick house with a roof of corrugated or sheet metal, warped shingles
(3) _____ Stone/concrete/brick house with a roof of thatch/straw/other vegetation
(4) _____ Stone/concrete/brick house with roll roofing/polyethylene sheet or salvaged material
(5) _____ Stone/concrete/brick house with a roof with a large hole
(6) _____ Mudbrick house with a roof of concrete/tile/good wood or stone shingles
(7) x Mudbrick house with a roof of corrugated or sheet metal, warped shingles
(8) _____ Mudbrick house with a roof of thatch/straw/other vegetation
(9) _____ Mudbrick house with roll roofing/polyethylene sheet or salvaged material
(10) _____ Mudbrick house with a roof with a large hole
(11) _____ Grass/stick/wattle house with a roof of concrete/tile/good wood or stone shingles
(12) _____ Grass/stick/wattle house with a roof of corrugated or sheet metal, warped shingles
(13) _____ Grass/stick/wattle house with a roof of thatch/straw/other vegetation
(14) _____ Grass/stick/wattle house with roll roofing/polyethylene sheet or salvaged material
(15) _____ Grass/stick/wattle house with a roof with a large hole
(16) _____ Other *(describe)* _____

► This is a priority variable. Please make sure this question is answered.

F17a. What is the second most frequent kind of house lived in by the user group? <UHOUSE2>
Mark only one answer.

(1) _____ Stone/concrete/brick house with a roof of concrete/tile/good wood or stone shingles
(2) _____ Stone/concrete/brick house with a roof of corrugated or sheet metal, warped shingles
(3) _____ Stone/concrete/brick house with a roof of thatch/straw/other vegetation
(4) _____ Stone/concrete/brick house with roll roofing/polyethylene sheet or salvaged material
(5) _____ Stone/concrete/brick house with a roof with a large hole
(6) _____ Mudbrick house with a roof of concrete/tile/good wood or stone shingles
(7) _____ Mudbrick house with a roof of corrugated or sheet metal, warped shingles
(8) X Mudbrick house with a roof of thatch/straw/other vegetation
(9) _____ Mudbrick house with roll roofing/polyethylene sheet or salvaged material
(10) _____ Mudbrick house with a roof with a large hole
(11) _____ Grass/stick/wattle house with a roof of concrete/tile/good wood or stone shingles
(12) _____ Grass/stick/wattle house with a roof of corrugated or sheet metal, warped shingles
(13) _____ Grass/stick/wattle house with a roof of thatch/straw/other vegetation
(14) _____ Grass/stick/wattle house with roll roofing/polyethylene sheet or salvaged material
(15) _____ Grass/stick/wattle house with a roof with a large hole
(16) _____ Other *(describe)* _____

F17b. What is the third most frequent kind of house lived in by the user group? <UHOUSE3>
Mark only one answer.

(1) _____ Stone/concrete/brick house with a roof of concrete/tile/good wood or stone shingles
(2) X Stone/concrete/brick house with a roof of corrugated or sheet metal, warped shingles
(3) _____ Stone/concrete/brick house with a roof of thatch/straw/other vegetation
(4) _____ Stone/concrete/brick house with roll roofing/polyethylene sheet or salvaged material
(5) _____ Stone/concrete/brick house with a roof with a large hole
(6) _____ Mudbrick house with a roof of concrete/tile/good wood or stone shingles
(7) _____ Mudbrick house with a roof of corrugated or sheet metal, warped shingles
(8) _____ Mudbrick house with a roof of thatch/straw/other vegetation
(9) _____ Mudbrick house with roll roofing/polyethylene sheet or salvaged material
(10) _____ Mudbrick house with a roof with a large hole
(11) _____ Grass/stick/wattle house with a roof of concrete/tile/good wood or stone shingles
(12) _____ Grass/stick/wattle house with a roof of corrugated or sheet metal, warped shingles
(13) _____ Grass/stick/wattle house with a roof of thatch/straw/other vegetation
(14) _____ Grass/stick/wattle house with roll roofing/polyethylene sheet or salvaged material
(15) _____ Grass/stick/wattle house with a roof with a large hole
(16) _____ Other *(describe)* _____

F17c. Describe other type of house. *(text)* <UHOUSEOTH>

There are a few houses made from wood planking.

▶ This is a priority variable. Please make sure this question is answered.

►F18. What type of fuel do most individuals in the user group utilize for cooking? <UFUELCOOK>

Mark only one answer.

(1) _____ Electricity or gas

(2) _____ Oil

(3) X Wood

(4) _____ Charcoal

(5) _____ Small sticks or scrap wood

(6) _____ Weeds, leaves, dung

►F19. During the last two years, have individuals in this group faced any issues that have engendered conflict within the user group? <UCONFLICT>

Mark only one answer

(1) _____ No

(2) X Yes

►F19a. If yes, please describe the nature of this conflict: *(long text)* <UCONFDESC>

1. The Finance Police intervened on two occasions to sanction two members of the group who had cut a considerable amount of forested land. One of those parcels of land was approximately the size of 3 manzanas.

2. One person who does not own land faced some obstacles preventing him from working lands in EI Sitio. Such problems probably stemmed from a personal conflict with other members of the group.

3. The owner of a farm to the north of the settlement has guards on his land, and someone once attempted to enter his property and was expelled by the guards.

4. One person immigrated and rented his lands for pasture. His lands were also invaded by other livestock.

►F19b. During the past year, would you say that the level of conflict within the group has: <UCONFLEVL>

Mark only one answer.

(1) _____ Increased

(2) X Remained the same

(3) _____ Decreased

►F19c. During the past year, would you say that the level of conflict has been: <UEFFECT>

Mark only one answer.

(1) _____ Disruptive of normal activities

(2) X Disruptive upon occasions

(3) _____ Channeled in ways that are not disruptive of normal activities

► This is a priority variable. Please make sure this question is answered.

GEN. GENERIC QUESTIONS FOR USE BY RESEARCHERS

Please write your question(s) and the answer(s) where indicated below. **Enter the methodology and all questions together into the database under** <UWKSPMEMO>. Enter each answer into the database under the data name specified for each answer below. See Section II of the Field Manual for more detailed instructions.

Please describe why you are asking the generic questions below and/or what methodology you used to collect the data provided below. *(long text)* <UWKSPMEMO>

Question 1 (answer requires a whole number):

Answer to question specified by researcher *(integer)* <UGENSNUM1> _____

Question 2 (answer requires a whole number):

Answer to question specified by researcher *(integer)* <UGENSNUM2> _____

Question 3 (answer requires a whole number):

Answer to question specified by researcher *(integer)* <UGENSNUM3> _____

Question 4 (answer requires a whole number):

Answer to question specified by researcher *(integer)* <UGENSNUM4> _____

Text question 1:

Answer to question specified by researcher *(text)* <UGENTEXT1>

Text question 2:

Answer to question specified by researcher *(text)* <UGENTEXT2>

▶ This is a priority variable. Please make sure this question is answered.

Text question 3:

Answer to question specified by researcher *(text)* <UGENTEXT3>

Question 1 (answer requires a decimal number):

Answer to question specified by researcher *(decimal)* <UGENLNUM1> _____

Question 2 (answer requires a decimal number):

Answer to question specified by researcher *(decimal)* <UGENLNUM2> _____

Question 3 (answer requires a decimal number):

Answer to question specified by researcher *(decimal)* <UGENLNUM3> _____

Question 4 (answer requires a decimal number):

Answer to question specified by researcher *(decimal)* <UGENLNUM4> _____

Answer(s) to question(s) specified by researcher that require(s) more than 250 characters *(long text)* <UGENMEMO>

▶ This is a priority variable. Please make sure this question is answered.

III.A.6. FORM A—FOREST ASSOCIATION FORM: GUIDELINES

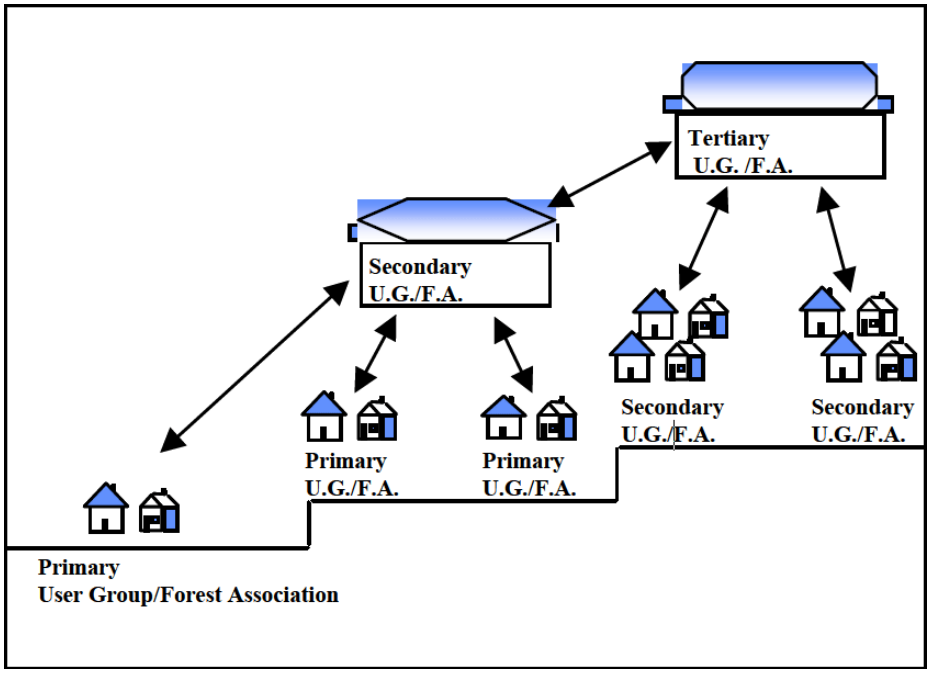
A. DEFINITION OF A PRIMARY, SECONDARY, AND TERTIARY FOREST ASSOCIATION

A **forest association** is a user group (or groups) with rules, policies, and/or guidelines about a forest (or forests), some of which the users have prescribed for themselves. In the case where user groups prescribe rules, policies, or guidelines for themselves, the forest association will be considered a **primary association.** A small handicraft business, a large timber company, and a user group of mushroom gatherers can form a forest association or be individual forest associations.

A **secondary forest association** is defined as two or more forest associations that work together to accomplish joint activities and/or objectives with rules, policies, and/or guidelines, some of which have been prescribed by the secondary forest association.

A **tertiary forest association** (or parent organization) is defined as two or more secondary forest associations that work together to accomplish some joint activities and/or objectives with rules, policies, and/or guidelines, some of which have been -prescribed by the tertiary association.

FIGURE 14
DIAGRAM OF FOREST USER GROUP/FOREST ASSOCIATIONS IN NESTED LEVELS OF GOVERNANCE

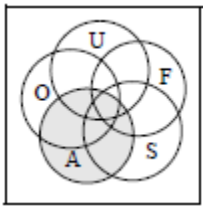


B. PURPOSE OF THE FOREST ASSOCIATION FORM

The *Forest Association Form* (Form A) was designed to code the governance activities of an organized forest user group or federation of user groups. Form A was originally part of Form U. It was separated so researchers could code user groups even when they are not highly organized. The separation of the two forms also provides the researcher with the means to code federated levels of forest associations. Information on Form A is elicited about rules-in-use for harvesting and monitoring a forest, and whether users can make or modify rules about the resources they use. It also gives the researcher the opportunity to record how the user group is formed, staffed, and monitored. If there are areas of conflict, questions are provided to elicit whether there is access to fair resolution.

C. GUIDELINES FOR DATA COLLECTION

1. Defining User Group/Forest Association/Federated Levels



The team leader and IFRI researchers will need to have a clear idea about the patterns of forest use to complete Form A. Some user groups will not have a formal organizational structure but still meet to formulate, modify, and enforce rules about forest use and maintenance. Others will have office buildings and central locations for meeting or for storing records, money, or equipment.

Many of the questions in section C are about education, ethnicity, finances, gender, and religion. Some of these questions may be sensitive to respondents. Sensitivity will vary depending on the cultural setting. To ask these -questions, some knowledge of these subjects, as they relate to the site, will be necessary in advance of the site visit. The research team should gather as much of this information as possible before arriving at the site (see section IV). Information, collected in advance, which would be helpful in properly coding these questions will include:

- general levels of education of people living in and around the forest site
- the types of ethnic groups represented in and around the forest site
- general levels of income of people living in and around the forest site
- gender roles of those living in and around the forest site
- the types of religious groups represented in and around the forest site

Key Questions for the Research Team in the Process of Defining a Forest Association

1. How are the user groups organized?
2. What are the rules for harvesting and maintaining the forest?
3. Which rules have been formulated or modified by the user group or have evolved over time?
4. What is the relationship of each user group/forest association to other governance organizations?
5. Do the user group/forest associations meet with other forest associations to formulate rules about forest use or maintenance (once a month, twice a year, etc.)?
6. Where do the forest users meet together to formulate and discuss forest rules?
7. How do they jointly function? When?

2. Data Collection

Some of the initial data on this form are obtained at the first group meetings, where they use community mapping techniques. The level of organization per user group can begin to be addressed by simply asking settlement members to discuss whether and how user groups meet to discuss business.

It is important to interview a number of individual members from each forest association.

3. Highlights on the Forest Association Form

B1 addresses operational rules that have been passed and/or modified for a series of activities by the forest association.

In section C, under "governance and structure," the selection of (1) general representational body or (2) executive committee in C1 will determine which unit the researcher is considering for the remainder of section C.

4. Team Leader Responsibilities Before Leaving the Site

If columns two, three, and four in D1a are blank, column one should be checked by researchers unless information is unknown. The team leader needs to check the meaning of all blank spaces before departure from the field.

► This is a priority variable. Please make sure this question is answered.

D. SPECIFIC GUIDELINES BY SECTION AND QUESTION

A. History

The questions in this section seek information on the history of the forest association or federated levels of forest associations named on this form. If this is the first IFRI visit to this site, fill out the entire section. If this is not the first site visit, omit this section and fill out only question B0 in the next section.

A5. This question asks/inquires about major changes in the forest association between its origin and the time of the first site visit. Please record the changes that have happened in the order that they have happened. Please record the reasons the forest association members give for the changes. Here "external" means any factor that was outside of the association and over which the -association had no control. "Internal" means within the association and over which the association may have had some control. The changes may have come about if the central government altered legislation; when an influential leader of the association changed; if there were major natural disasters; if there were major changes in local conditions such as the construction of a road or the emergence of a market; or if there were changes in harvesting technology.

B0. Major Changes Since Last Site Visit

If this is a second or later IFRI visit to this site, please describe the **major** changes this forest association has undergone since the last IFRI site visit. For example, the researcher could note changes in size, composition, or legal status. If the forest association has become a part of a secondary or tertiary association since the last IFRI visit, please describe that change. The researcher should carefully read the materials provided from the earlier site visit(s) so it is possible to record relevant changes.

B. Activities Carried Out by the Association

B1. This question gives researchers the opportunity to describe the activities of the forest association.

B2. The researcher should ask several forest association members about the rules that guide the association to obtain the answer to this question. It should reflect the results of the researcher's general discussions among users and **not** only the opinion of the leaders of the forest association.

B3 through B3e. It would be very easy for the researcher to lead members to specific answers in B3 through B3e, so team members must be alert to the need to listen carefully. These answers should be coded after in-depth discussions with the users of the forest association.

C. Governance and Structure

Part 1 of this section will be completed only if the forest association has a group of representatives at a higher level within the association itself. This group may be small or large and may meet more often than the larger association to conduct affairs and decide matters related to the association. If there is an executive committee and this committee represents the users on a regular basis, please fill out each question for the executive committee. If there is a general representative body (not a formal -committee) that represents a user group, fill out each question for the general representative body. If there are both types of -representative bodies present for this association, choose the representative body that is **most active** in rule making and -decision making, and answer for this representative body.

C4. Please check the last line if the executive committee or general representative body does not have a president, vice president, secretary, or treasurer.

D. Records and Supervision

D1a. On this question, the team leader must check the matrix prior to leaving the site. The check marks indicate that records are maintained or submitted to a parent organization, or higher authority, or are not maintained. If records are not maintained, blank spaces in other columns will be not applicable. Otherwise, blank spaces mean that the -information is missing-in-case. If there are other kinds of records not listed in the examples provided, write the additional record in <ARECOTH> and check the appropriate column.

E. Staff and Officials

This section provides the researcher with information about the number of staff and their responsibilities. For some forest -associations, information may be available about forest monitoring. Please research this section carefully. In E1, for example, the researcher may mark 14 full-time employees and 1 part-time employee. In this case, E2 and E3 would be completed. Please refer to the examples in E2 and E3, and thoroughly research activities undertaken by staff. If, for example, the researcher enters -"protecting" as the only activity undertaken by 10 full-time employees in E2, this type of entry will be interpreted as the only activity undertaken by the employees of the forest association.

F. Resource Mobilization and Accounting

Information in this section may be obtained from operational budgets, accounts, or interviews with staff. Many of these -questions can be completed by holding discussions with the accountant or secretary of the forest association.

F1b. The researcher will need to address this question with sensitivity to local conditions.

G. Rule making in the Association

G1. The research team should find statements of mission or written copies of forest -association objectives. They may be found in organizational meeting minutes or by-laws.

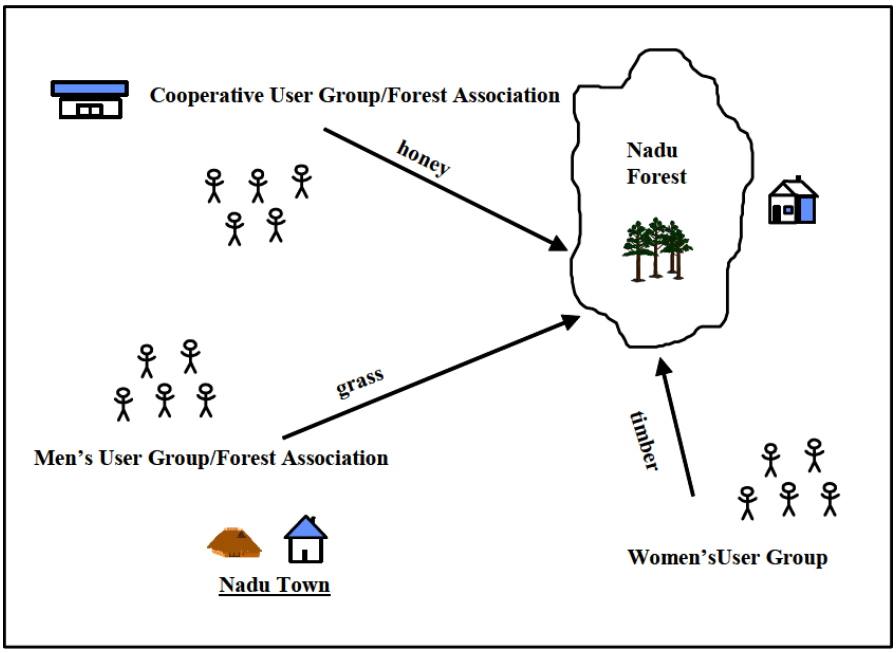
I. Performance

This section obtains information about the performance of the association in terms of its ability to operate in a fair and -equitable manner.

I1. In order to answer this question, the researcher will need to hold discussions with several individuals of the forest -association.

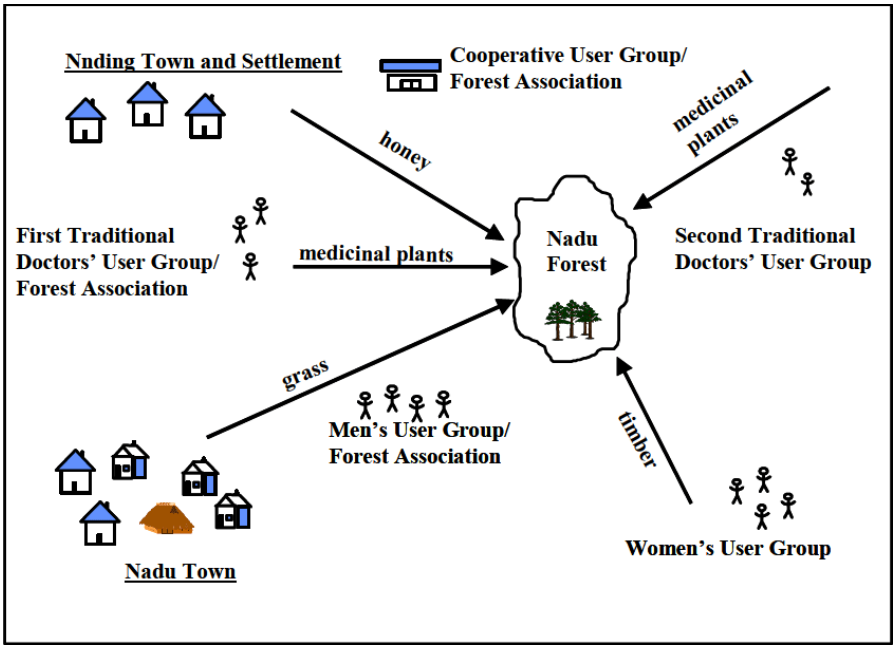
BOX 8: EXAMPLES OF FOREST ASSOCIATIONS

(a) One example of a user group/forest association is the Men's User Group. Men collect grass for fodder on Mondays in winter months because Monday is the only day when the forest is open to the community of users. They meet once a month with the leader of the town, talk about the availability of grass for fodder, discuss and prescribe a rule that says: Grass bundles must be measured by a premeasured rope (Agrawal, 1994:306) and be collected only on Mondays or else users will be charged a fine of two rupees. Each member takes a turn monitoring the area where grass is harvested. Women and men in the Cooperative User Group meet once a month to discuss harvesting procedures. The Women's User Group shares traditionally recognized rights to cut timber, but each woman works alone and does not meet with others regarding timber harvesting. In this case, researchers must complete three *User Group Form*s and two *Forest Association Form*s.



Cooperative, Men's and Women's User Groups

(b) Another example of a forest association is the First Traditional Doctors' User Group/Forest Association from Nnding and Nadu Settlements. They share the same rights to harvest medicinal plants from Nadu Forest, and meet together once a year to talk about availability of rare ground cover species. They also have designed rules to exclude other users from harvesting rare medicinal plants. Only traditional doctors and medicine men can harvest medicinal plants. Others will be asked to defend themselves in front of the traditional court. In this case, users from one user group/forest association are located in two settlements. One *User Group Form* and one *Forest Association Form* will be completed by the researchers for the traditional doctors, as well as both forms for the Men's and Cooperative User Groups/Forest Associations.

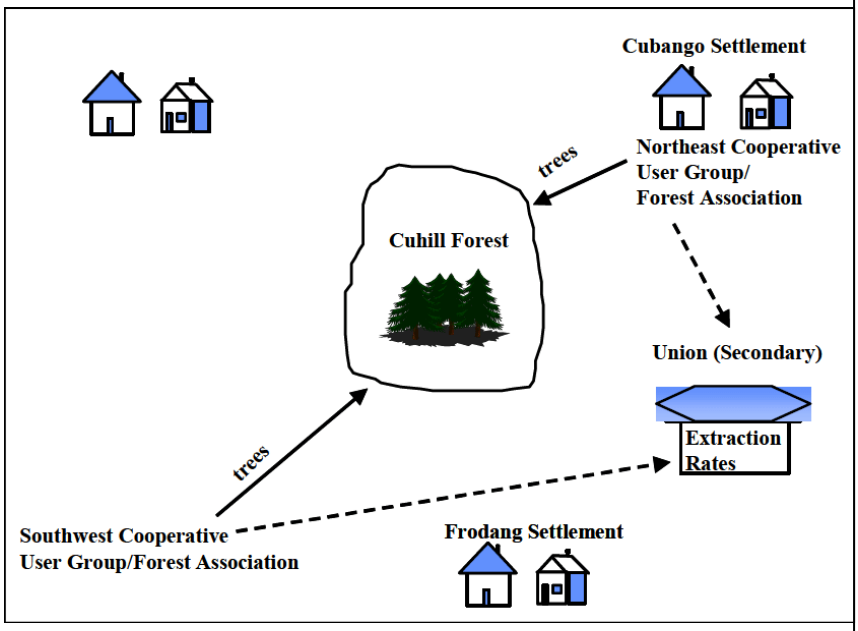


First Traditional Doctors' User Group/Forest Association (in addition to other User Group/Forest Association)

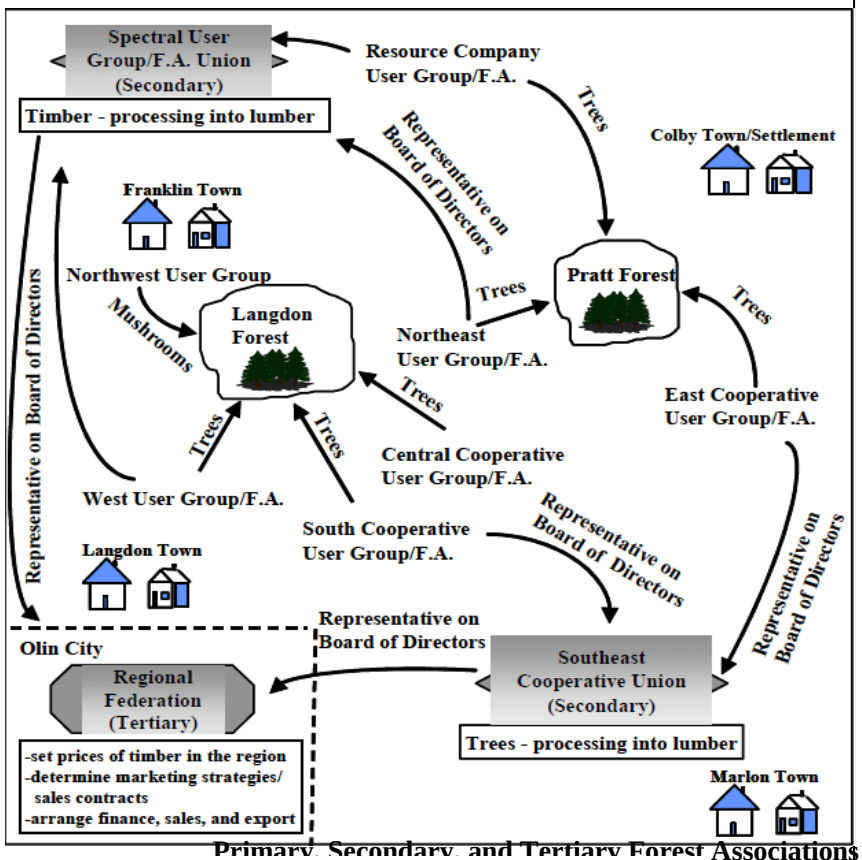
▶ This is a priority variable. Please make sure this question is answered.

BOX 9: EXAMPLES OF FOREST ASSOCIATIONS

a) The Northeast Cooperative User Group/Forest Association in Cubango Settlement separately prescribes its own rules and monitors members' use of wood products harvested from Cuhill Forest. The Southwest Cooperative User Group/Forest Association on the other side of the forest in Frodang does the same. Members from each user group/forest association meet once a month to determine joint extraction rates and processing at the Union, and prescribe rules about how to process quality timber. In this case, researchers must complete two *User Group Form*s and two *Forest Association Form*s for the Southwest and Northeast User Groups/Forest Associations, and a secondary *Forest Association Form* for the Union.



b) Several cooperative federated user group/forest associations (West User Group/F.A., Resource Company User Group/F.A., East Cooperative User Group/F.A., South Cooperative User Group/F.A., Central Cooperative User Group/F.A.) jointly work together in a cooperative union to formulate rules about marketing of timber to lumber companies. They then formulate their own rules for entry and extraction, but jointly determine how much timber will be marketed to selected buyers through a tertiary structure. They share an office building and equipment, such as lumber-processing equipment and a computer, at the secondary level.



Primary, Secondary, and Tertiary Forest Associations

Primary, Secondary, and Tertiary Forest Association

▶ This is a priority variable. Please make sure this question is answered.

IFRI FORM A

FOREST ASSOCIATION FORM

A primary forest association is one or more user groups with rules, policies, and/or guidelines about the forest, some of which users have prescribed for themselves.

A secondary forest association is defined as two or more forest associations that work together to accomplish joint activities and/or objectives with rules, policies, and/or guidelines, some of which have been prescribed by the secondary forest association.

A tertiary forest association (or parent organization) is defined as two or more secondary forest associations that work together to accomplish some joint activities and/or objectives with rules, policies, and/or guidelines, some of which have been -prescribed by the tertiary association.

The Forest Association Form has been designed to obtain information about any forest association related to one or more forests through the activities of one or more user groups.

Research ID: 005 Country ID: GUA Site ID: 001

Date of site visit (mm-dd-yr): 07-31-96

Date(s) data collected for this form (mm-dd-yr): 07-31-96 through 09-26-96

►**Name of forest association** <ANAME>: Mock association

Name(s) of user group(s) <ID>: La Bamba

►**Is this forest association a** <AFED>:

(1) x Primary Forest Association?

(2) _____ Secondary Forest Association?

(3) _____ Tertiary Forest Association?

►**Name(s) of component forest association(s)** <AFEDGRPS>: N/A

►**Name of forest association leader** <ALEADNAME>: JUAN DOMINGO

Name(s) of forest(s) <ID>: El Sitio

Name of person filling out this form: Fabrice Lehoucq

Name(s) of person(s) with whom discussions held: Juan Domingo and Beatrice Vasquez

Location(s) of discussions (fields, home of respondent, place of business, etc.): homes and fields

►**Has this forest association been coded before?** <ACODED>:

(1) x No

(2) _____ Yes

(3) _____ Uncertain

(4) _____ Yes, with a different name *(If this response is checked, write old and new names in B0.)*

A. HISTORY

A1. How did this forest association first come into being? *(long text)* <AEXISTENCE>
Provide as much detail as possible.

This association was formed by several families in the group that thought they could profit by selling wood. They began meeting informally in the 1980s and, by 1985, formed a group known as Mock Association. (note: This is a mock form devised to show how this Form A should be completed.)

► This is a priority variable. Please make sure this question is answered.

►A2. Who initiated the initial formation of the forest association? <AINITWHO_>

Multiple answers may be applicable.

(1) X User group

(2) _____ Nongovernment program (local)

(3) _____ Nongovernment program (international)

(4) _____ Local government program

(5) _____ Regional government program

(6) _____ National government program

(7) _____ International government program

(8) _____ Other *(describe)* <AINITOTH>: _____

►A3. What year was this forest association formed? <AYEAR> 1985

►A3a. Did the forest association obtain official legal status at the time of formation? <ALEGFORM>

Mark only one answer.

(1) X No

(2) _____ Yes

►A3b. If no, has it obtained official legal status since the time of formation? <ALEGSINCE>

Mark only one answer.

(1) X No

(2) _____ Yes

►A3b1 If it has obtained official legal status since the time of formation, what year did it receive it? <ALEGYEAR>

N/A

►A4. How many years has this forest association had its present structure and process? <ASTRUCT> 11

►A5. What have been the major changes in the character and rules of this forest association since its origin? ***(long text)*** <ACHANGES>

List them in the order that they happened and discuss the reasons given for the changes.

This association has very few rules. They meet infrequently to identify dead trees that can be chopped for firewood. Their main preoccupation is to coordinate their activities to get their firewoord to Gualan (the municipal capital) on market day.

← Notice that this question will be asked only during the first visit. Thorough information about the changes since the time of formation to the time of the first site visit should be recorded here.

► This is a priority variable. Please make sure this question is answered.

A6. Is the history of the forest association recorded? <AHISTORY>

Mark only one answer.

(1) X No

(2) _____ Yes

A6a. If yes, how is the history recorded and where are such records available? *(text)* <AHISTDESC>

N/A

B0. MAJOR CHANGES SINCE LAST SITE VISIT

►**B0.** **Have there been any major changes in the forest association since the last visit, and if so, what were they?** ***(long text)*** **<AHISTCHNG>**

Do not complete if this is the first visit to this site to record information for the IFRI database.

N/A

← Question B0 will only be completed during the follow-up visits to the site.

► This is a priority variable. Please make sure this question is answered.

B. ACTIVITIES CARRIED OUT BY THE ASSOCIATION

B1. The following table asks questions about the activities carried out by the association.

Which of the following **activities** has this association coordinated (C); for which has it passed rules (P) and/or modified rules (M); for which has it not (N) done any of the above. Circle all Cs, Ps, or Ms that apply. If the association has not done any of the above, circle N only.	During the past year:	During the five years prior to the past year:
Planted seeds, seedlings, etc.	►<ASEEDS1_> C P M (N)	►<ASEEDS5_> C P M (N)
Other maintenance	►<AMAINT1_> C P M (N)	►<AMAINT5_> C P M (N)
Harvested forest products	►<AHARVEST1_> (C) P M N	►<AHARVEST5_> (C) P M N
Distributed forest products to local users	►<ADIST1_> (C) P M N	►<ADIST5_> (C) P M N
Sold forest products	►<ASELL1_> C P M (N)	►<ASELL5_> C P M (N)
Distributed revenue from the sale of forest - products	►<AREVENUE1_> C P M (N)	►<AREVENUE5_> C P M (N)
Determined timing (season) of the harvest of forest products	►<ATIMING1_> (C) P M N	►<ATIMING5_> (C) P M N
Determined quantity of forest products - harvested	►<AQUANT1_> (C) P M N	►<AQUANT5_> (C) P M N
Determined type of technology used to harvest forest products	►<ATYPTECH1_> (C) P M N	►<ATYPTECH5_> (C) P M N
Determined who is authorized to harvest forest products	►<AWHOAUTH1_> C P M (N)	►<AWHOAUTH5_> C P M (N)
Determined use that can be made of forest products (including religious uses)	►<ATYPEUSE1_> C P M (N)	►<ATYPEUSE5_> C P M (N)
Sold rights to harvest forest products that users can trade with others (Transferable Rights)	►<ARIGHTS1_> C P M (N)	►<ARIGHTS5_> C P M (N)
Rented nontransferable rights to harvest forest products	►<ARENT1_> C P M (N)	►<ARENT5_> C P M (N)
Monitored forest condition	►<AMONCOND1_> C P M (N)	►<AMONCOND5_> C P M (N)
Monitored conformance to rules	►<AMONRULE1_> C P M (N)	►<AMONRULE5_> C P M (N)
Sanctioned rule breakers (e.g., fines, - punishment)	►<ASANCT1_> C P M (N)	►<ASANCT5_> C P M (N)
Arbitrated disputes among local users	►<ADISPUTE1_> C P M (N)	►<ADISPUTE5_> (C) P M N
Interacted with higher authorities	►<AINTER1_> C P M (N)	►<AINTER5_> C P M (N)

In other words: has the forest association undertaken or arranged for arbitration (C), passed rules related for arbitration (P), or modified such rules (M)? If none of these have been done, circle (N).

► This is a priority variable. Please make sure this question is answered.

B2. How many members of the forest association know about the rules that guide the forest association? <AKNOWRULES>

The researcher should talk with a number of users of the forest association prior to answering this question. This answer should reflect the results of the researcher's general survey among users, not only the opinion of the leaders of the forest association.

Mark only one answer.

(1) _____ No one

(2) _____ A few people

(3) _____ Half the people

(4) _____ Almost everyone

(5) X Everyone

B3. In the researcher's estimation, are the rules used by the user group:

Questions in B3 should be answered only after in-depth discussions are held with members of the forest association. The answers here are based on the field team's perceptions in light of these discussions.

B3a. **Easy** for the harvesters to understand? <ARULEEASY>
Mark only one answer.

(1) _____ No, very complex, difficult to understand

(2) _____ Relatively complex, but can be understood through learning and experience

(3) X Yes, easily understood

B3b. **Clear** as to what behavior demonstrates following and breaking the rules? <ARULECLEAR>
Mark only one answer.

(1) _____ No

(2) _____ Yes

B3c. **Flexible** in dealing with times of emergency or unusual problems facing particular members of the user group? <ARULEFLEX>
Mark only one answer.

(1) _____ No

(2) X Yes

B3d. Perceived by most members of this user group as **fair?** <ARULEFAIR>
Mark only one answer.

(1) _____ No

(2) X Yes

►**B3e**. **Perceived by most members of this user group as legitimate? <ARULELEGIT>**

Here "legitimate" is used to describe the rules as being recognized and accepted as rightful, to be respected as law. These rules can be customary (de facto) or established by law (de jure), but they have to be perceived as legitimate to be accepted by the members of the user group.
Mark only one answer.

(1) _____ No

(2) X Yes

► This is a priority variable. Please make sure this question is answered.

C. GOVERNANCE AND STRUCTURE

Many forest associations have some form of an executive committee or a general representative body that is smaller (and usually meets more frequently) than the assembly of all individuals of the association. If there is an executive committee and this committee represents the members on a regular basis, please fill out the executive committee - questions. If there is a general representative body (not a formal committee) that represents members, fill out the - general representative body questions. If there are both types of representative bodies present for this association, choose the representative body that is most active in rulemaking and decision making. Skip to Part 2, C18, if there is neither a general representative body nor an executive committee.

PART 1. EXECUTIVE COMMITTEE OR GENERAL REPRESENTATIVE BODY

►C1. For Part 1 of Section C, check whether (1) or (2) is being coded <AGOVTYPE>**:**

Mark only one answer.

(1) X General representative body for this association

(2) _____ Executive committee for this association

C1a. How many members comprise this executive committee or general representative body?

	Female	Male
Number 6	►<AFEMALE> 2	►<AMALE> 4

C1b. Have women been members of the executive committee or general representative body of the association? <AFEMMEM>

Mark only one answer.

(1) X No

(2) _____ Yes, but only currently

(3) _____ Yes, previously in the past five years

(4) _____ Yes, currently and in the past five years

C1c. Has a woman ever been the leader of the executive committee or general representative body of the association? <AFEMLEAD>

Mark only one answer.

(1) X No

(2) _____ Yes, but only currently

(3) _____ Yes, previously in the past five years

(4) _____ Yes, currently and in the past five years

► This is a priority variable. Please make sure this question is answered.

Questions C2 through C17a apply for cases of one-member committees as well as multiple-member committees.

►**C2.** **How are most of the members of the executive committee or general representative body of the association selected?** <ASELECT>
Mark only one answer.

(1) _____ Elected by members in elections held regularly

(2) X Elected by members in elections held irregularly (including consensual mechanisms)

(3) _____ Inherited (e.g., from father to son, mother to daughter, etc.)

(4) _____ Appointed by a local village head or chief or village elders

(5) _____ Appointed by a local government

(6) _____ Appointed by a national or regional government

►**C3.** **How often does the executive committee or general representative body of the association meet?** <AMEET>
Mark only one answer.

(1) _____ Once a week

(2) _____ Twice a month

(3) _____ Once a month

(4) _____ Once every three months

(5) _____ Once every six months

(6) _____ Once a year

(7) _____ Every other year

(8) X Not regularly scheduled

C4. **How long a period, term, or mandate can the executive committee (E.C.) or general representative (G.R.) body of the association serve?**
If the executive committee or general representative body does not have a president, vice president, secretary, or -treasurer, please check the appropriate item on the last line.
Check only one answer per line.

Official	(1) Life	(2) Fixed period, elected	(3) Fixed period, not elected	(4) Variable, -subject to vote
►**President** <APRES>				X
►**Vice President** <AVICE>				N/A
►**Secretary** <ASEC>				N/A
►**Treasurer** <ATREAS>				N/A
►**Most members of the E.C. or G.R. Body** <AMEMB>				N/A

►**C4a.** **If the president of the forest association (or equivalent title) serves the association for a fixed period of time (column 2 or 3 in C4), please record the number of years he or she serves per term.** <APRESTERM> N/A years

C4a1. If the next most important official serves the association for a period of time different from the president, please record the number of years he or she serves per term. <AVPTERM> _____ years N/A

Answer this only if the vice president, secretary, or treasurer (or equivalent title) serves the association for a period of time different from the president AND if only for a fixed period of time (column 2 or 3).

► This is a priority variable. Please make sure this question is answered.

►C5. **How many different individuals have led the forest association since the inception of the association?**
<ADIFFLEAD> 4

C5a. Please list the names of individuals who have been president or have led the forest association and the name(s) of the next most important official(s) who has(have) served the association since its inception. *(long text)* <APRESNAMES>

Please add details here about the next most important official selection.

Juan Domingo
Diego Sabada
Herbierto Vasquez

►C6. **Has a forest user held a position on the executive committee or general representative body of the association?**
<AUSERMEM>

Mark only one answer.

(1) ____ No, never

(2) X Yes, always

(3) ____ Yes, sometimes

►C7. **In the past decade, has there been any competition for any position on the executive committee or general - representative body?** <ACOMPETE>

Mark only one answer.

(1) X No

(2) ____ Yes, always

(3) ____ Yes, in some elections

►C8. **Is it possible for users to remove the members of the executive committee or general representative body?**
<AREMOVEUSE>

Mark only one answer.

(1) ____ No

(2) X Yes

► This is a priority variable. Please make sure this question is answered.

►C9. **Can an external or higher level authority remove the members of the executive committee or general representative body?** <AREMOVEEXT>
Mark only one answer.

(1) X No

(2) _____ Yes, with complaints from other harvesters (villagers)

(3) _____ Yes, at the discretion of the external or higher level authority

(4) _____ Yes, but only with substantiated evidence about wrongdoing of the executive

►C10. **How are most members of the executive committee or general representative body paid?** <APAIDMEMB>
Mark only one answer.

(1) X Receive **no** pay or material compensation

or The primary source of their pay or material compensation is:

(2) _____ Funds from the general budget of the association

(3) _____ Allocated extra shares of forest products

(4) _____ Obligations to forest association are reduced

(5) _____ Receive voluntary contributions from other members

(6) _____ Funds from local or external government

(7) _____ Funds from a development agency

(8) _____ Some other means *(describe)* <APAIDMOTH>: _____

►C11. **Do the members of the executive committee or general representative body own assets or capital whose operation depends on obtaining forest products from the forest (e.g., furniture factory that needs wood, or shop that needs -fuelwood), and if so, how much?** <AOWNASSET>
Mark only one answer.

(1) X No

(2) _____ Yes, and the amount needed is below average of other users

(3) _____ Yes, and the amount needed is average compared to other users

(4) _____ Yes, and the amount needed is higher than the average taken by other users

(5) _____ Yes, and the amount is very high compared to other users

►C12. **Do most members of the executive committee or general representative body reside in or near the forest(s) that the association governs?** <ARESIDE>
Mark only one answer.

(1) _____ No, most of the members of the executive committee or general representative body live more than 5 kilometers from the forest

(2) _____ Yes, most of the members of the executive committee or general representative body live between 1 and 5 kilometers from the forest

(3) X Yes, most of the members of the executive committee or general representative body live in or within 1 kilometer from the forest

► This is a priority variable. Please make sure this question is answered.

►C13. On average, what is the education level of the members of the executive committee or general representative body? <AEDULEVEL>

Mark only one answer.

(1) X It is very low

(2) _____ It is low

(3) _____ It is average

(4) _____ It is high

(5) _____ It is very high

►C14. If relevant to the region, do most members of the executive committee or general representative body belong to the same ethnic group as most of the villagers? <AETHNIC>
Mark only one answer.

(1) _____ No

(2) X Yes

C14a. If no, state the ethnic category of most members of the executive committee or general representative body <AETHNICCAT>: _____

C15. If relevant to the region, do most of the members of the executive committee or general representative body belong to the same religion as most of the villagers? <ARELIG>
Mark only one answer.

(1) _____ No

(2) X Yes

C15a. If no, state the religion of most of the members of executive committee or general representative body <ARELIGTYPE>: _____

C16. If relevant to the region, do most of the members of the executive committee or general representative body belong to the same caste (if appropriate) as a majority of the villagers? <ACASTE>

Mark only one answer.

(1) _____ No

(2) X Yes

C16a. If no, name the caste of most of the members of the executive committee or general representative body <ACASTETYPE>: N/A

C17. Do any members of the executive committee or general representative body hold leading positions in other collective or governmental bodies? <ALEADER>
Mark only one answer.

(1) X No

(2) _____ Yes

C17a. If yes, state positions held by the members of the executive committee or general representative body in different - bodies. *(brief text)* <ALEADERPOS>

► This is a priority variable. Please make sure this question is answered.

PART 2. GENERAL MEMBERSHIP OF THE FOREST ASSOCIATION

►C18 Are meetings held in which all members of the forest association are eligible to participate? <AMEETALL>

Mark only one answer.

(1) _____ No

(2) X Yes

►C18a How frequently are these meetings organized? <AMEETFREQ>

Mark only one answer.

(1) _____ Once a week

(2) _____ Twice a month

(3) _____ Once a month

(4) _____ Once every three months

(5) _____ Once every six months

(6) _____ Once a year

(7) _____ Every other year

(8) X Irregular intervals

►C18b Are these meetings very well attended? <AMEMATTEND>

Mark only one answer.

(1) X Almost all members attend

(2) _____ About half the members attend

(3) _____ Few members attend

C18c. Describe the decisions made in general membership meetings of the forest association in comparison to the decisions made in meetings of the executive committee or general representative body. What types of decisions are made and how different are they? *(long text)* <ADECDESC>

Because this association consists of approximately half a dozen members, its general assembly and executive body are one and the same.

C19. Can members of the association call a general meeting when they want to discuss a special problem such as the extreme lack of rainfall or the breaking of association rules by members of the executive committee or general - representative body? <ACALLMEET>

Mark only one answer.

(1) _____ No

(2) X Yes

C19a. If yes, has a special meeting been called during the last five years? <ACALLMEET5>

Mark only one answer.

(1) X No

(2) _____ Yes

C20. Has the executive committee or general representative body of the association changed the rules of the association as a result of suggestions made by members of the forest association? <ARULESUG>

Mark only one answer.

(1) X No

(2) _____ Yes

C20a. If yes, describe an example of such a change in rules. *(text)* <ARULEDESC>
N/A

C21. Has the executive committee or general representative body of the association changed the allocation of forest - products among users as a result of suggestions made by the members of the forest association? <AALLOCSUG>

Mark only one answer.

(1) X No

(2) _____ Yes

C21a. If yes, describe an example of such a change and state how the change affected the distribution among members of the forest association. *(text)* <AALLOCDESC>

D. RECORDS AND SUPERVISION

►D1. Are records of any kind maintained by the association? <ARECMAINT>

Mark only one answer.

(1) X No

(2) _____ Yes

► This is a priority variable. Please make sure this question is answered.

D1a. If yes, please check all that apply on the following table. N/A

If a cell is **not** checked on this matrix, this information will be interpreted as unknown. "N/A" should be written in the cell if the question is not applicable.

Are the following kinds of records maintained by the -association or submitted to any higher authority?	(1) Records are maintained	(2) Records are submitted to parent organization	(3) Records are submitted to government	(4) Records are not maintained
►**Records about the identity of the office-bearers** <AIDENTITY_>				
►**Records of meetings and resolutions in meetings** <ARESOLUTE_>				
►**Records of income and expenditures incurred by the -association** <AFINANCE_>				
►**Records of contributions in kind (labor, grain, etc.) or cash, made by users of the forest** <ACONTRIB_>				
►**Records monitoring the condition of the forest** <AMONITOR_>				
►**Records about the amount of products harvested from the -forest** <AAMOUNT_>				
►**Records about distribution of forest products among the users** <ADISTRIB_>				
►**Records about whether those who do not follow rules are -punished** <APUNISH_>				
►**Records about conflicts of the association with individuals or other associations** <ACONFLICT_>				
►**Records about how conflicts are resolved** <ARESOLVED_>				
►**Records about the different ways that individuals break rules** <ABREAK_>				
►**Records about the types of punishments that are imposed** <APUNTYPE_>				
►**Other kinds of records** <ARECOTH> <AOTHREC_>:				

► This is a priority variable. Please make sure this question is answered.

►D1b. If records are maintained, are they available for examination by others? <AEXAMINE>

Mark only one answer.

(1) X No, they are available only to officials of the association

(2) _____ Yes, they are available to the general public

(3) _____ Yes, but only to members of the forest association

(4) _____ Yes, but only to officials in the parent organization

(5) _____ Yes, but only to government officials

D2. If the association maintains records of its accounts, are the records audited? <AAUDIT> N/A

Here "audit" means a formal examination of financial records by a competent and neutral person or organization to determine honesty and correctness of record-keeping.

Mark only one answer.

(1) _____ No

(2) _____ Yes

►D3. Are the activities of the association supervised by a higher organization? <ASUPER>

Mark only one answer.

(1) X No

(2) _____ Yes, by the parent organization of the association

(3) _____ Yes, by officials appointed by the government

(4) _____ Yes, other *(describe)* <ASUPEROTH>: _____

E. STAFF AND OFFICIALS

The following questions are about officials who make day-to-day decisions for the forest and who enforce rules created to utilize and manage the forest(s). Examples of these types of officials could be guards, forest watchers, accountants, record-keepers, business managers, and secretaries.

E1. How many individuals work for this organization? N/A

Total number of people hired by the association		Total number of people who volunteer labor
Full time	Part time	
<AFULL>	<APART>	<AVOL>

E2. Describe the type of activities undertaken by most of the full-time employees, e.g., planting, protecting, enforcing, maintaining records. *(text)* <AEMPFULL>

N/A

► This is a priority variable. Please make sure this question is answered.

E3. Describe the type of activities undertaken by most of the part-time employees, e.g., planting, protecting, enforcing, maintaining records. *(text)* <AEMPPART>

N/A

►E4. How are guards paid? <APAIDGARD_> N/A

Multiple answers may be applicable.

(1) _____ Through collections from members' households

(2) _____ Through wages from the general fund of the association

(3) _____ Through fines collected from individuals

(4) _____ Through funds received from an external government

(5) _____ Through funds received from a development agency

(6) _____ Through special levies from members

(7) _____ Through extra shares in the forest products

(8) _____ Other *(describe)* <APAIDGOTH>: _____

►E5. How are guards selected to watch over the forest? <ASELGUARD> N/A

Mark only one answer.

(1) _____ By election

(2) _____ By appointment

(3) _____ By lots

E6. How many forest guards are on duty at different times or seasons of the year? {A_GRDUTY} N/A

Season option	Name of the season	Number of guards
(1) Season 1	►<ASEAS1NAME>	<ASEAS1NUM>
(2) Season 2	►<ASEAS2NAME>	<ASEAS2NUM>
(3) Season 3	►<ASEAS3NAME>	<ASEAS3NUM>
(4) Season 4	►<ASEAS4NAME>	<ASEAS4NUM>
(5) Other times	►<ASEASOTHNAME>	<ASEASOTHNUM>

► This is a priority variable. Please make sure this question is answered.

F. RESOURCE MOBILIZATION AND ACCOUNT KEEPING

►F1. What were the major financial sources for this forest association during the most recent year, e.g., product sales, -voluntary contributions, entry fees, fines, own taxes, external government or development agency transfers, etc. Mark each of the sources from which funds were received by this forest association. <ASRCE1_>

Please note that response (8) "own taxes" refers to taxes raised by a general-purpose government. Regular levies by other kinds of associations should be referred to as (2) "membership fees."
Multiple answers may be applicable.

(1) _____ Voluntary contribution of funds
(2) _____ Membership fees
(3) _____ Payments that substitute for labor input
(4) _____ Fines
(5) _____ National or regional government
(6) _____ Development agency
(7) _____ Sales of forest products from the forest
(8) _____ Own taxes
(9) _____ Special levies
(10) _____ Aid from external NGOs
(11) _____ Aid from indigenous NGOs
(12) _____ Foreign government
(13) X Other *(describe)* <ASRC1OTH>: Association resources are provided in kind by members

►F1a. Enter the number (1-13) listed in F1 that was the single most important source of financial support for the forest -association. <ASRC1MOST> 13

F1b. What is the total financial budget of this forest association for the most recent year data is available? <ABUDGET> N/A

F1c. What percentage of the total financial budget is the single most important source of financial support for this forest association? <ASRC1PRCNT> N/A %

F1d. What is the "most recent year" for which this data is available? <ASRC1YEAR> N/A
Specify full year, e.g., 2006; if the budgetary year is not the equivalent of the calendar year, use the last year of the budgetary year.

F1e. In total, how many person-days of labor were contributed to the activities of the association in the above year? <ALABOR1> 30-50 *One 8-hour day of labor x one person = one person-day.*

►F2. On average, over the past five years, what is the single most important financial source for the forest association? <ASRCE5>
Please note that response (8) "own taxes" refers to taxes raised by a general-purpose government. Regular levies by other kinds of associations should be referred to as (2) "membership fees."

Mark only one answer.

(1) _____ Voluntary contribution of funds
(2) _____ Membership fee
(3) _____ Payments that substitute for labor input
(4) _____ Fine

► This is a priority variable. Please make sure this question is answered.

(5) _____ National or regional government

(6) _____ Development agency

(7) _____ Sales of forest products from the forest

(8) _____ Own taxes

(9) _____ Special levies

(10) _____ Aid from external NGOs

(11) _____ Aid from indigenous NGOs

(12) _____ Foreign government

(13) __X__ Other *(describe)* <ASRC5OTH>: IN-KIND RESOURCES PROVIDED BY MEMBERS

►**F2a.** **Over the past five years, what is the average amount of the single most important financial source for the forest association?** **<ASRC5AMT>** ____0____ ***(local currency)***

F2b. In total, how many person-days of labor were contributed to the activities of the association in the past five years? <ALABOR5> ____150-250____ *One 8-hour day of labor x one person = one person-day.*

►**F3.** **If the association did not receive any funds from external agencies and had to rely on contributions from members or its user group, or other funds raised locally, could it support all its expenditures?** **<ASUPPORT>**
Mark only one answer.

(1) _____ No, it could not meet its expenses if no funds were received from external sources

(2) _____ Yes, it could support expenditures with a combination of sales of products and contributions from members

(3) _____ Yes, it could support itself by sales from forest products

(4) X Yes, it could support its expenditures by contributions from members alone

►**F4.** **What is the largest item on which the association spends its income?** **<ASPENDMOST>**
Mark only one answer.

(1) _____ Salaries of officials

(2) _____ Salaries of hired personnel

(3) _____ Court cases

(4) _____ Account keeping

(5) _____ Fees paid to specialized staff or contractors

(6) _____ Expenses of the community (e.g., school building)

(7) _____ Monitoring the forest resource

(8) _____ Guarding the forest resource

(9) _____ Maintaining the forest resource

(10) _____ Improving the forest resource

(11) _____ Travel and entertainment of the officials of the forest association

(12) X Other *(describe)* <ASPENDOTH>: coordination of efforts to travel on market day

F5. Is any of the income of the association supposed to be used only for specific purposes? <ASPECPURP>
Mark only one answer.

(1) X No

(2) _____ Yes

► This is a priority variable. Please make sure this question is answered.

F6. Does any other organization determine how the forest association spends or earns income? <AExtSpend>
Mark only one answer

(1) X No

(2) _____ Yes

G. RULE MAKING IN THE ASSOCIATION

►**G1.** **Does the association have a written statement of its mission and objectives?** **<AWritten>**
Mark only one answer

(1) X No

(2) _____ Yes

G1a. If yes, what was the process of formation of the statement of mission for the association? If possible, please attach a copy of the by-laws to this form. *(text)* <AWritDesc>

N/A

►**G1b.** **If G1 is yes, who created or wrote most of this statement?** **<AWritWho>**
Mark only one answer. N/A

(1) _____ Local users

(2) _____ Local users with the help of some external authorities

(3) _____ Government officials (local, regional, or national)

(4) _____ A nongovernment organization (local)

(5) _____ A nongovernment organization (international)

(6) _____ The parent organization of the local association

(7) _____ Other *(describe)* <AWritOth>: _____

►**G1c.** **Are the rules of this forest association based on an original set of rules provided by a government agency?** **<AOrigRule>**
Mark only one answer.

(1) X No

(2) _____ Yes, the rules are identical to many other forest associations

(3) _____ Yes, but there is considerable variation from forest association to forest association

►G1d. **If G1 is yes, do users or officials of the association have the power to change the statement of mission for their -association?** <AWRITUSER> N/A

Mark only one answer.

(1) _____ Neither users nor association officials have the power to change it.

(2) _____ Only association officials have the power to change it.

(3) _____ Only users have the power to change it.

(4) _____ Users and officials together have the power to change it.

(5) _____ Users or forest association officials with government officials have the power to change it.

►G1e. **If G1 is yes and users can change the statement of mission, which rule must be used?** <AWRITRULE>

Mark only one answer. N/A

(1) _____ Simple majority

(2) _____ Extraordinary majority

(3) _____ Unanimity

(4) _____ Decision made by association executive or council

►G1f. **If G1 is yes, has the statement of mission and objectives for the association ever changed?** <AWRITCHNG>

Mark only one answer N/A

(1) _____ No

(2) _____ Yes

G2. Is the association a corporate body in the sense of being able to sue or be sued? <ASUE>

This question tries to determine the legal standing of the association; whether it is legally liable or responsible to a court of law; whether someone can take the association to court in a lawsuit.

Mark only one answer

(1) X No

(2) _____ Yes

H. INTERNAL RELATIONS

H1. Do internal conflicts exist within the association? <AINITCONFL>

Mark only one answer

(1) X No

(2) _____ Yes

H1a. Are any mechanisms available for resolving internal conflicts? <ACONFMECH>

Mark only one answer

(1) X No

(2) _____ Yes

► This is a priority variable. Please make sure this question is answered.

H1b. How do internal conflicts in the association get resolved? *(long text)* <ACONFLRES>

For example, conflicts may be resolved by face-to-face discussion at association meetings, special meetings with association officials, arbitration, decisions taken by a majority, through consensus, by council members and executive voting, by decisions of courts, by decisions of higher government officials, by decisions of superior officials who do not belong to the particular association but are officers in a higher organization, etc.

Internal conflicts are rare. When they exist, members discuss the advantages and disadvantages of the different points of view. A solution is adopted through consensus.

H2. Have there ever been any problems in selecting officials for the association? <ASELPROB>

Mark only one answer.

(1) X No, never

(2) _____ Yes, frequently

(3) _____ Yes, sometimes

►H3. How are the rules created by the association enforced? Are they enforced by: <AENFRULES_>

Multiple answers may be applicable.

(1) X Members of the user group(s)

(2) _____ External officials appointed by the government

(3) _____ Officials **appointed** by the forest association

(4) _____ Officials of the forest association

(5) _____ Other ways *(describe)* <AENFOTH> _____

►H4. How does this organization perceive itself in terms of relating to other forest-governing structures? <ARELATE>

Mark only one answer.

(1) _____ Not cooperating

(2) X Cooperating, but independent of other organizations' rules and regulations

(3) _____ Cooperating jointly in determining rules/regulations

► This is a priority variable. Please make sure this question is answered.

H4a. Please describe: *(long text)* <ARELATDESC>

Members of the association do not consider themselves apart from other Moran-Naranjo community members. So, when the community as a whole agrees on an issue, they tend to follow. Since El Sitio is open for use to all locals, one possible source of conflict with communitywide rules about use of the forest. Actually, most locals believe it is not profitable to travel to the municipal capital to sell firewood.

I. PERFORMANCE

I1. Have any individuals of the forest association been systematically disadvantaged because of the rules of the association? <AWORSEOFF>
Mark only one answer.

(1) X No

(2) _____ Yes

I1a. If yes, please describe how and when. *(long text)* <AWORSEDESC>

N/A

▶ This is a priority variable. Please make sure this question is answered.

I2. Have the relatively worse off individuals of the forest association been cut out of their benefits from this forest or - substantially harmed? <ACUTOUT>
Mark only one answer.

(1) X No

(2) _____ Yes

I2a. If yes, please describe. *(long text)* <ACUTDESC>

N/A

I3. Has the disparity between the relatively worse-off and the relatively better-off individuals changed? <ADISTANCE>
Mark only one answer.

(1) X No

(2) _____ Yes

I3a. If yes, please describe how and when. *(long text)* <ADISTDESC>

N/A

GEN. GENERIC QUESTIONS FOR USE BY RESEARCHERS

Please write your question(s) and the answer(s) where indicated below. **Enter the methodology and all questions together into the database under** <AWKSPMEMO>. Enter each answer into the database under the data name specified for each answer below. See Section II of the Field Manual for more detailed instructions.

Please describe why you are asking the generic questions below and/or what methodology you used to collect the data provided below. *(long text)* <AWKSPMEMO>

Question 1 (answer requires a whole number):

Answer to question specified by researcher *(integer)* <AGENSNUM1> _____

Question 2 (answer requires a whole number):

Answer to question specified by researcher *(integer)* <AGENSNUM2> _____

Question 3 (answer requires a whole number):

Answer to question specified by researcher *(integer)* <AGENSNUM3> _____

Question 4 (answer requires a whole number):

Answer to question specified by researcher *(integer)* <AGENSNUM4> _____

Text question 1:

Answer to question specified by researcher *(text)* <AGENTEXT1>

Text question 2:

Answer to question specified by researcher *(text)* <AGENTEXT2>


This is a priority variable. Please make sure this question is answered.

Text question 3:

Answer to question specified by researcher *(text)* <AGENTEXT3>

Question 1 (answer requires a decimal number):

Answer to question specified by researcher *(decimal)* <AGENLNUM1> _____

Question 2 (answer requires a decimal number):

Answer to question specified by researcher *(decimal)* <AGENLNUM2> _____

Question 3 (answer requires a decimal number):

Answer to question specified by researcher *(decimal)* <AGENLNUM3> _____

Question 4 (answer requires a decimal number):

Answer to question specified by researcher *(decimal)* <AGENLNUM4> _____

Answer(s) to question(s) specified by researcher that require(s) more than 250 characters *(long text)* <AGENMEMO>

III.A.7. FORM G—FOREST–USER GROUP RELATIONSHIP FORM: GUIDELINES

A. DEFINITION OF FOREST–USER GROUP RELATIONSHIP

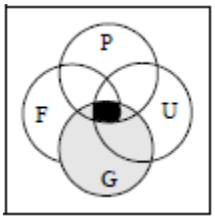
A forest–user group relationship is the description of the harvesting, use, and maintenance activities that a user group -has with a particular forest. It also includes the user group's interactions with other forest user groups with respect to this forest.

B. PURPOSE OF THE FOREST–USER GROUP RELATIONSHIP FORM

The purpose of the *Forest–User Group Relationship Form* (Form G) is to discover what products are harvested by a user group, where they are harvested, what other forests are used, and each user group's relationship with other users. It also collects the information necessary to analyze the rules that have been prescribed, invoked, applied, monitored, and enforced for each forest product. The questions on Form G also address the specific rights for harvesting or using each forest product. This -information, along with that on the *Forest Product Form* (Form R), also addresses the question of how rules affect the incentives -facing forest users and which incentives encourage forest users to engage in management practices that sustain a healthy forest.

C. GUIDELINES FOR DATA COLLECTION

1. Defining the Relationship between the Forest and the User Group



In many ways the instructions for the completion of Form F and Form U intersect with the instructions on Form G. The research team begins to define this relationship through general questions about the forest and forest use in the opening mapping discussion. As the boundaries of the forest are mapped, team members obtain more and more information about who uses the forest and for what purposes.

Key Questions for the Research Team When Defining the Forest–User Group Relationship
1. How many forests are in this study?
2. How do users define the most important products harvested and/or used by the user group in each forest?
3. How does this user group relate to others in relationship to each forest?

2. Data Collection

One Form G must be completed for each forest used by each user group. This form will be completed only after researchers complete significant portions of Form U, Form F, and Form A. Doing so provides the researcher with information about some of the broader issues about the organization of the user group prior to addressing specific information about forest product harvesting, use, and maintenance. Researchers also must be familiar with the terminology on this form. Products can be plant or plant-like and consumptive, such as trees, bushes, grasses, and leaves. In addition, they can be consumptive, inorganic, and/or mineral/mineral-like, such as soils, stones, water, wildlife. Forest products also can be nonconsumptive goods, such as enjoyment of nature or the use of a path in a forest. (Note: A common error that researchers make on this form is to call the forest product "fuelwood." This is a **use** of a forest product. The **product** is a tree or a part of a tree.)

▶ This is a priority variable. Please make sure this question is answered.

TABLE 8: TYPES OF FOREST PRODUCTS AND PRODUCT USES

Product type / Consumptive products	Products	Product part harvested or used	Product use
Plants and plant-like forms	Trees Bushes Grasses Climbers	Trunk Branches Stalk Leaves	Firewood Charcoal Roofing material Fodder
Inorganic and/or mineral/mineral-like materials	Soils Stones Minerals Water Fungi Wildlife	A horizon Surface gravel Entire animal	Housing Housing Jewelry Food Food
Nonconsumptive Products	Enjoyment of nature Path in forest	All of forest Northern quadrant of forest	Worship Hiking

3. Highlights about Questions on the Forest–User Group Relationship Form

The challenge on this form is to note all of the forest products (consumptive and nonconsumptive) that the user group harvests or uses (this could be recorded by observing or questioning users). It is important to indicate as accurately as possible the harvesting/use boundaries on the map developed in question A3.

Questions A2, A3, and A6a2 may be sensitive to the respondents. The research team needs to address these questions with -sensitivity to local conditions.

D. GUIDELINES BY SECTION AND QUESTION

The forest products referred to on Form G must relate to the information on the respective Form R. Please remember that questions on this form refer to one forest and one user group and the relationship between these two entities. If the user group uses more than one forest, then more than one Form G will be completed to describe each unique relationship.

A. User Group Relation to the Forest

A2. The question inquires about the products taken from a forest or used in a forest by the user groups. The team should reply by investigating how each user group obtains consumptive products and accesses nonconsumptive goods in the forest (see Form U Guidelines, section III.A.5). For example, the user group may not think that hiking through beautiful trails is a benefit worth mentioning, but the space marked as "other" can be used to record this. Number (4) in A2 is a highly sensitive question and should be carefully stored if its reply could generate problems for respondents.

A3. In the space provided, the researcher is asked to trace or copy the Forest Feature Map developed in the *Forest Form* (question B1). Please refer to the IFRI mapping instructions in section IV.C.4, for more information. **Remember that this map should show only the forest named in this form (with as many landmarks as possible), and where the forest products identified are harvested or used.** The researcher may want to show where other forests (used by this user group) are located in relation to this particular forest.

A4. The researcher asks about any additional benefits that the forest may provide to the user group. This is where any other products or benefits derived from this forest, in addition to the products marked in question A2, may be listed and briefly described. Please include nonconsumptive goods like walking on a path in a forest, or enjoying nature, etc., if -applicable.

A5. This question, as well as A5a and A5b, inquires about the use of other forests by the user group as part of its regulatory practices. In other words, does this group reduce the demands on this forest for consumptive products and nonconsumptive goods by turning to other forests?

A6a2. Describe, briefly, the kinds of products harvested or used, the times of the year that such illegal activity occurs, and the effect of such activity on this forest.

A7. This is a general question. Please remember that the more detailed questions are asked about user groups in other forms (Form U and Form A). This question is designed to obtain information about the nature of the relationships and interactions between groups using the forest. Does the user group named in this form have a friendly or adversarial relationship with other groups (legal or illegal) using this -forest? Is there cooperation, teamwork, or tension?

A9. Before answering this question, researchers need to talk to a number of different individuals in the user group, -preferably those whose use of this forest varies from product to product. For example, the researcher might talk to some women, a wood cutter, a tea shop owner, and the village blacksmith, all of whom may be part of the user group using this -forest. If the -individuals in the user group give proportions, record them in your field notes in this way. Please remember to convert these proportions to percentages before entering them on the form.

A10. This question requires an answer that represents the views of **most** of the individuals in the user group. What do **most** of the users think about the condition of this forest?

A11. This question also requires an answer that represents the views of **most** of the individuals in the user group.

B0. Major Changes Since Last Site Visit

Please remember that this is a question that refers to the history of the relationship between this forest and the user group named on this form since the last IFRI site visit. If this is the first site visit, do not answer this question.

C. Subsistence and Commercial Uses of the Forest

C1-C4. "Significantly" means a sufficiently large portion of a forest user's livelihood that cannot be substituted by any other source of subsistence.

C3-C4. These questions refer specifically to households.

D. Livestock and Grazing in the Forest

D2. If notes need to be made about habitat, please use D2a.

E. User Group Improvement Activities in the Forest

The questions in this section refer to activities undertaken by all or most of the individuals in the user group. It will be difficult to answer some of the questions if this group is relatively informal. Only complete tables that are possible to answer given the nature of the user group.

E1. This table requires the researcher to make a checkmark in the appropriate cell. A blank column means that there are missing data.

E2-E3. Note that these tables require the researcher to mark **"1" for No and "2" for Yes**, unlike E1 where check marks are required. Reversing these codes is one of the most common

► This is a priority variable. Please make sure this question is answered.

F. Ownership and Rule Making in the Forest

F2-F3a. These questions are designed to obtain information about participation in rulemaking. If the user group has prescribed some rules, policies, or guidelines, the researcher will find more specific questions about rulemaking in Form A and in Form R.

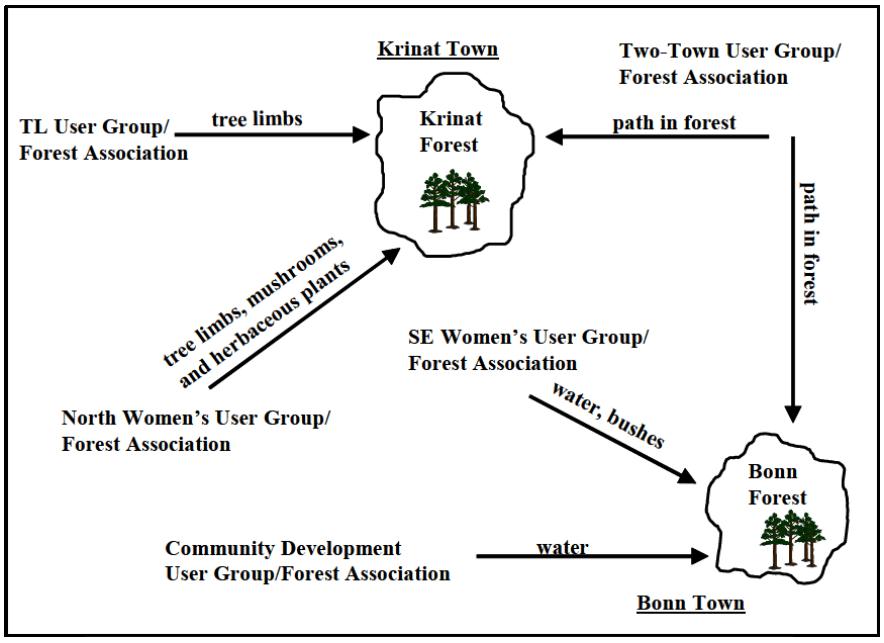
G. General Questions

This section refers to how most of the individuals of the user group view their forest resource. For example, they may see it only as an economic resource to be exploited without restraint, a sacred area to be revered and protected and used carefully, or a source of subsistence to be maintained and managed carefully. Check the approprite answer in G1, and explain in G1a how this view affects their use of the forest.

BOX 10: EXAMPLE OF FOREST–USER GROUP RELATIONSHIPS

In Krinat Town, there are three user groups: the TL User Group (U.G.)/ Forest Association (F.A.), the North Women's U.G./F.A., and theTwo-Town U.G./F.A. Each obtains benefits from the Krinat Forest (and in the case of the Two-Town U.G./ F.A. from Bonn Forest as well). The TL U.G./F.A. is cutting live tree limbs for building and harvesting tree limbs on the ground for firewood (two consumptive products). At A2 on Form G, the TL U.G./F.A. marks trees as the product that users harvest from Krinal Forest.

The North Women's U.G./F.A. is extracting tree limbs for making tool sheds and houses, mushrooms for eating, and herbaceous plants for medicines (consumptive products). On A2 in Form G, the NorthWomen's U.G./F.A. marks trees, fungi, and bushes.



Southwest and Northeast Cooperative User Groups/Forest Associations (Primary and Secondary)

The Two-Town U.G./F.A. is using a nonconsumptive good from the forest: paths in Krinat and Bonn Forests. They mark the "Other" column of A2 on two Form Gs: one for Krinat Forest and one for Bonn Forest.

The field team, in this part of the case, will code four Form Gs. Three will be coded for Krinat Forest for each of the User Groups, and the other one will be coded for Bonn Forest for the Two-Town User Group. Researchers need to ask the Two-Town U.G./F.A. whether they also harvest any plant or plant-like species.

In Bonn Town, two user groups are harvesting consumptive products from the Bonn Forest. The SE Women's U.G./F.A. is extracting water and shrubs. The Community Development U.G./F.A. is obtaining water. The Community Development U.G./F.A. lists water as the only product harvested from Bonn Forest.

In this part of the case, two Form Gs will need to be coded, and the field team needs to ask the SE Women's and Community Development User Groups if any other plant or plant-like form is harvested and could be coded on Form G.

▶ This is a priority variable. Please make sure this question is answered.

IFRI FORM G

FOREST–USER GROUP RELATIONSHIP FORM

*A **forest–user group relationship** is the description of the harvesting, use, and maintenance activities that a user group -considers to be most important in each forest, and the user group's interactions with other user groups with respect to a forest. One form must be completed for <u>each</u> user group in <u>each</u> forested area identified as a separate forest by IFRI definition. If the user group in question does not recognize different legal jurisdictions that IFRI uses to distinguish forests, this should be explained in detail in the text variables of the Forest Form (A3) and the User Group Form (A1).*

Research ID: 005 Country ID: GUA Site ID: 001

Date of site visit (mm-dd-yr): : 07-31-96

Date(s) data collected for this form (mm-dd-yr) 07-31-96 through 09-26-96

►**Name of forest used** <FK_FOREST>: El Sitio

►**Name of user group** <FK_USERGRP>: La Bamba

Name of person filling out this form: Clark Gibson

Name of person(s) with whom discussions held: community majority

Location of discussions (fields, home of respondent, place of business, etc.): homes and farms

A. USER GROUP RELATION TO FOREST

►**A1.** **On average, how far do the individuals in the user group live from this forest?** <GDISTANCE>
Mark only one answer.

(1) ___ Individuals live in or within 1 kilometer from this forest

(2) ___ Individuals live between 1 and 5 kilometers from this forest

(3) ___ Individuals live between 5 and 10 kilometers from this forest

(4) ___ Individuals live more than 10 kilometers from this forest

►A2. **What are the forest products or benefits that the user group harvests or obtains from the forest?**
Please mark only one check per column.

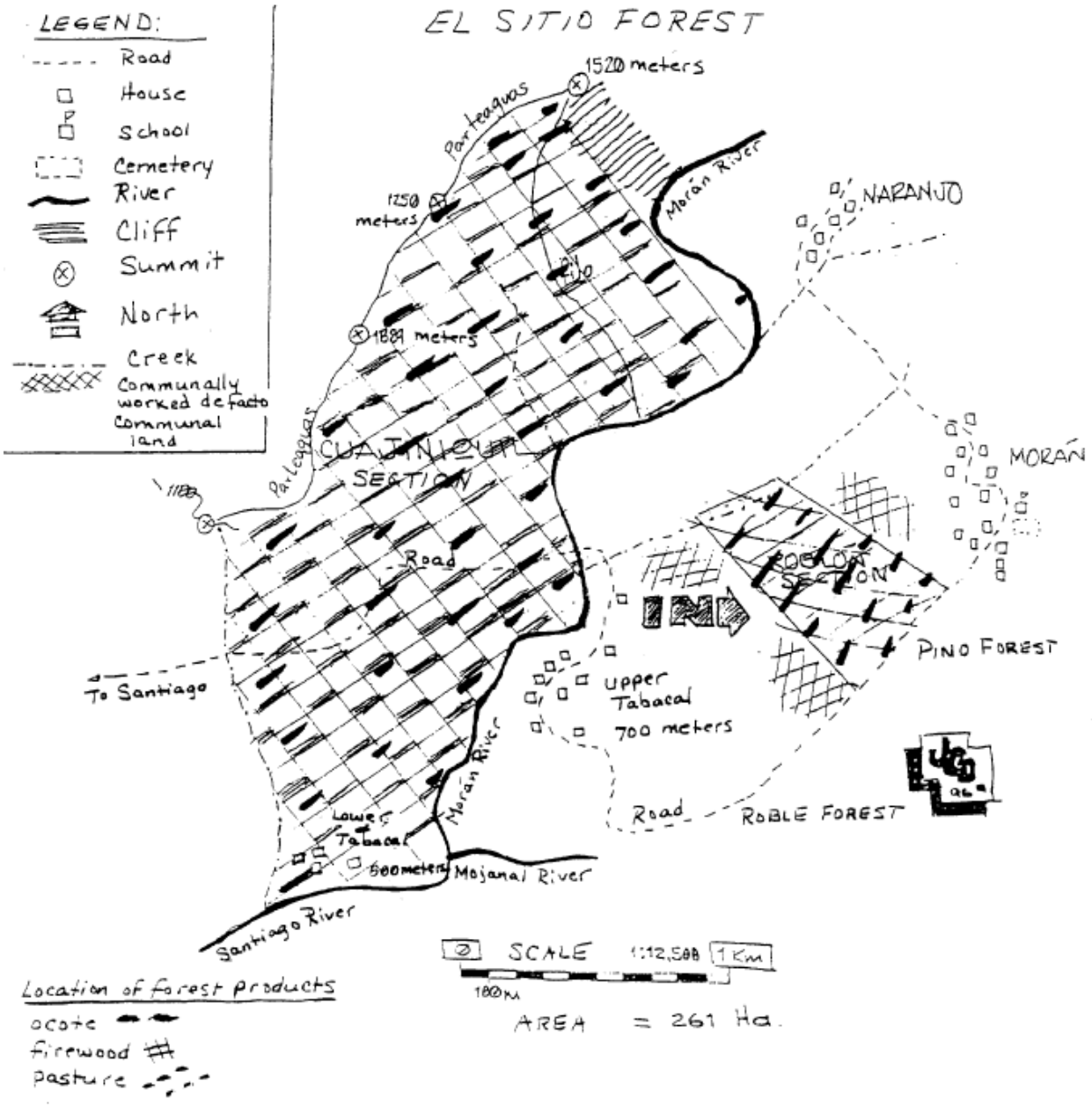
← Please remember to try to also elicit information here about products (benefits) that users may not consider products, such as using space in the forest for a sacred area.

Check if this -product:	► Trees <GTREES>	► Bushes <GBUSHES>	► Grasses <GGRASSES>	Leaves: ► On ground <GLGROUND>	Leaves: ► Climbing <GLCLIMB>	► Soils, stones, minerals <GSSM>	► Water <GWATER>	► Fungi <GFUNGI>	► Wildlife <GWILDLIFE>	► Other <GOTHER>
(1) *is* harvested or obtained, and user group has *right* to harvest	X	X	X		X	X	X		X	X
(2) is *not* harvested or obtained, and user group has a *right* to harvest or obtain this product				X						
(3) is *not* harvested or obtained, and user group does *not* have a *right* to -harvest or obtain this product										
(4) is harvested or obtained, and the user group does *not* have the *right* to harvest or obtain this product										

► This is a priority variable. Please make sure this question is answered.

A3. Trace or copy the "Forest Feature Map" developed in the *Forest Form* (question B1) on tracing paper if possible so it can be overlaid. **Identify the areas in this forest where the forest products and benefits coded on the Product Forms (From R) are harvested or used.**

On the map that you traced, you should identify (as accurately as possible) established harvesting boundaries, whether formally or informally established. If there are any landmarks used as boundary markers, identify these -landmarks. Identify any features of this forest that may be of special importance to the user group (e.g., heavily used trails). For additional mapping information, refer to the IFRI mapping instructions in section IV, C4.



A4. For this user group, what other benefits does this forest provide in addition to those coded on the Product Forms (Form R)? *(long text)* <GBENEFITS>

water
wild animals
medicinal plants
moss and pashte (used for making washcloth)
tree boles (about 5cm dbh, used for home construction)
valeriana
minerals: lime (to make tortillas and cover walls)
chistun (a type of adobe)
clay (previously used to make ceramics)
pamaca leaves (to make roofs for homes)

►**A5.** **Have individuals in this group tried to limit usage of this forest by harvesting forest products from other communal or government forests?** <GREGULATE>

Mark only one answer

(1) X No

(2) _____ Yes

►**A5a**. **If yes, what kinds of other forests have been used more intensively so as to limit usage of this forest listed on the front of this form?** <GOTHFOREST_> N/A

Multiple answers may be applicable.

(1) _____ Other communal forests to which this group **does not** have legal rights

(2) _____ Government forests

(3) _____ Private forests

(4) _____ Other communal forests to which this groups **has** legal rights

►**A5b.** **If yes, for which products?** ***(text)*** <GOTHPRODS>

N/A

► This is a priority variable. Please make sure this question is answered.

►A6. Are there other user groups who harvest from this forest? <GOTHUG>

Mark only one answer

(1) ____ No

(2) X Yes

►A6a. If yes, do these groups have use rights to harvest from this forest? <GOTHRIGHTS>

Mark only one answer

(1) ____ No

(2) X Yes

(3) ____ Some do have use rights and others do not

A6a1. If (2) or (3) for the above question A6a is marked, please provide the name(s) of the group(s) and fill out a *User Group Form* for each of these groups:

Tabacal community

►A6a2. If (1) or (3) for the above question A6a is marked, please describe the extent of illegal harvest of products by others who do not have legal rights. ***(long text)*** <GOTHUGDESC>

N/A

► This is a priority variable. Please make sure this question is answered.

A7. Describe how individuals in the user group interact with other groups using this forest. *(long text)* <GINTERACT>

Historically, Tabacal and Moran were linked through family ties. During the last twenty years, there have been conflicts between Tabacal and Moran. These include personal conflicts, a murder, and a possible theft of beasts of burden. The beasts belonged to families in Moran having a pasture near Tabacal. These conflicts continue to exist, and there are several families in the communities who do not get along with other families. It looks as if these families have not had conflicts among themselves regarding access to forests used by members of both communities

A8. What percentage of the user group's needs does this forest supply?

An estimate for this question will need to be made based on conversations with a number of different individuals.

Multiple answers may be applicable.

User Group's Need	Percent
►**Need for fodder** <GFODDER>	50
►**Need for fuelwood** <GFUELWOOD>	60
►**Need for biomass, green manure as farming inputs** <GBIOMASS>	1
►**Need for food** <GFOOD>	1
►**Other** <GNEEDOTH>	70
►**Describe "other"** <GDESCOTH> ocote to light firewood	

← Notice that this response is a percentage

►**A9.** **How do most individuals in the user group rank the condition of this forest?** <GCONDITION>

Mark only one answer.

(1) ____ Very sparse

(2) X Somewhat sparse

(3) ____ About normal for this ecological zone

(4) ____ Somewhat abundant

(5) ____ Very abundant

► This is a priority variable. Please make sure this question is answered.

►A10. How do most individuals in the user group feel about the type of conservation measures adopted in relation to this -forest? <GCONSERVE>

Mark only one answer.

(1) ____ Too restrictive, more could be harvested from this forest without endangering its sustainability over time

(2) X About the right level of conservation

(3) ____ Too lax, if harvesting continues at this rate, the sustainability of this forest is endangered.

►A11. Please comment on the user group's estimate of the most serious problems that they and those responsible for -managing this forest are facing during the next five years. ***(long text)*** <GPROBLEMS>

Firewood is becoming more scarce.
Where to make milpas on good soils, because it is prohibited to fell trees in the forest to make milpas.
Barkette disease can infect the pine forest.

A12. Please comment on the user group's estimate of the greatest opportunities that they and those responsible for -managing this forest are looking forward to during the next five years. *(long text)* <GOPPORTS>

N/A

► This is a priority variable. Please make sure this question is answered.

B0. MAJOR CHANGES SINCE LAST SITE VISIT

►**B0.** **Have there been any major changes in the relationship between the forest and the user group since the last visit, and if so, what were they?** ***(long text)*** <GHISTCHNG>

Do not complete if this is the first visit to this site to record information for the IFRI database.

N/A

C. SUBSISTENCE AND COMMERCIAL USES OF THE FOREST

►**C1.** **How many individuals in this user group depend significantly on this forest for their own subsistence?** <GINDSUBSIS> 290

►**C2.** **How many individuals in this user group depend significantly on this forest for their family income arising from commercial activities?** <GINDCOMM> 1

Commercial activities could be basket-weaving, carpentry, tea-stalls or restaurants, charcoal making, animal husbandry for sale of milk, wool and/or meat, collection of NTFPs for sale like pine resin, brazil nuts, tendu leaves, etc.

►**C3.** **How many households (as locally defined) in this user group depend significantly on this forest for their own subsistence?** <GHHSUBSIS> : 69

← See definition of household in Form S Guidelines (section III.A.4.) and in question A5, Form S

► This is a priority variable. Please make sure this question is answered.

►C4. **How many households (as locally defined) in this user group depend significantly on this forest for their family income arising from commercial activities?** <GHHCOMM> 1

Commercial activities could be basket-weaving, carpentry, tea-stalls or restaurants, charcoal making, and so forth.

►C4a. **Describe these commercial activities as related to both individuals and households (as locally defined).** ***(long text)*** <GCOMMDESC>

Specify activities by gender and general age group—youth, adult, elder.

Only one individual in the user group has as his ~~principle~~cg principal activity the sale of firewood to other individuals in the user group. Some members of the user group also obtain sporadic income from the sale of ocote (the resinous interior of pine trees, useful for starting fires) to other communities.

D. LIVESTOCK AND GRAZING IN THE FOREST

►D1. **How many individuals in the user group graze their animals in this forest?** <GINDANGRAZ> 69

D2. Do the users think it is more advantageous to feed the animals inside this forest? <GANFEEDIN>
Mark only one answer.

(1) ____ No

(2) X Yes

D2a. Why? *(text)* <GANFEEDINY>

The grass is abundant, and access to this area is open.

► This is a priority variable. Please make sure this question is answered.

E. USER GROUP IMPROVEMENT ACTIVITIES IN THE FOREST

E1. Have individuals in this user group undertaken any of the following management or regeneration activities, and if so, how frequently?

Note that each column in this type of question must have one and only one check mark. A blank column will be interpreted as missing-in-case.

Mark only one answer per column.

Activity / Frequency	►Planted seedlings? <GPLANTSEED>	►Planted trees? <GPLANTTREE>	►Planted bushes? <GPLANTBUSH>	►Built fences or other -barriers to protect parts of the forest? <GFENCE>	►Cleared undergrowth (burning or pulling)? <GCLEAR>
(1) Done once a year					X
(2) Done every several years					
(3) Done about every five years					
(4) Done about every ten years					
(5) Rarely done					
(6) Never done	X	X	X	X	

E2. During the past year, have individuals in this user group undertaken any of the following activities?

Activity	Mark "1" for No, "2" for Yes	If yes, describe: <GACTDESC>
Attempted to remove encroachments (e.g., vines, twigs, branches, etc.) from the forest?	<GRMENCROA> 1	
Created a nursery to distribute seedlings?	<GNURSERY> 2	Pine tree greenhouse owned by Nature's Defenders
Removed leaf or needle litter from the floor of the forest?	<GRMLEAF> 1	
Sought help from external authorities to improve vegetation growth?	<GGETHELP> 1	
Reduced harvesting levels for medicinal plants?	<GREDHARVST> 1	

► This is a priority variable. Please make sure this question is answered.

E3. During the past year, have individuals in this user group invested in any of the following new technologies that improve the productivity of this forest?

Activity	Mark "1" for No, "2" for Yes	If yes, describe: <GNEWDESC>
Adopting improved bee-keeping techniques?	<GBEE> 1	
Planting seedlings that alter species mix?	<GALTERMIX> 1	
Other technology for improving the productivity of the forest?	<GIMPVTECH> 2	Locals use fire to stimulate the growth of grass in the forest
Are there any other methods that the user group is following to protect, maintain, or improve the resources of the forest?	<GOTHMETH> 1	

F. OWNERSHIP AND RULE MAKING IN THE FOREST

►F1. Does this user group include the owner(s) of the forest (if privately owned)? <GOWNFOREST>

Mark only one answer. N/A

(1) ____ No

(2) ____ Yes

►F2. Are any individuals in this user group responsible for making rules about the forest? <GMAKERULE>
Mark only one answer.

(1) X No

(2) ____ Yes

►F3. Are there any individuals in this user group who do not participate in rule making for the forest? <GNORULE>
Mark only one answer.

(1) ____ No

(2) X Yes

►F3a. If yes, how would you describe these individuals who do <u>not</u> make rules? Are these individuals primarily from one religious group, one ethnic group, one gender? ***(text)*** <GNORULDESC>

No one makes rules, because the forest is open access for all members of the community.

► This is a priority variable. Please make sure this question is answered.

G. GENERAL QUESTIONS

G1. What are the cultural views of the individuals in this user group about this forest? Most individuals see this forest as: <GFORVIEW>

Mark only one answer.

(1) ____ Sacred

(2) X Economic resource

(3) ____ Both

(4) ____ Other *(describe)* <GVIEWOTH>: _____

G1a. In what ways do these views affect the use of this forest? *(long text)* <GVIEWDESC>

The forest is considered an important source of firewood, ocote, and grass for pasture, but is secondary to agriculture in importance.

▶ This is a priority variable. Please make sure this question is answered.

GEN. GENERIC QUESTIONS FOR USE BY RESEARCHERS

Please write your question(s) and the answer(s) where indicated below. **Enter the methodology and all questions together into the database under** <GWKSPMEMO>. Enter each answer into the database under the data name specified for each answer below. See Section II of the Field Manual for more detailed instructions.

Please describe why you are asking the generic questions below and/or what methodology you used to collect the data provided below. *(long text)* <GWKSPMEMO>

Question 1 (answer requires a whole number):

Answer to question specified by researcher *(integer)* <GGENSNUM1> _____

Question 2 (answer requires a whole number):

Answer to question specified by researcher *(integer)* <GGENSNUM2> _____

Question 3 (answer requires a whole number):

Answer to question specified by researcher *(integer)* <GGENSNUM3> _____

Question 4 (answer requires a whole number):

Answer to question specified by researcher *(integer)* <GGENSNUM4> _____

Text question 1:

Answer to question specified by researcher *(text)* <GGENTEXT1>

Text question 2:

Answer to question specified by researcher *(text)* <GGENTEXT2>

Text question 3:

Answer to question specified by researcher *(text)* <GGENTEXT3>

Question 1 (answer requires a decimal number):

Answer to question specified by researcher *(decimal)* <GGENLNUM1> _____

Question 2 (answer requires a decimal number):

Answer to question specified by researcher *(decimal)* <GGENLNUM2> _____

Question 3 (answer requires a decimal number):

Answer to question specified by researcher *(decimal)* <GGENLNUM3> _____

Question 4 (answer requires a decimal number):

Answer to question specified by researcher *(decimal)* <GGENLNUM4> _____

Answer(s) to question(s) specified by researcher that require(s) more than 250 characters *(long text)* <GGENMEMO>

III.A.8. FORM R—FOREST PRODUCT FORM: GUIDELINES

A. DEFINITION OF FOREST PRODUCT

A **forest product** is a resource unit or "good" that can be extracted from or used in the forest or is provided and/or maintained by forest users. IFRI makes an explicit distinction between a consumptive product and a nonconsumptive good. Consumptive products can be categorized as plants, plant-like forms, inorganic or mineral-like materials, or animals that are extracted for consumption by humans. Recreation or a religious activity in a forest is an example of a nonconsumptive forest use.

Consumptive products and nonconsumptive goods have *physical characteristics* that often play a role in how they are harvested or accessed and the types of rules that are prescribed by humans for their harvest and/or use, and maintenance. The more obvious physical characteristics are size, durability, and appearance throughout different seasons. Additional physical characteristics of a forest product can be described in terms of how likely, in its natural state, it can be reused by someone else once it is harvested or used in the forest (subtractability). Nonconsumptive goods include many uses made of forests by forest users whose enjoyment does not reduce the availability of that product for others (hiking on a path in a forest). The use of consumptive products by one person, on the other hand, reduces the availability of that product for others (harvesting tree limbs). In other words, consumptive products share the characteristic of subtractability. Physically excluding beneficiaries from both consumptive products and nonconsumptive goods usually means excluding them from a forest itself, and this is usually difficult and costly (see Table 9).

Each consumptive product and nonconsumptive good is also defined by a vast array of *social characteristics*, which include the assignment of rights of ownership, use, harvesting, and maintenance to various people (Fortmann and Bruce 1988). Trees, for example, can be owned by one person, yet others might have rights to harvest fruit, and still another person might have the right to harvest the branches. Each forest product is defined in terms of who can use it, who can change the use of it, who is empowered to destroy it, and who has the right to pass rights on to heirs or sell these rights to others. (Note: A common error that researchers make on this form is to call the forest product "fuelwood." This is a **use** of a forest product. The **product** is a tree or a part of a tree.)

B. PURPOSE OF THE FOREST PRODUCT FORM

The purpose of the *Forest Product Form* (Form R) is to obtain information about the attributes and availability of the most important consumptive products and nonconsumptive goods used by each user group in a specific forest, as well as the rules (if any) used by that group to regulate access, harvest, and use of this forest product.
One Form R is completed for each of the three most important forest products (consumptive products or nonconsumptive goods) that the user group obtains from a forest. Fewer than three Form Rs are completed only if the group has fewer than three uses of the forest. If the group uses more than three products or goods, the field team is encouraged to code additional forest products, using a separate Form R for each product used or accessed in a particular forest. If hiking, water, and soil (i.e., a nonconsumptive good and inorganic, mineral-like substances) are considered the three most important products of those noted in Form G, then the field team should ask the user group if one or two plant or plant-like products are also important. At least one plant or plant-like product should be coded on one of the Form Rs.

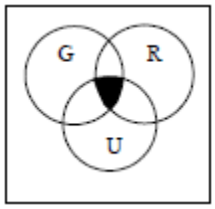
Form R includes descriptions of the origin of the user group's product rules, the way the forest product is used, how much of it is harvested, when the product is available, and its value. The form includes a description of the harvesting technology, the rules and restrictions for the timing of harvests, location of harvest, quantity harvested, and processing and sale of each consumptive product or nonconsumptive good. IFRI FORM R

TABLE 9: EXAMPLES OF FOREST PRODUCTS, CHARACTERISTICS, AND RULES-IN-USE

Product Type	Product	Product use	Benefit	Highly subtractive?	Example of rules- in-use
Plants/plant-like forms	Trees	Fencing	Animal safety	Yes	Live branches must not be harvested.
	Herbaceous plants	Medicinal herbs	Health	Yes	Everyone except traditional healers is forbidden from harvesting these plants.
Inorganic materials	Soil	Building houses	Protection	Yes	Users must not extract soil except in the pit designated for that purpose.
	Water	Drinking	Health	Yes	Water for drinking must be taken from spring, and animals must not use spring for drinking.
Nonconsumptive goods	Path in forest	Hiking	Exercise	No	Paths in the forests may be used by any member of settlements surrounding a forest.
	Temple	Worship	Spirituality	No	Acacia trees must not be cut down because of religious beliefs.

C. GUIDELINES FOR DATA COLLECTION

1. Defining a product (or products) used by user groups and the rules that govern its (their) use.



Through the process of interviewing user groups about their uses of each forest in a site, the team describes the types of consumptive products and nonconsumptive goods they harvest or use, the types of rules that are associated with the harvest or use, and maintenance of the products. Researchers need to complete Form R after Forms U and G have been completed for each user group. Information in Form U and Form G will be necessary to lay the foundation for obtaining the specific information about each forest product. By asking the types of questions listed in Form U and Form G in advance, some degree of trust between members of the user group(s) and the research team will hopefully be established. Such trust will be very helpful in obtaining the more sensitive information covered in sections E (Infractions) and F (Penalties) of Form R. The team should interview many users on many occasions to identify the rules for the use of each forest product.

Key Questions for the Research Team When Defining Forest Products in a Site

1. Who are the forest users?
2. What forest products do they access?
3. Are these forest products consumptive or nonconsumptive?
4. Where in the forest do the forest users access the forest products?
5. What part(s) of the consumptive products do they harvest?
6. What forest products do the users consider the most important?
7. Who has rights to access each forest product?

2. Data Collection

The rule configurations across different user groups and different forest products can be expected to vary significantly. While one user group may have clearly defined rules with regard to timing, location, technology, quantity, processing, and sale, another may have rules that pertain only to timing and quantity. Yet a third group may have a few vague rules relating only to location. Still other user groups without formal organization will have no rules at all. Therefore, a completed Form R for one user group may look vastly different from a completed Form R for another user group. Additionally, the rules that the user group applies to its most important forest product may be vastly different from the rules that it applies to the other products it uses.

3. Highlights about Questions on the Forest Product Form

Question D1 is important because it asks if any rules actually affect the harvesting level of the consumptive product or access to the nonconsumptive good. A "no" answer to this question will mean that existing rules do not limit/restrict harvesting of or access to this forest product. This may mean total open access. A "yes" answer, on the other hand, will mean that members of the user group limit/restrict their access to and/or harvest of this product. Researchers should be absolutely confident of their answer to this question.

4. Team Leader Responsibilities <u>before</u> Leaving the Site

The team leader must check this forest product, including the specific information about it, with those noted in Form G to be sure that the coded product is mentioned by the user group. He or she also should compare this information to Form Ps to see if the species, if applicable, has been found in some of the forest plots. If no plant or plant-like form is coded, and the field team has not asked the user group for at least one plant or plant-like form, it is the team leader's responsibility to make sure at least one plant or plant-like form is coded on a Form R.

D. SPECIFIC GUIDELINES BY SECTION AND QUESTION

Top of First Page

Name of the forest product, name of forest product species, and name of part harvested. The forest product will be either a consumptive product, such as a tree, bush, grass, leaf, mineral, water, or wildlife, or a nonconsumptive good, such as recreational use of the forest. The name of the forest product species will be the name of each product (if named by species; if not, by local name), and the name of the part harvested for plant and plant-like forms will be limbs, branches, trunk, nuts, berries, bark, or flowers. The code for the name of the part harvested will be one of the following: A = all or most of tree, bush or grass;
B = bark; F = flowers; H = higher sections (e.g., branches, limbs); L = leaves; N = nuts and fruits; O = other; R = roots; and T = trunk or main section.

<u>A. History</u>

A2. An accurate answer to this question probably will not be obtained by simply asking members of the user group. The research team should not only interview members of the user group but observe, if possible, how the product is harvested, used, and/or maintained during the field visit. This will give the research team a better idea of the actual relationship between the rules-in-use and the formal rules.

<u>B0. Major Changes Since Last Site Visit</u>

If this is a second or later visit, describe major changes in the rules about this forest product since the last visit. Examples of such changes might include increases or decreases in allowable amounts of forest products harvested or the introduction of a new harvesting technology. If the product is collected in more than one forest, the team needs to identify changes affecting the product in each forest. Remember to complete the *Forest Product Form* (Form R) for each forest in which the consumptive product is collected or the nonconsumptive good is used. Even a "universal" change, such as a new rule affecting the forest product, may have different ramifications depending on the forest, so researchers should take care to identify possible variations

B. Description of the Forest Product

B1. Is the group's claim to the forest product established by law, by the fact that it claims harvesting rights to the consumptive product or access to the nonconsumptive good possibly without legal backing, or both?

B1a. A detailed explanation of legal rights to the forest product is very important to each study.

B4 and B5. These two questions attempt to discover if there is any difference between the period of time when a forest product is available to harvest or accessible for use, and the period of time when the product is actually harvested or used. For example, households might have gas for cooking and therefore need to gather wood for heat only during the cold months, even though the wood is available all year, or a user group might have rules restricting access to a particular entry to the forest during part of the year.

B6b. If response 2, 3, 4, or 5 is checked in B6, answer this question. The answer requires converting a local calendar if it is different from the January-to-December calendar.

B11. The best source of information for this question will be the records kept by the user group relating to past and present harvesting levels of the product. If such records are not kept or are unavailable, attempt to get an estimate with the help of a knowledgeable user group member.

B12 through B13a. Use the definition of household as established in question A5 of Form S to answer these questions. The answers to these questions will help to check the information supplied in B11. People will recall information more accurately at the household level than at the user group or individual level.

B14a. This question asks what the closest substitute for this forest product is that is available to members of the user group. For example, a user group may harvest a particular type of hardwood to make furniture. Another type of hardwood, which is inferior to the hardwood actually harvested but could be used in furniture construction, might also be available in the same forest. In another example, a user group may use a certain path to arrive at a meeting place. Another path, which is longer but could be used to get to the same place, might also be available in the same forest. The inferior hardwood and the less desirable path would be the closest substitutes available. Substitutes include alternative products from the same forest and the same product from other forests. Other possible sources are listed in B14b.

C. Harvesting and Accessing Technology (Tools and Techniques/Methods)

C1 through C6a. "Technology," as used in these questions, refers to both the **tools and methods used** to harvest each forest product or access each nonconsumptive good. For example, while two different user groups might both rely on such mechanical devices as tractors and chain saws (the tools) to harvest pine trees, one user group might employ selective logging and the other might employ clear-cutting (the methods). In another example, while two different user groups might both rely on such means as mules (the tools) to take visitors to view wildlife in the forest, one user group might include a tour of other parts of the forest and the other might take a direct route to the viewing place (the methods). Researchers will need to be aware of this distinction to answer these questions properly.

D. Rules for this Forest Product

D3a. If restrictions have changed on the total quantity harvested, carefully describe how they have changed.

D4. The answers to this question incorporate the views of the user group members and other foreest users. It should also be based on the views of other knowledgeable observers, including observations that the research team makes during the course of the site visit.

E. Infractions

E1. This question identifies types of infractions and when they occur. It also lists the reasons for violating rules. These infractions are used in discussions of penalties in section F. They fulfill the "or else" clause used to define a rule.

F. Penalties

If there are penalties for harvesting, the severity and whether they are perceived to be fair can be assessed in section F.

G. Product Uses

G1. The researcher is asked to rank the importance of this forest product in relation to its use by the user group. Please remember that this question refers to one forest. If the user group uses more than one forest to harvest or use this product, then more than one Form R will be completed. Please give members of the user group time to rank this product in the order of importance to them. If no plant or plant-like forms are coded, researchers should ask additional questions about which products are most important to the user group. At least one plant or plant-like product must be coded on a Form R.

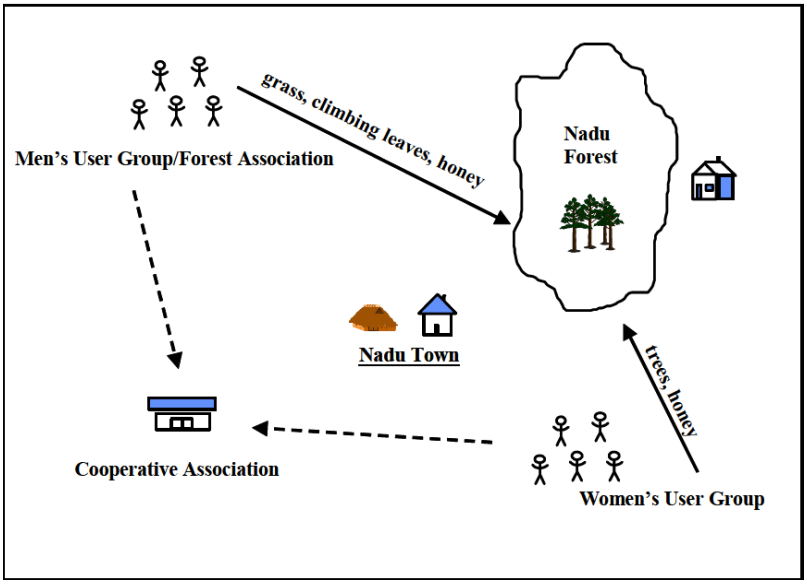
If there are fewer than three important forest products, code one or two. Please give members of the user group time to rank the three products in the order of importance to them, then average the responses. For a plant or plant-like product, write the botanical name of the species in the header section, if known. If unknown, write the local name and the unknown letter assigned on the Master Species List. If the species is not listed on the Master Species List, please add it to the list. While completing this form, The researcher should remember to fill out a Forest Product Form (Form R) for each of the three most important products that are listed (at a minimum).

An exception to this method of coding is when inorganic or nonconsumptive goods are listed by the user group as the three most important products. In this case, they must be coded according to the user group's definition of importance. If no plant or plant-like forms are coded, researchers should ask additional questions about which products are most important to the user group. If any plant or plant-like forms are listed, at least one must be coded as an additional product on A2a on Form G and in Form R.

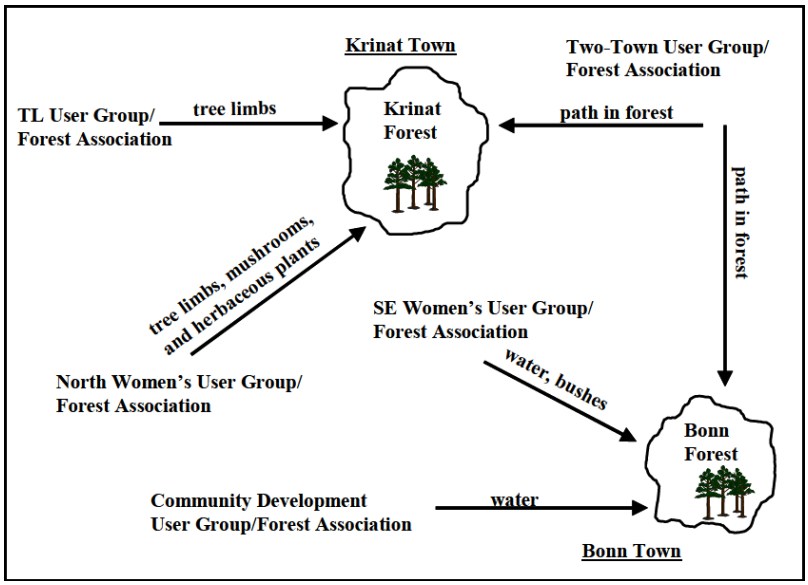
G7-G19. The researcher is asked to distinguish the uses of the forest product by most of the households in the user group. There are three exclusive responses possible for each question: subsistence, commerce, or both.

BOX 11: EXAMPLES OF FOREST PRODUCT HARVESTING

a) Two user groups use Nadu Forest. The Men's User Group harvests three forest products: grasses, climbing leaves for fodder, and honey. The Women's User Group harvests trees for timber and collects honey. The team should complete Form U for each user group. The men are organized around grazing issues, so one Form A is completed for the Men's Forest Association. Both men and women work together in the Cooperative User Group to coordinate the collection of honey; one Form A is completed for the cooperative. The research team should complete at least five Form Rs. The research team should complete three Form Rs for the Men's User Group, one each for grass, climbing leaves, and honey. For the grass, Form R should note the part harvested as the higher section of the grass and the use of the product as fodder. Since the women use only two products from the forest, the research team will complete two Form Rs for this user group, one each for trees and honey. The team should be alert for any indication that the women use Nadu Forest for additional products, including nonconsumptive products, that they may not have mentioned to the research team. It is possible that the women did not think that the research team would be interested in nonconsumptive products or some forms of use that they do not perceive to be important. If the research team notes additional uses, additional Form Rs should be completed for the Nadu Women.



b) Follow the example in Box 10 (Form G instructions). Ideally, at least three Form Rs should be completed for each group–forest relationship. In this example, however, some of the user groups use fewer than three products in each forest. Five Form Rs will be completed for Krinat Forest: tree limbs for the TL User Group; tree limbs, mushrooms, and herbaceous plants for the North Women's User Group; and a path in the forest for the Two-Town User Group. Four Form Rs will be completed for Bonn Forest: water for the Community Development User Group, water and bushes for the SE Women's User Group, and a path in the forest for the Two-Town User Group. Although both the TL User Group and the North Women's User Group collect tree limbs in Krinat Forest, two separate Form Rs for tree limb collection in Krinat Forest will be completed: one for each user group. By completing two separate Form Rs, it becomes possible to capture differences between the two user groups in terms of rights to the product, rules for resource use, quantities of the product collected, and reliance on this particular forest for this particular resource. Likewise, when a single user group uses the same product in two different forests, as is the case with the use of forest paths by the Two-Town User Group, a separate Form R must be completed for the product in each forest. The Two-Town UG may have different rights to use paths in the two forests, they may have developed different rules for the two forests, and the frequency with which they use paths in the two forests may differ considerably.



▶ This is a priority variable. Please make sure this question is answered.

FOREST PRODUCT FORM

An IFRI forest product is a resource unit that can be extracted from the forest or a "good" that can be used in the forest or maintained by forest users. IFRI makes a distinction between a consumptive product and a nonconsumptive good. One Form R will be completed for <u>each</u> forest product (including consumptive and nonconsumptive) that the user group obtains from or uses in the forest. At least one of the products should be a plant or plant-like form. Note that a separate Form R must be completed for the product for each forest in which a particular user group harvests or uses it. Even if the same rules apply to the use of a product or good by a given user group in multiple forests, quantities harvested, availability, or other factors may differ from forest to forest.

Research ID: 005 Country ID: GUA Site ID: 001

Date of site visit (mm-dd-yr): 07-31-96

Date(s) data collected for this form (mm-dd-yr): 07-31-96 through 09-27-96

►**Name of this forest product <RNAME>:** : tree .

►**Name of this forest product species, if applicable <RSPECIES>:** [Inuite] Quercus sapotae folia .

Name of part harvested or used, if applicable: all of it .

Name the forest and the user group that is responsible for the extraction or use of the product described on this form

►**<FK_GRPTOFOR>:** **Forest** El Sitio **User Group** La Bamba

Name of person filling out this form: Clark Gibson

Name(s) of person(s) with whom discussions held: majority of community

Location of discussions (fields, home of respondent, place of business, etc.): homes and fields

►**Is this a consumptive (extracted) product? <RCONSUMPTIVE>**

Mark only one answer.

(1) ____ No
(2) _X_ Yes

A. HISTORY

►**A1.** **What is the most important source of the rules related to the forest product described on this Form R?**
<RORIGIN>
Mark only one answer. Mark N/A if there are no rules and skip to question B1 to complete the form.

(1) _X_ Rules have evolved over a long period of time. There is no clear source.
(2) ____ Rules were created by the founding members of this user group and there are myths or stories about this origin
(3) ____ Rules were created more recently by an informal user group
(4) ____ Rules were created more recently by a formal user group (e.g., association)
(5) ____ Rules were created more recently by national/regional/local government legislation
(6) ____ Rules were created more recently by an organization not listed above
(7) ____ Other (describe) <RORIGINOTH>: _____

►**A2.** **Are the rules that are used in practice (rules-in-use) similar to rules recognized as law for this product?**
<RINUSE>
Rules recognized as law (legally upheld) for this product may be customary; national/regional/local government law; or both. Laws include legislation, court rulings, and administrative procedures.

Mark only one answer. Mark N/A if there are no laws related to the use of this forest product.

(1) ____ No, rules-in-use are completely different from laws
(2) ____ No, rules-in-use vary substantially from laws
(3) ____ Yes, rules-in-use conform closely to laws
(4) _X_ Yes, rules-in-use conform broadly to laws

Observation of the user group's harvesting and use patterns will be necessary to accurately answer this question ←

► This is a priority variable. Please make sure this question is answered.

B0. MAJOR CHANGES SINCE LAST SITE VISIT

►B0. Have there been any ***major*** changes in the rules about this forest product since the last visit, and if so, what were they? *(long text)* <RHISTCHNG>

Do not complete if this is the first visit to this site to record information for the IFRI database.

N/A

B. DESCRIPTION OF THE FOREST PRODUCT

►B1. What is the nature of the group's current legal claim to the harvest or use of this forest product? <RLEGCLAIM>
Mark only one answer.

(1) _____ De jure (by right, as established by law)

(2) _____ De facto (as exists, not necessarily by legal establishment)

(3) X De jure and de facto (they have a formal right and they are exercising it)

(4) _____ Contrary to formal law

►B1a. Describe: *(long text)* <RLEGDESC>

Please include, as part of this description, a detailed explanation of the rights of tenure for the product per season.

All residents of Moran have the right to obtain trees for firewood, based on the following reasons:

1. According to the access rights for communal lands that the law gives to the Municipality of Rio Hondo in El Sitio.

2. According to the law of protected areas and its enabling legislation (Decree No. 4-89, Title II, Chapter I, Article 8), which defines the Zones of Multiple or Sustainable Use and of Recooperation and Cultural Development in the following way: "The primordial objectives of these areas will be to protect the Nuclear areas and the sustainable use of natural resources without negatively and permanently affecting its diverse ecosystems. All types of environmental regeneration will be permitted as well as sustainable and stable human activities. All of these activities should be under scientific control. Until the Master Plan is approved, it will not be possible to develop activities based on the use or required extraction of resources. An exception to this rule will be traditional uses by the indigenous population in limited form in order to satisfy their local necessities."

3. According to the Sierra de Las Minas Biosphere Reserve Master Plan, 1992-1997, written by Nature's Defenders, the purpose of the Buffer Zone is "to achieve the sustainable use of natural resources to improve the quality of life of its inhabitants. "

4. According to the enabling legislation of the forestry law, Governmental Accord No. 916-90, Article 84: "The volume of wood and other wood products used for family use will be guided in the following way: a) a maximum of twenty cubic liters per year will be permitted to each family."

► This is a priority variable. Please make sure this question is answered.

►**B2.** **How is this forest product used by individuals in this group?** <RUSED>

Mark only one answer.

(1) _X_ Primarily used for consumption by individuals' families
(2) ___ Primarily used for animal consumption
(3) ___ Primarily used for animal bedding
(4) ___ Primarily used as biomass to enrich nutrients in the soil of farming plots
(5) ___ Primarily used for household construction
(6) ___ Primarily used to produce other products for household consumption
(7) ___ Primarily used to produce other products for sale
(8) ___ Primarily sold in a local or nearby market held in the settlement area
(9) ___ Primarily sold in an external market
(10) ___ No single primary use (*do not check this answer unless there really are several equally important use of this forest product)*
(11) ___ Primarily used for nonconsumptive purposes

B3. What percent of the product accessed by this group is used or sold?

The sum of the percentages in B3a–B3e should not exceed 100%.

►**B3a.** 95 **% Used for the subsistence of individuals or their animals <RSUBSISTENCE>**

►**B3b.** 5 **% Sold in a market held in the settlement area <RSOLDSETTLE>**

►**B3c.** _____**% Sold in an external market <RSOLDMARKET>**

►**B3d.** _____**% Used as input to farming systems (e.g., bedding or enhancement) <RFARMING>**

►**B3e.** _____**% Used for nonconsumptive purposes <RNONCONSUM>**

B4. How long is this forest product available for harvest or accessible for use? <RAVAIL>

Mark only one answer.

(1) ___ Up to one week each year
(2) _____ Two weeks each year
(3) _____ One month each year
(4) _____ Two months each year
(5) _____ One-quarter of the year
(6) _____ One-half of the year
(7) ___ Three- quarters of the year
(8) _X_ All year round
(9) ___ Every other year
(10) ___ Every 3rd year
(11) ___ Every 4th year
(12) ___ Every 5th year
(13) ___ Every 10th year or more

B5. When do the individuals in this user group **actually** harvest or use this forest product? <RWHENHARV>

Mark only one answer.

(1) _____ Up to one week each year
(2) _____ Two weeks each year
(3) _____ One month each year
(4) _____ Two months each year
(5) _____ One-quarter of the year
(6) _____ One-half of the year
(7) ___ Three- quarters of the year
(8) _X All year round
(9) ___ Every other year
(10) ___ Every 3rd year
(11) ___ Every 4th year
(12) ___ Every 5th year
(13) ___ Every 10th year or more

► This is a priority variable. Please make sure this question is answered.

B6. If available all year round, is the quantity of this forest product (that is available for harvest or use) relatively constant from season to season? <RCONSTSEAS>

Here, the responses for variation (little, moderately, dramatically) should be seen as presented in an increasing order of magnitude so that "moderately" in response 3 represents the approximate middle from "little" to - "dramatically."
Mark only one answer.

(1) _____ Quantity of forest product available does not vary from season to season
(2) X Quantity of forest product available varies a little from season to season
(3) _____ Quantity of forest product available varies moderately from season to season
(4) _____ Quantity of forest product available varies substantially from season to season
(5) _____ Quantity of forest product available varies dramatically from season to season

B6a. If the quantity of this forest product varies dramatically from season to season (response 5 in question B6), then: <RVARY>

Mark only one answer. N/A

(1) _____ Maximum quantity available in one season is twice the minimum in other seasons
(2) _____ Maximum quantity available in one season is five times the minimum in other seasons
(3) _____ Maximum quantity available in one season is ten times the minimum in other seasons

B6b. If the availability of this forest product varies *at least* a little from season to season (response 2, 3, 4, or 5 in question B6), which month during the year is it **most** available? <RMONTH>

If necessary, convert from local calendar to a month based on the conversion completed in question C7, Form O.

Mark only one answer.

(1) _____ January
(2) _____ February
(3) X March
(4) _____ April
(5) _____ May
(6) _____ June
(7) ____ July
(8) ____ August
(9) ____ September
(10) ____ October
(11) ____ November
(12) ____ December

B7. If this forest product is **not** available year round, is the beginning of the season when this product is normally available for harvest or use -accurately predicted within <RPREDICT>: N/A

This question tries to obtain information about the predictability of having a product to harvest or use; that is, how certain the user group can be about the availability of the product for harvest or use.
Mark only one answer.

(1) _____ A one-week period
(2) _____ A two-week period
(3) _____ A one-month period
(4) _____ A two-month period
(5) _____ A three-month period
(6) _____ A four-month period
(7) _____ A five-month period
(8) _____ A six-month period
(9) _____ Not predictable
(10) _____ More than a six-month period

► This is a priority variable. Please make sure this question is answered.

B8. Is the quantity of the forest product that will be available for harvest or the available time for use of a nonconsumptive good relatively constant from year to year? <RConstYear>

Here, the responses for variation (little, moderately, dramatically) should be seen as presented in an increasing order of magnitude so that "moderately" in response 3 represents the approximate middle from "little" to "-dramatically."
Mark only one answer.
Quantity of forest product available/length of available time for use:

(1) _____ does not vary from year to year
(2) X varies a little from year to year
(3) _____ varies moderately from year to year
(4) _____ varies substantially from year to year
(5) _____ varies dramatically from year to year

B9. What is the unit used to measure the quantity of this forest product taken from the forest (e.g., bundle, headload, basket)? Please furnish the local name of the unit used.<RUnit>
A load, called a "carga," which can be carried by a mule

B9a. Can this unit be converted to a standard metric unit for weight, area, length, or volume? <RConv>

For example, a typical basket of fodder leaves usually weighs x pounds which can be converted to y kilograms.
Mark only one answer.

(1) _____ No
(2) X Yes

B9b. If yes, how? *(brief text)* <RConvHow>
A load is a quantity that a mule or another beast of burden can carry, which is approx.. 80kg. Women can carry approx. ¼ on their heads, which is about 20kg.

B10. What is the monetary value for a unit of this forest product, in local currency?
Please enter numeric value only (no units), e.g., 25.

In the settlement area <RValSettle>: 15
In the nearest market <RValMarket>: 10
In a market to which one can walk in one day's time<RValWalk>: 20

B11. What is the total amount of local units that individuals in this user group, as a whole, harvested?

Please enter numeric value only (no units), e.g., 25.

	Local Unit
Last year (the 12 months preceding the day of data collection) <RAmtYearA>:	717, 600
The year before last year <RAmtYearB>:	
The year before that <RAmtYearC>:	

▶ This is a priority variable. Please make sure this question is answered.

B12. What was the least quantity of these units harvested by any household (with individuals in this user group) last year? <RQTYLEAST> MIC

B12a. How many households harvested this quantity of these units? <RHHLEAST> MIC

B13. What was the greatest quantity of these units harvested by any household (with individuals in this user group) last year? <RQTYMOST> MIC

B13a. How many households harvested this quantity of these units? <RHHMOST> MIC

Use the definition of household established in question A5 on Form S.

►B14. Is there a substitute for this forest product? <RFILTERSUBS>
Mark only one answer.

(1) _____ No *(Skip to section C)*

(2) _____ Yes

►B14a. What is(are) the closest substitute(s) for this forest product that the individuals in this user group could obtain? ***(text)*** <RSUBST> *Please list in declining order of availability.*

Substitutes can include alternate forest product(s) in the same forest or the same or alternate product(s) in another forest.

Other tree species
Cerel
Gamuso
Mezcal

B14b. Where is the most easily obtained substitute named in B14a readily available?

Location	Mark "**1**" **for No**, or "**2**" **for Yes**
In the forest(s) this group is using	►<RFOREST> 2
In another community's forest(s)	►<ROTHCOMM> 1
In government forest(s)	►<RGOVFOR> 1
Through agroforestry production	►<RAGROFOR> 1
Through agricultural production	►<RAGRIPRO> 2
At local markets *(A local market is one held in the settlement where the user group resides while using this forest or in a nearby settlement that holds regular market days.)*	►<RLOCALMKT> 1
At external markets *(External markets are those located in villages, towns, or cities located away from the user group settlement.)*	►<REXTERMKT> 1

►B15. How costly is the most easily available substitute? <RSUBSTCOST>
Mark only one answer.

(1) X It is easily affordable by almost all individuals in this group

(2) _____ It is easily affordable by most individuals in this group

(3) _____ It is easily affordable by about half the individuals in this group

(4) _____ It is easily affordable by only a few individuals in this group

(5) _____ It is easily affordable by almost no one in this group

► This is a priority variable. Please make sure this question is answered.

C. HARVESTING AND ACCESSING TECHNOLOGY (TOOLS AND TECHNIQUES/METHODS)

C1. Describe the technology used by most individuals and the methods of use in this group to harvest this consumptive product or use this nonconsumptive product. *(text)* <RTECHDESC>

Technology refers to methods as well as tools. The individuals could use axes, saws, sickles, fire, plucking, breaking, sweeping, etc. to harvest this forest product. For nonconsumptive goods, individuals could use motorized vehicles to sweep away debris for access. Note that a technique need not involve implements, as in plucking or collecting products by hand, grazing livestock by herding them, or walking into the forest. Please describe any and all such methods and tools used for harvesting or using this product.

They use machetes to cut firewood and beasts of burden (mules and horses) to take the firewood to their homes. Women take the firewood on their heads.

Technology= tools and methods

C2. The primary source of this technology is: <RTECHPRIME>
Mark only one answer.

(1) _____ Local indigenous knowledge
(2) X Indigenous technology developed by other user groups and adopted by this group
(3) _____ Research and extension services provided by government and/or other external organizations
(4) _____ Private vendors

C3. Where can individuals in this user group find the tools that are used in this technology? <RFINDTOOL_>
Multiple answers may be applicable.

(1) _____ Tools are made by users themselves
(2) X Tools are easily found in local markets in this region
(3) _____ Tools are easily found in a major city in this country
(4) _____ Tools are provided by NGOs
(5) _____ Tools are provided by government officials
(6) _____ Tools are provided by donor organization(s)
(7) _____ Other (*describe*) <RFINDOTH>: _____

C4. Do the tools used by most individuals in this group help in limiting the quantity of this forest product that can be harvested? <RTOOLLIMIT>

Example: A small knife that cannot cut through more than a small plant, or a rope of uniform length used by all individuals when tying fodder bundles.
Mark only one answer.

(1) X Quantity is not limited at all
(2) _____ Quantity is minimally limited
(3) _____ Quantity is moderately limited
(4) _____ Quantity is greatly limited

► This is a priority variable. Please make sure this question is answered.

C5. Do different individuals in the group use different technologies for harvesting products from the forest? <RDIFFTECH>

Mark only one answer.

(1) ____ No

(2) X Yes

C5a. If yes, please describe the different technologies in use **and** the reason for their use of different technologies. *(long text)* <RDIFFDESC>

Typically, men cut the firewood and bring it home on beasts of burden. When women and children go for firewood, they return with it on their heads and backs, respectively.

►C6. Have individuals in this user group changed their technology of harvesting within the last five years? **<RCHNGETECH>**

Mark only one answer.

(1) X No

(2) ____ Yes

►C6a. If yes, state the approximate year of change and what the reason was for the change, and give a brief description of the change. **<RCHNGEDESC>**

N/A

►C7. **Do users have price support contracts or guaranteed purchase agreements for the selling of resource units or -commodities produced by resource units?** <RCONSUPP>

This question tries to obtain information about the certainty of selling forest resource units/products or commodities/items produced from these resource units/products to one or more buyers. That is, information about any secure arrangement between individuals in the user group or the user group as a whole and one or more buyers.

Mark only one answer.

(1) X No

(2) _____ Yes

►C7a. **If yes, describe the type of contract or agreement used, including the parties of the contract, the price levels, and whether the contract is currently operating:** ***(text)*** <RCONDESC>

N/A

D. RULES FOR THIS FOREST PRODUCT

►D1. **Do accessing, harvesting, processing, or selling rules exist that affect the harvesting level or use of this product?** <RRULEEXIST>

Mark only one answer.

(1) _____ No — ***Skip to section G***

(2) X Yes

►D2. **Are there restrictions on harvesting this forest product in regard to the quantity of forest products that can be harvested?** <RQUANTITY>

Mark only one answer.

(1) _____ No

(2) X Yes

► This is a priority variable. Please make sure this question is answered.

►D2a. If there are restrictions as specified above, how is the total quantity to be harvested or used during a year determined?<RDETERMINE>
Mark only one answer.

(1) ____ An estimate of the total availability each year (quantity will vary from one year to the next)

(2) _X_ A fixed upper limit (quantity does not vary from year to year unless the rule is changed)

(3) ____ Historical use patterns (upper quantity remains constant from year to year)

(4) ____ Other (*describe*) <RDETEROTH>: Only an amount for home use may be harvested

►D2b. If there are restrictions as specified above, how is this total quantity distributed among individuals in the user group? <RDISTUSER>
Mark only one answer.

(1) X Every household is assigned an equal quantity

(2) _____ Each household is assigned a specified quantity based on ownership of animals (example: a household with 10 animals is assigned a quantity limit that is higher than a household with 1 animal)

(3) _____ Each household is assigned a specified quantity based on ownership of land (example: a household with 10 hectares is assigned a quantity limit that is higher than a household with 1 hectare)

(4) _____ Each household is assigned a specified quantity based on the number of individuals in the household

(5) _____ Each household is assigned a specified quantity based on gender

(6) _____ Each household is assigned a specific quantity based on prior customary usage

(7) _____ Each household is assigned a specific quantity based on an auction of rights to a particular quantity

(8) _____ Each household is assigned a specific quantity based on its contribution to maintenance or protection of the forest

(9) _____ Specific quantities are assigned on some other basis

►D2c. If there are restrictions as specified above, *rights* to a particular quantity of this forest product can be: <RRESTRICT_>
Multiple answers may be applicable. N/A

(1) _____ Inherited by offspring

(2) _____ Sold to another individual of the user group

(3) _____ Sold to another resident of the settlement

(4) _____ Sold to an outsider (without prior approval of user group–forest association or government official)

(5) _____ Sold to an outsider (with prior approval of user group–forest association or government official)

►D3. Have the restrictions on the total quantity to be harvested during a year changed over the past 10 years?<RRESQTY10> MIC

Mark only one answer

(1) _____ No

(2) _____ Yes

►D3a. If yes, how have they changed? Please specify the basis for the restriction.<RQTYHOW10> N/A

► This is a priority variable. Please make sure this question is answered.

D4. Besides or in addition to restrictions on the quantity that can be harvested, please indicate any other restrictions on -harvesting or using this forest product.

Describe the restrictions that apply. Write a "0" if the restriction is not used. If such a restriction is used, indicate whether the restriction is gender specific, noting "1" for female, "2" for male, or "3" for both in the appropriate -column. If a restriction exists and answer columns two and three are blank, that information will be considered missing-in-case. Blanks in answer column four will be considered missing-in-case if "yes" is coded in answer column three.

Restrictions	Restricted? "0" = no "1" = female, "2" = male "3" = both	If a restriction applies, describe: <RRESDESC>	If a restriction applies, has it changed over the past ten years? "1" = no "2" = yes	If a restriction has changed over the past ten years, how has it changed? <RRESHOW10>
The location within the forest where this forest product can be -harvested or used	<RLOCATION>		<RLOC10>	
The use of various types of technology	<RTYPETECH>		<RTYPE10>	
The time period during which the forest product can be harvested or used	<RTIMING>		<RTIMING10>	
The characteristics of the product itself (e.g., not cutting trees or bushes until they are a particular size, not cutting grasses until seeds have matured and dropped, no camping when extremely dry)	<RCHARACTER>		<RCHAR10>	
The type of transport that can be used to remove or access this forest product (e.g., only human transport, only one horse, no motor vehicle)	<RTRANSPORT>		<RTRANS10>	
The rights of individuals to harvest or access alone (e.g., an individual always has to harvest or enter with others in a group)	<RINDIV>		<RINDIV10>	
The processing of the harvested product	<RPROCESS>		<RPROC10>	
The sale of the harvested product	<RSELLPROD>		<RSELLPRO10>	
The sale of harvesting or use rights to the product	<RSELLRIGHT>		<RSELLRIG10>	
Any other restriction not mentioned above *(please describe any important rules that have not have been mentioned in the above - examples)*	<RRESOTHER>		<RRESOTH10>	

► This is a priority variable. Please make sure this question is answered.

D5. In your estimation, do individuals in the user group follow the rules for harvesting, processing, or selling this product from the forest or using the forest for this nonconsumptive purpose? <ROBEYRULES>

Mark only one answer.

(1) _____ Rarely or never

(2) _____ Sometimes

(3) _____ About half the time

(4) _____ Most of the time

(5) _____ Yes, almost always

E. INFRACTIONS

E1. If there are infractions, what are the infractions, when do infractions take place, and what are the reasons? {R_INFRCT}

Here "infraction" means a breaking of a rule/law.

Infraction *Please list the different kinds of infractions that have occurred with respect to harvesting or accessing this product within the last two years. Do not list the same kind of infraction more than once, whether or not it was formally recorded.* <R_KIND>	Time (e.g., day, dawn, dusk, night) <R_TIME>	Season (e.g., summer, winter, rainy, dry) <R_SEASON>	Major reasons why this type of infraction is likely to occur: <R_REASONS>
MIC			

▶ This is a priority variable. Please make sure this question is answered.

F. INFRACTIONS

In the next questions, the term "fine" includes either a cash fine or a requirement to provide a certain amount of a commodity, such as rice. If a commodity fine is involved, ascertain the value of the amount of the commodity required in relation to the wage for a day's work.

►F1. **What types of penalties are likely to be imposed on users if they break a harvesting rule related to this product for the first time?** <RPEN1_>
Multiple answers may be applicable.

(1) ____ A fine less than the equivalent of one day's work
(2) ____ A fine equal to one day's work
(3) ____ A fine greater than one day's work but no more than one week's work
(4) ____ A fine greater than one week's work
(5) ____ Temporary restriction on harvesting rights for this product
(6) ____ Temporary restriction on any harvesting from this forest(s)
(7) ____ Required labor input
(8) ____ Public apologies
(9) ____ Permanent suspension of harvesting rights for this product
(10) ____ Permanent suspension of any harvesting from forest(s)
(11) _X_ Other (describe) <RPEN1OTH>: verbal sanction

►F2. **What types of penalties are likely to be imposed on users if they break a harvesting rule related to this product a -second time?** <RPEN2_>
Multiple answers may be applicable.

(1) ____ A fine less than the equivalent of one day's work
(2) ____ A fine equal to one day's work
(3) ____ A fine greater than one day's work but no more than one week's work
(4) ____ A fine greater than one week's work
(5) ____ Temporary restriction on harvesting rights for this product
(6) ____ Temporary restriction on any harvesting from this forest(s)
(7) ____ Required labor input
(8) ____ Public apologies
(9) ____ Permanent suspension of harvesting rights for this product
(10) ____ Permanent suspension of any harvesting from forest(s)
(11) _X_ Other (describe) <RPEN2OTH>: verbal sanction

►F3. **What types of penalties are likely to be imposed on users if they break a harvesting rule related to this product many times?** <RPEN3_>
Multiple answers may be applicable.

(1) ____ A fine less than the equivalent of one day's work
(2) ____ A fine equal to one day's work
(3) ____ A fine greater than one day's work but no more than one week's work
(4) ____ A fine greater than one week's work
(5) ____ Temporary restriction on harvesting rights for this product
(6) ____ Temporary restriction on any harvesting from this forest(s)
(7) ____ Required labor input
(8) ____ Public apologies
(9) ____ Permanent suspension of harvesting rights for this product
(10) ____ Permanent suspension of any harvesting from forest(s)
(11) _X_ Other (describe) <RPEN3OTH>: (1) under arrest 15-60 days (article 99 of Forestry Law) (2) a fine of Q5-Q25 (article 81 of the Law of Protected Areas

► This is a priority variable. Please make sure this question is answered.

►F4. **Who initially decides what kind of penalty is appropriate when a harvesting rule about this product is observed to be broken?** <RDECIDE>
Mark only one answer.

(1) _____ A guard patrolling for a local forest association
(2) x A guard patrolling for a government forestry department
(3) _____ A vote of individuals in this user group at a meeting
(4) _____ A vote of an executive committee of the user group
(5) _____ A vote of individuals in this user group and other authorized users of this forest(s) at a meeting
(6) _____ An official of the user group
(7) _____ A local government official in an administrative setting
(8) _____ A regional government official in an administrative setting
(9) _____ A national government official in an administrative setting
(10) _____ Government officials in consultation with individuals in user group

►F5. **Is a fine imposed?** <RFILTERFINE> MIC
Mark only one answer.

(1) _____ No *(Skip to question F6)*
(2) _____ Yes

►F5a. **If yes, who collects the fine?** <RCOLLECT> MIC
Here, collecting a fine does not imply or include keeping the amount collected.
Mark only one answer.

(1) _____ The guard who apprehends a rule breaker
(2) _____ An official of the user group or forest association
(3) _____ An official for a forestry department
(4) _____ A local government official
(5) _____ A national government official outside forestry department

►F5b. **How is this fine used?** <RFINEUSED> MIC
Mark only one answer.

(1) _____ A general source of revenue to local association
(2) _____ A general source of revenue for local government
(3) _____ A general source of revenue for forestry department
(4) _____ A general source of revenue for national government (deposited in some form of general fund and does not come back to the forestry department)

►F6. **To what extent are these penalties complied with if imposed?** <RCOMPLY> MIC
Mark only one answer.

(1) _____ No one complies with the penalties imposed on them
(2) _____ Few users comply with the penalties imposed on them
(3) _____ About half the users comply with penalties imposed on them
(4) _____ Most users comply with penalties imposed on them
(5) _____ Penalties are fully complied with when imposed

► This is a priority variable. Please make sure this question is answered.

►F7. **What types of records are kept concerning penalties imposed and complied with?** <RRECTYPE> MIC

Mark only one answer.

(1) _____ No records or only scanty records kept
(2) _____ Forest guards keep a notebook
(3) _____ User group keeps a notebook
(4) _____ Local forestry association keeps record books
(5) _____ Local government officials keep record books
(6) _____ Regional government officials keep record books
(7) _____ National government officials keep record books
(8) _____ Other (*describe*) <RRECOTH>: _____

►F7a. **Are these records accessible to all individuals in the user group?** <RACCESS> MIC

Mark only one answer.

(1) _____ No
(2) _____ Yes

►F8. **If the users do not pay fines, what alternatives are open to the authority that imposes the fines?** <RALTERN_>

Multiple answers may be applicable. MIC

(1) _____ Private reprimand and request to fully comply with penalty
(2) _____ Public reprimand and request to fully comply with penalty
(3) _____ Shunning within user group
(4) _____ Shunning within the settlement
(5) _____ Confinement within settlement boundaries
(6) _____ Confinement in local jail
(7) _____ Taking user to court
(8) _____ Other (*describe*) <RALTERNOTH>:

►F8a. **If response 7 is checked above, describe court case and action taken:** ***(long text)*** <RCOURTS>

N/A

► This is a priority variable. Please make sure this question is answered.

F9. If users may lose their harvesting rights to this product, how can these rights be restored? *(text)* <RRESTORE>

MIC

►F10. During the past two years, have external government officials been called upon to enforce penalties against- -individuals in this user group? <REXTENF>

Mark only one answer.

(1) X No

(2) _____ Yes

►F10a If yes, describe the incident(s): *(text)* <REXTDESC>

►F11. During the past two years, have government officials been called upon to enforce penalties against someone else, -outside this user group? <ROUTENF>

Mark only one answer.

(1) X No

(2) _____ Yes

►F11a If yes, describe the incident(s): *(text)* <ROUTDESC>

► This is a priority variable. Please make sure this question is answered.

►**F12.** **During the past two years, have government officials accepted commodities or currency to avoid imposing a fine for an infraction?** <RBRIBES>

Mark only one answer.

(1) X No

(2) _____ Yes

►**F12a** **If yes, describe such incidents:** ***(text)*** <RBRIBEDESC>

G. PRODUCT USES

►**G1.** **Please rank this product in the order of its importance in relation to its use by the user group.** <RPRODRANK> 1

G2. What is the consumptive product harvested or nonconsumptive good used? <RPRODTYPE>

Terms in parentheses are categories for input to the database.

Mark only one answer.

Plant/plant-like forms

(TREES) X Trees

(BUSHES) _____ Bushes

(GRASSES) _____ Grasses

(LGROUND) _____ Leaves on ground

(LCLIMB) _____ Climbing leaves

Inorganic and/or mineral-like materials

(SSM) _____ Soils, stones, minerals

(WATER) _____ Water

(FUNGI) _____ Fungi

Animals

(WILDLIFE) _____ Wildlife

Nonconsumptive/miscellaneous

(OTHER) _____ Other *(describe):*

► This is a priority variable. Please make sure this question is answered.

G3. What is the section of the consumptive product harvested or nonconsumptive good used? <RPRODSECT>

Complete only if Trees, Bushes, or Grasses is checked in G2.
Mark only one answer.

Plant/plant-like forms

(A) x All or most of tree, bush, or grass

(B) _____ Bark

(F) _____ Flowers

(H) _____ Higher sections (e.g., branches, limbs)

(L) _____ Leaves

(N) _____ Nuts and fruits

(R) _____ Roots

(T) _____ Trunk or main section

(O) _____ Other *(describe)*:

G4. Why is it important? <RPRODWHY> (text)
firewood to cook everyday

G5. Who owns the rights to harvest or access this consumptive product or nonconsumptive good? <RPRODOWN> *(text)*

the community

G6. If privately owned, what is the gender of the owner(s)? <RPRODSEX>

Mark only one answer. N/A

(1) _____ Female

(2) _____ Male

(3) _____ Both

*Questions G7–G19 apply to **consumptive** products only.*

►**G7.** **If this product is used as fuelwood, most households use it: <RFUELWOODUSE>**
Mark only one answer.

(1) x Primarily for subsistence

(2) _____ Primarily for commercial use

(3) _____ Equally for subsistence use and commercial use

►**G8.** **If this product is used as charcoal, most households use it: <RCHARCOALUSE>**
Mark only one answer.

(1) _____ Primarily for subsistence

(2) _____ Primarily for commercial use

(3) _____ Equally for subsistence use and commercial use

► This is a priority variable. Please make sure this question is answered.

►G9. **If this product is used for housing, most households use it:** <RHOUSINGUSE>
Mark only one answer.

(1) _____ Primarily for subsistence

(2) _____ Primarily for commercial use

(3) _____ Equally for subsistence use and commercial use

G10. If this product is used for **fencing**, most households use it: <RFENCINGUSE>
Mark only one answer.

(1) X Primarily for subsistence

(2) _____ Primarily for commercial use

(3) _____ Equally for subsistence use and commercial use

G11. If this product is used for **furniture**, most households use it: <RFURNITUREUSE>
Mark only one answer.

(1) _____ Primarily for subsistence

(2) _____ Primarily for commercial use

(3) _____ Equally for subsistence use and commercial use

G12. If this product is used as **tools, toys and household implements**, most households use it: <RTOOLSTOYSUSE>
Mark only one answer.

(1) _____ Primarily for subsistence

(2) _____ Primarily for commercial use

(3) _____ Equally for subsistence use and commercial use

G13. If this product is used as **manure**, most households use it: <RMANUREUSE>
Mark only one answer.

(1) _____ Primarily for subsistence

(2) _____ Primarily for commercial use

(3) _____ Equally for subsistence use and commercial use

►G14. **If this product is used as food, most households use it:** <RFOODUSE>
Mark only one answer.

(1) _____ Primarily for subsistence

(2) _____ Primarily for commercial use

(3) _____ Equally for subsistence use and commercial use

►G15. **If this product is used as fodder, most households use it:** <RFODDERUSE>
Mark only one answer.

(1) _____ Primarily for subsistence

(2) _____ Primarily for commercial use

(3) _____ Equally for subsistence use and commercial use

► This is a priority variable. Please make sure this question is answered.

G16. If this product is used for **clothing**, most households use it: <RCLOTHINGUSE>

Mark only one answer.

(1) _____ Primarily for subsistence

(2) _____ Primarily for commercial use

(3) _____ Equally for subsistence use and commercial use

G17. If this product is used as **medicine**, most households use it: <RMEDICINEUSE>

Mark only one answer.

(1) _____ Primarily for subsistence

(2) _____ Primarily for commercial use

(3) _____ Equally for subsistence use and commercial use

G18. If this product is used for **handicrafts**, most households use it: <RHANDICRAFTUSE>

Mark only one answer.

(1) _____ Primarily for subsistence

(2) _____ Primarily for commercial use

(3) _____ Equally for subsistence use and commercial use

►G19. If this product has other uses, most households use it: <ROTHERUSE>

Mark only one answer.

(1) _____ Primarily for subsistence

(2) _____ Primarily for commercial use

(3) _____ Equally for subsistence use and commercial use

GEN. GENERIC QUESTIONS FOR USE BY RESEARCHERS

Please write your question(s) and the answer(s) where indicated below. **Enter the methodology and all questions together into the database under** <RWKSPMEMO>. Enter each answer into the database under the data name specified for each answer below. See Section II of the Field Manual for more detailed instructions.

Please describe why you are asking the generic questions below and/or what methodology you used to collect the data provided below. *(long text)* <RWKSPMEMO>

Question 1 (answer requires a whole number):

Answer to question specified by researcher *(integer)* <RGENSNUM1> _____

Question 2 (answer requires a whole number):

Answer to question specified by researcher *(integer)* <RGENSNUM2> _____

Question 3 (answer requires a whole number):

Answer to question specified by researcher *(integer)* <RGENSNUM3> _____

Question 4 (answer requires a whole number):

Answer to question specified by researcher *(integer)* <RGENSNUM4> _____

Text question 1:

Answer to question specified by researcher *(text)* <RGENTEXT1>

Text question 2:

Answer to question specified by researcher *(text)* <RGENTEXT2>

 This is a priority variable. Please make sure this question is answered.

Text question 3:

Answer to question specified by researcher *(text)* <RGENTEXT3>

Question 1 (answer requires a decimal number):

Answer to question specified by researcher *(decimal)* <RGENLNUM1> _____

Question 2 (answer requires a decimal number):

Answer to question specified by researcher *(decimal)* <RGENLNUM2> _____

Question 3 (answer requires a decimal number):

Answer to question specified by researcher *(decimal)* <RGENLNUM3> _____

Question 4 (answer requires a decimal number):

Answer to question specified by researcher *(decimal)* <RGENLNUM4> _____

Answer(s) to question(s) specified by researcher that require(s) more than 250 characters *(long text)* <RGENMEMO>

III.A.9. FORM V—FOREST GOVERNANCE FORM: GUIDELINES

A. DEFINITION OF FOREST GOVERNANCE ORGANIZATION

A forest governance organization is an organization that does NOT directly use the forest, but designs or influences the design of rules, policies, and/or guidelines about forest entry, harvesting, and maintenance. A forest governance organization may also be responsible for implementing policies or monitoring forest use. It can be a district or regional office of a government ministry, a local government, a multinational organization, a private voluntary organization (PVO), or a nongovernment organization (NGO).

If a forestry organization uses the forest or is part of the federated structure of forest users, the coding of this information will be completed on Form U and Form A, rather than on the *Forest Governance Form* (Form V).

B. PURPOSE OF THE FOREST GOVERNANCE FORM

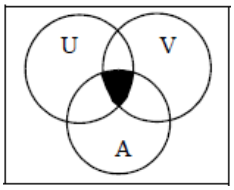
The purpose of Form V is to code data about the range of governance arrangements, outside of forest users, that influence how forest resources are harvested, used, or maintained. This information captures the complexity of actors involved in the governance of the forest, what their rights are in relationship to forest users, and the level of influence they have in designing, invoking, monitoring, and sanctioning rules.

The questions on this form include how the forest governance organization is structured, its location and governance area, its relationship with users of the forest, and general information about internal management of the organization. Ask questions in Form V at the beginning of data collection, along with Form S, Form F, Form U, and Form A. Data about the general questions (such as in sections A and E) are collected in an initial visit. Follow-up visits can address the more in-depth questions, such as those in sections B, C, and D.

One Form V must be completed for each forest governance organization that governs the forest(s), per site. For instance, in Example 1 (Figure 2, section II.C), one Form V will be completed for the District Forest Office. In Example 2 (Figure 3, section II.C), one Form V will be completed for the Local Project Office and one Form V for the District Forest Office. The Federated Forest Association will be included on the *Forest Association Form*, not Form V, even though this federated structure may not "use" the forest. In Example 3 (Figure 4, section II.C), Form V will be completed for the District Forest Office. Information on Form V should be based on local office rules and regulations, not those of the national or international headquarters of these organizations.

C. GUIDELINES FOR DATA COLLECTION

1. Defining a Forest Governance Organization On-Site



During the initial mapping exercise, researchers should begin asking who, if anyone other than community members, plays a role in how the forest is governed. It is very important to distinguish between those who use and maintain the forest from those who help design rules, monitor forest use, and sanction rule breakers but do not use the forest. If there is a pattern of forest use for this organization, then Form V will NOT be coded. Forms U and A are coded in this case. If an organization monitors forest use (such as a forest guard from the district forest service), or a community council makes rules about using the forest and sanctions rule breakers, but does not use the forest, this information will be coded on Form V.

2. Data Collection

The data on Form V may be collected by scheduling discussions with district forest officers, NGO personnel, community leaders, and other researchers in the area. Researchers should interview more than one person from each organization including people involved in actions taken or decided upon with regard to the forest. These organizations may be located further away from the site than others. Travel to and from the location where respondents are located can be planned at the site.

3. Highlights on the Forest Governance Form

A3 has been confusing to some researchers. This question was designed to determine whether the organization's rights are within, partly within and partly outside, or completely outside the jurisdiction of the smallest government unit. It means: What is the area in which the organization has the right to implement policy? Examples of jurisdictions include municipalities, districts, prefectures, and other units of general authority.

B1 asks the researcher to record which of the activities the organization has coordinated, whether it has passed and/or modified rules, or not done any of the above. If a forest governance organization planted trees and conducted other maintenance activities in the forest in the past year, this will be an indicator that coding for this organization should be completed on Form U and Form A.

4. Team Leader Responsibilities before Leaving the Site

The team leader will need to check B1 carefully. Blank lines will be considered as missing-in-case.

D. SPECIFIC GUIDELINES BY SECTION AND QUESTION

A. History

A1. In reference to details about the general purpose of this organization, researchers should discuss during the site visit any changes that have occurred in the organization, and how visible and accessible the organization is within the community.

A2. Enter number of years since any major structural change has been made in the organization.

A3. Territorial jurisdiction in A3 means the jurisdictional area in which the organization has the right to implement policy. Examples of jurisdictions include municipalities, districts, prefectures, and other units of general authority.

A4. If the District Forest Office is responsible for enforcing policy in two forests, one Form V will be completed for the District Forest Office, but both forests will be included in A4. Column four addresses the perceptions of staff within the organization. For example, the District Forest Office staff member may say that the office interacts with the Forestry Cooperative and District Community Development Office, but not with an existing local PVO. The Forestry Cooperative and District Community Development Office should be written down in this case.

B0. Major Changes Since Last Site Visit

This question need only be answered for the second and later visits to the forest site. If this is **not** the first IFRI visit to this site, please describe the changes that this organization has undergone since the last site visit. For example, the researcher could note changes in size, governance, and financing.

B. Governance and Structure

B1. In this question, the researcher should ask "What activities does this organization do?" One source of information for question B1 could be the minutes of the organization's meetings.

B2 and B2a. These questions address any areas where tension may exist within and in relationship to other forest associations in the area. This information needs to be checked with more than one staff member of the organization, and with members of the forest associations. Community leaders or local council members may provide additional insights. However, the answer should be based on the perceptions of the **organization's** staff about these conflicts.

C. Officials and Functionaries

To answer questions in this section, researchers can rely on meeting minutes or interviews with staff.

C1 through C4. Answers provide the researcher information on the number of staff and responsibilities. For some forest governance organizations, information may be available about forest monitoring. In C2, for example, the researcher may mark 14 full-time employees and one part-time employee. In this case, C3 and C4 should be completed. If there are 10 full-time employees and the researcher enters "protecting" only as the activity undertaken by these employees on C3, this type of entry will be interpreted as the only activity undertaken by the employees of the forest governance organization.

C5. Acquiring information about C5 should be one of the questions the researcher asks at the close of the interview or may choose to find out by talking with forest users, the owner of the forest, or community leaders.

D. Resource Mobilization and Account Keeping

D1 through D3. The questions in section D can be answered by reviewing the organization's operational budget if the researcher has access to these accounts.

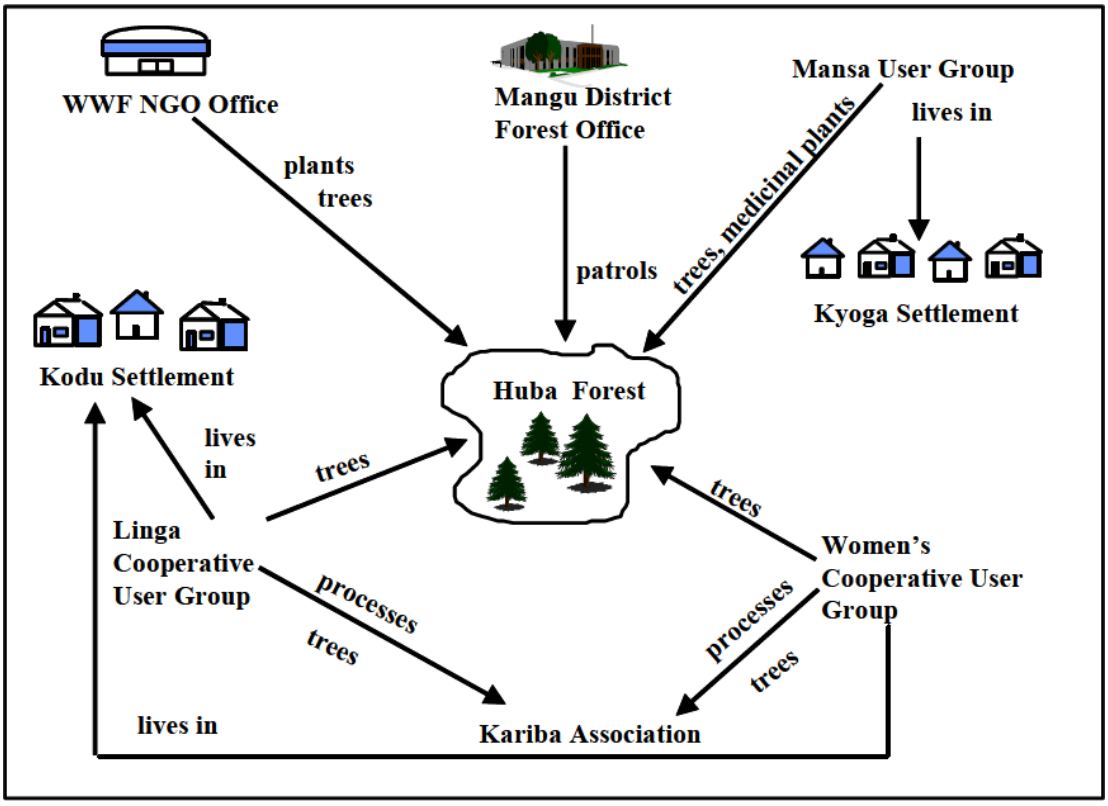
D1b. This can be a sensitive question, depending on the organization. It should not be one of the first questions asked. It could be phrased by saying "Could you share any information about your organizational budget—how large it is, etc.?" The financial budget should be written in local currency and computed into dollars.

E. Collective- and Constitutional-Choice Processes

E1 through E4. These questions can be asked at the beginning of the interview process with the organization. In E2, information will be collected about how the charter of mission or objectives was designed (if available).

BOX 12: EXAMPLE OF FOREST GOVERNANCE

The district office of the Ministry of Forestry in Mangu has been given the mandate by the national government to monitor the use of timber species in Huba Forest. Forest guards from the district office patrol the boundaries of the forest twice a week. The district forest officer attends regional meetings about forest governance every two months. The World Wildlife Fund (WWF) sponsors a community forestry program in Kyoga and Kodu that is teaching people alternative tree planting techniques to replace eucalyptus trees in the buffer zones of Huba Forest. A WWF representative lives in Kodu and works with community groups on skill development. In this case, two *Forest Governance Form*s will be completed by researchers: one for Mangu District Forest Office, and one for the WWF organization.

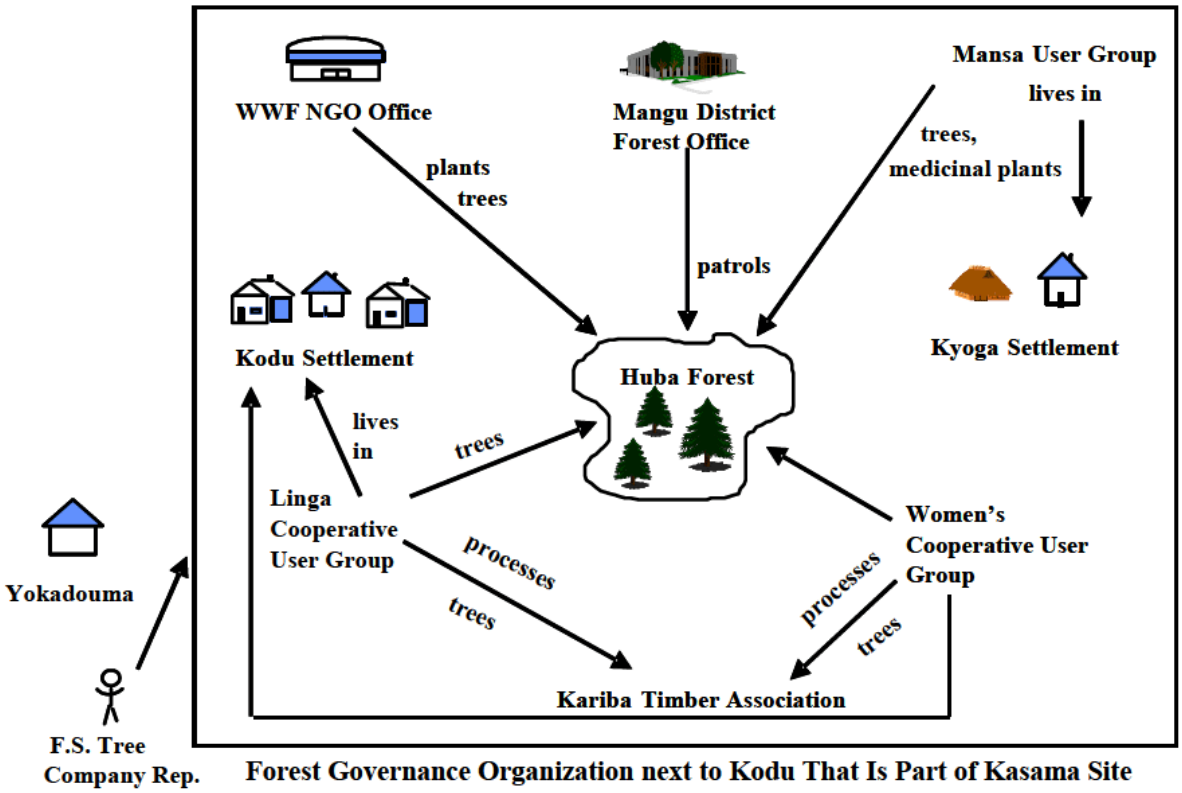


Forest Governance in Kasama Site

▶ This is a priority variable. Please make sure this question is answered.

BOX 13: EXAMPLE OF FOREST GOVERNANCE

The F.S. Tree Company in England sent a representative to the Yokadouma region to study the effects of insect damage on teak trees in the Mangu district, and to advise the community about stopping the damage. The representative lives in a regional city, Yokadouma, but travels frequently to Kyoga and Kodu to monitor change in the insect damage, and to advise the community about possible plans to stop the damage. Caretaking of the teak trees has reached an all-time low. Three *Forest Governance Form*s will be completed: one for WWF, one for the Mangu District Forest Office, and one for the F.S. Tree Company.



Forest Governance Organization next to Kodu That Is Part of Kasama Site

▶ This is a priority variable. Please make sure this question is answered.

IFRI FORM V

FOREST GOVERNANCE FORM

A forest governance organization is an organization that does NOT use the forest, but designs or influences the design of rules, policies, and/or guidelines about forest entry, harvesting, and maintenance. A forest governance organization also may be responsible for implementing policies or monitoring forest use. It could be a district or regional office of a national government ministry, a multinational organization, a private voluntary organization, or a nongovernmental organization.

One *Forest Governance Form* should be completed per organization.

Research ID: 005 Country ID: GUA Site ID: 001

Date of site visit (mm-dd-yr): 07-31-96

Date(s) data collected for this form (mm-dd-yr): 07-31-96 through 09-27-96

►**Name of this organization** <VNAME>: Nature's Defenders, Motagua District

►**Name(s) of forest(s)** <ID>: El Sitio

Name of person filling out this form:: Paul Turner and Pablo Moreno

Name(s) of person(s) with whom discussions held: Oscar Rojas, Gerardo Paiz, Eliseo Galvez, Hector Orellana

location of discussions (field, home of respondent, place of business etc.):
In offices and the country side .

Be sure to write the name(s) of the forest(s) this organization governs. The names of the forest(s) written here must be written in A4.

►**Has a *Forest Governance Form* been completed *before* for this organization?** <VCODED>

(1) x No

(2) _____ Yes

(3) _____ Uncertain

(4) _____ Yes, with a different name *(If this response is checked, write old and new names in B0.)*

A. **HISTORY**

►**A1.** **Briefly describe this organization.** ***(long text)*** <VORGDESC>

Nature's Defenders Foundation was formed in 1983 with the aim of conserving the biological richness and diversity of ~~Ga~~PT Guatemala. It is a private, not-for-profit organization. Nature's Defenders work in four areas: (1) manages wild areas, (2) tries to promote sustainable use of wild areas, (3) promotes environmental education, and (4) seeks to affect the nature of environmental l aws. In 1990, Nature's Defenders were given responsibility for administering the Sierra de las Minas Biosphere Reserve according to Legislative Decree No. 49-90. Nature's Defenders divides the reserve into three areas: (1) Motagua, (2) Chilasco, and (3) Polo chic.

► This is a priority variable. Please make sure this question is answered.

►A2. How many years has this organization had its present structure? <VYEARS> _____years

Note to field researcher: Changes may have come about if the central government altered legislation, if an influential leader of the organization left, or if there were major natural disasters.

►A3. What is the relationship of the territorial jurisdiction of the organization to that of the smallest general-purpose government or administrative unit? <VTERJURI>

Territorial jurisdiction means the area in which the organization has the right to implement policy

Mark only one answer.

(1)_____ The smallest general-purpose government or administrative unit is totally within (smaller than or the same as) the territorial jurisdiction of the organization

(2)___X___ The smallest general-purpose government or administrative unit is partially outside (larger than or partly inside and partly outside) the territorial jurisdiction of the organization

A4. Please answer the following forest-specific questions for this organization only in relationship to the forests used by user groups in the settlement(s) included in this site. {GOVTOFOR}

In the first column below, write the name(s) of the forest(s) with which this organization is involved. The name(s) in this list should correspond to the name(s) of the forest(s) on the Forest Form(s)*, with one forest on each* Forest Form*. In the second column, indicate how many years this organization has been involved in governing this forest. If unknown, please enter the organization representative's best estimate. In the third column, indicate where the organization's office is located in relationship to the forest by marking one of the distances given. In the last column, write the name(s) of the organization(s) as posted on relevant forms with which this organization -perceives that it interacts.*

►Name of the forest <FK_FOREST>	►How many years has this organization been involved in the governing of this forest? <TYEARS>	►Where is the organizational office located in relationship to the forest? <TWHERE >	►With which organization(s) does this organization perceive that it interacts with regard to this forest? <TINTERACT>
El Sitio	6	(1) ____ < 1 km (2) ____ within 10 km (3) ____ within 50 km (4) ____ within 100 km (5) ____ > 100 km	National Council of Protected Areas
		(1) ___ < 1 km (2) ___ within 10 km (3) ___ within 50 km (4) ___ within 100 km (5) ___ > 100 km	
		(1) ____ < 1 km (2) ____ within 10 km (3) ____ within 50 km (4) ____ within 100 km (5) ____ > 100 km	
		(1) ____ < 1 km (2) ____ within 10 km (3) ____ within 50 km (4) ____ within 100 km (5) ____ > 100 km	

The information in this column should be obtained by asking open-ended questions about the different organizations with which this organization interacts, and asking about other organizations' relationships with this organization. Note that this is the perception of the people interviewed at the organization, not the perception of the researcher.

► This is a priority variable. Please make sure this question is answered.

B0. MAJOR CHANGES SINCE LAST SITE VISIT

B0. Have there been any ***major*** changes in the governance of the forest(s) since the last visit, and if so, what are they? *(long text)* <VHISTCHNG>

Do not complete if this is the first visit to this site to record information for the IFRI database.

N/A

B. GOVERNANCE AND STRUCTURE

B1. The following table concerns activities carried out by this organization in relation to the forest.

Which of the following activities has this association coordinated (C); for which has it passed rules (P) and/or modified rules (M); for which has it not (N) done any of the above? Circle all Cs, Ps, or Ms that apply. If the association has not done any of the above, circle N only.	During the past year:	During the five years prior to the past year:
Plant seeds, seedlings, etc.	<VSEEDS1_> (C) P M N	<VSEEDS5_> C P M (N)
Other maintenance	<VMAINT1_> (C) P M N	<VMAINT5_> C P M (N)
Distribute forest products to local users	<VDIST1_> C P M (N)	<VDIST5_> C P M (N)
Sell forest products	<VSELL1_> C P M (N)	<VSELL5_> C P M (N)
Distribute revenue from sale of forest - products	<VREVENUE1_> C P M (N)	<VREVENUE5_> C P M (N)
Determine timing (season) of the harvest of forest products	<VTIMING1_> C P M (N)	<VTIMING5_> C P M (N)
Determine quantity of forest products - harvested	<VQUANT1_> C P (M) N	<VQUANT5_> C P M (N)
Determine type of technology used to harvest forest products	<VTYPTECH1_> (C) P M N	<VTYPTECH5_> (C) P M N
Determine who is authorized to harvest forest products	<VWHOAUTH1_> (C) P M N	<VWHOAUTH5_> C P M (N)
Determine type of use that can be made of forest products (including religious uses)	<VTYPEUSE1_> C P M (N)	<VTYPEUSE5_> C P M (N)
Sell rights to harvest forest products that users can trade with others	<VRIGHTS1_> C P M (N)	<VRIGHTS5_> C P M (N)
Rent nontransferable rights to harvest forest -products	<VRENT1_> C P M (N)	<VRENT5_> C P M (N)
Monitor forest condition	<VMONCOND1_> (C) P M N	<VMONCOND5_> (C) P M N
Monitor conformance to rules	<VMONRULE1_> (C) P (M) N	<VMONRULE5_> (C) P (M) N
Sanction rule breakers (e.g., fines, - punishment)	<VSANCT1_> (C) P M N	<VSANCT5_> (C) P M N
Arbitrate disputes among local users	<VDISPUTE1_> (C) P M N	<VDISPUTE5_> (C) P M N
Interact with higher authorities	<VINTER1_> (C) P M N	<VINTER5_> (C) P M N

► This is a priority variable. Please make sure this question is answered.

B2. If there are conflicts between the rules created by this organization and those of any forest association(s), please describe these conflicts. *(long text)* <VRULECONFL>

N/A

B2a. Are any mechanisms available for resolving these conflicts? If yes, please describe them. *(long text)* <VCONFLMECH>

N/A

▶ This is a priority variable. Please make sure this question is answered.

B3. How are internal conflicts in the organization resolved? *(long text)* <VCONFLRES>

To resolve serious internal conflicts, the approximately 10-12 administrative personnel of the central office and district offices have monthly meetings.

B4. Indicate how members of a user group express their needs and concerns about the forest(s) to officials of this organization. <VEXPRESS_>

Multiple answers may be applicable.

(1) ____ Formal petitions

(2) ____ Formal hearings

(3) ____ Demonstrations

(4) ____ General meetings

(5) ____ Illegal exchanges with officials

(6) X Other (*describe*) <VEXPRESOTH>: Conversations with the extension agents and other employees in sporadic visits

B5. How does this organization carry out most of the functions assigned to it? <VFUNCTION>

Mark only one answer.

(1) X The officials directly carry out tasks

(2) ____ The officials appoint/hire individuals to assist them

(3) ____ The officials create committees that carry out tasks or assist them

(4) ____ Other (*describe*) <VFUNCTOTH>: ____

▶ This is a priority variable. Please make sure this question is answered.

►B6. **Are the forest decision-making positions (the position of the officials) filled by forest users?** <VPOSUSER>
Mark only one answer.

(1) X No

(2) _____ Yes, through direct or indirect elections by users

(3) _____ Yes, appointed by the organization with active advice from users

(4) _____ Yes, appointed by the organization without active advice from users

(5) _____ Yes, through inheritance

►(6) _____ Other (*describe*) <VPOSOTH>: _____

►B7. **Can an external or higher-level authority remove the decision maker(s) in this organization?** <VREMOVEEXT>
Mark only one answer.

(1) _____ No

(2) _____ Yes, at the discretion of the external or higher-level authority

(3) X Yes, with substantiated evidence of wrongdoing

(4) _____ Yes, with complaints from other users

►B8. **Can forest users remove the decision makers?** <VREMOVEUSE>
Mark only one answer.

(1) X No

(2) _____ Yes, in elections that are held regularly

(3) _____ Yes, in elections that are held irregularly

(4) _____ Yes, through referenda or in arenas where criticisms are voiced

►B9. **Are the activities of this organization supervised by a higher authority?** <VSUPERVISE>
Mark only one answer.

(1) _____ No

(2) X Yes, by the parent organization (national or regional)

(3) _____ Yes, by the parent organization (international)

(4) _____ Yes, by higher-level government officials

(5) _____ Yes, other (*describe*) <VSUPEROTH>: _____

►B10. **Does this organization provide information to forest users on a regular basis? (e.g., silvicultural techniques, -relationships among tree and grass species)?** <VINFOPROV>
Mark only one answer.

(1) _____ No

(2) X Yes

►B10a. **If yes, what type of information?** ***(text)*** <VINFOTYPE> Through environmental education programs, the personnel supply general information about conservation of natural resources. The personnel also furnish information about forest seeds and the infestation of Barkbeetle disease.

► This is a priority variable. Please make sure this question is answered.

C. OFFICIALS AND FUNCTIONARIES

C1. In the last 5 years, how many leaders (officials) has this organization had?

	Female	Male
Number	<VFEMALE> 0	<VMALE> 3

C2. How many individuals work for this organization?

Total number of people hired by the organization		Total number of people who volunteer labor
Full-time	Part-time	
<VFULL> 10	<VPART> 0	<VVOL> 3

C3. Describe the types of activities undertaken by most of the full-time employees, e.g., planting, protecting, enforcing, maintaining records. *(text)* <VEMPFULL>

Full-time employees are involved in conservation activities, ensuring compliance of rules and environmental education research. Personnel from district and central offices and involved in such efforts.

C4. Describe the types of activities undertaken by most of the part-time employees, e.g., planting, protecting, enforcing, maintaining records. *(text)* <VEMPPART>

N/A

►**C5.** **Do the decision makers of this organization own assets or capital that utilize products from the forest(s), e.g., -furniture factory that needs wood, and if so, how much?** **<VOWNCAP>**

Mark only one answer.

(1) x No

(2) _____ Yes, the amount utilized is below average in this location

(3) _____ Yes, the amount utilized is average in this location

(4) _____ Yes, the amount utilized is above average in this location

(5) _____ Yes, the amount utilized is very high in this location

► This is a priority variable. Please make sure this question is answered.

D. RESOURCE MOBILIZATION AND ACCOUNT KEEPING

►D1. **What were the major financial sources for this organization during the most recent year, e.g., product sales, voluntary contributions, entry fees, fines, own taxes, external government or development agency transfers, etc. Mark each source from which funds were received by this organization.** <VSOURCE_>
Response 8, "own taxes," refers to taxes raised by a general- or special-purpose government. Regular levies by other kinds of organizations should be answered as 2, "membership fees."
Multiple answers may be applicable.

(1) X Voluntary contribution of funds
(2) _____ Membership fees
(3) _____ Payments that substitute for labor input
(4) _____ Fines
(5) X National or regional government
(6) _____ Development agency
(7) _____ Sales of forest products from the forest
(8) _____ Own taxes
(9) _____ Special levies
(10) X Aid from external NGO
(11) _____ Aid from indigenous NGOs
(12) X Foreign government (which one?) <VSOURCEGOV>: EEUU (USAID)
(13) _____ Other (*describe*) <VSOURCEOTH>: _____

►**D1a.** **Enter the number (1–13) listed in D1 that was the *single most important* source of financial support for this -organization.** <VSRCEMOST> 10/12

►**D1b.** **What is the total financial budget of this organization for the most recent year that data is available?** <VBUDGET> Q10,979,206 /6 = $1,829,868

~~Be sure to write the~~ name(s) of the forest(s)

►**D1c.** **What percentage of the total financial budget is the single most important source of financial support for this -organization?** <VSRCEPRCNT> 10.8 %

D1d. What is the "most recent year" for which this data is available? <VSRCEYEAR> 1996
Specify full year, e.g., 2006; if the budgetary year is not the equivalent of the calendar year, use the last year of the budgetary year.

►**D1e.** **If the organization did not receive any aid from external agencies, could it support its expenditures?** <VSUPPORT>
Mark only one answer.

(1) X No
(2) _____ Yes

D2. Does the organization maintain records of its accounts? <VRECMAINT>
Mark only one answer.

(1) _____ No
(2) X Yes

► This is a priority variable. Please make sure this question is answered.

D3. If yes, are the accounts audited or supervised in any manner? <VAUDIT>

Mark only one answer.

(1) _____ No

(2) X Yes

E. COLLECTIVE-CHOICE AND CONSTITUTIONAL-CHOICE PROCESSES

E1. Does the organization have a charter of mission and objectives? <VCHARTER>

Mark only one answer.

(1) _____ No

(2) X Yes

E2. If yes, what was the process of formation of the statement of mission for this organization? *(long text)* <VCHARTDESC>

MIC

E3. Is the organization a corporate body in the sense of being able to sue or be sued?

Mark only one answer.

(1) _____ No

(2) X Yes

►E4. How are the rules that are created by the organization enforced? Are they enforced by: <VENFRULE>

Mark only one answer.

(1) X Members of the organization itself?

(2) _____ Members of a user group who are not members of the organization?

(3) _____ External officials appointed by a government?

(4) _____ Officials selected by a user group?

(5) _____ Other ways? (*describe*) <VENFOTH>: _____

► This is a priority variable. Please make sure this question is answered.

GEN. GENERIC QUESTIONS FOR USE BY RESEARCHERS

Please write your question(s) and the answer(s) where indicated below. **Enter the methodology and all questions together into the database under** <VWKSPMEMO>. Enter each answer into the database under the data name specified for each answer below. See section II of the Field Manual for more detailed instructions.

Please describe why you are asking the generic questions below and/or what methodology you used to collect the data provided below. *(long text)* <VWKSPMEMO>

Question 1 (answer requires a whole number):

Answer to question specified by researcher *(integer)* <VGENSNUM1> _____

Question 2 (answer requires a whole number):

Answer to question specified by researcher *(integer)* <VGENSNUM2> _____

Question 3 (answer requires a whole number):

Answer to question specified by researcher *(integer)* <VGENSNUM3> _____

Question 4 (answer requires a whole number):

Answer to question specified by researcher *(integer)* <VGENSNUM4> _____

Text question 1:

Answer to question specified by researcher *(text)* <VGENTEXT1>

Text question 2:

Answer to question specified by researcher *(text)* <VGENTEXT2>

Text question 3:

Answer to question specified by researcher *(text)* <VGENTEXT3>

Question 1 (answer requires a decimal number):

Answer to question specified by researcher *(decimal)* <VGENLNUM1> _____

Question 2 (answer requires a decimal number):

Answer to question specified by researcher *(decimal)* <VGENLNUM2> _____

Question 3 (answer requires a decimal number):

Answer to question specified by researcher *(decimal)* <VGENLNUM3> _____

Question 4 (answer requires a decimal number):

Answer to question specified by researcher *(decimal)* <VGENLNUM4> _____

Answer(s) to question(s) specified by researcher that require(s) more than 250 characters *(long text)* <VGENMEMO>

III.A.10. FORM I—ORGANIZATIONAL INVENTORY AND INTERORGANIZATIONAL ARRANGEMENTS FORM: GUIDELINES

A. DEFINITION OF AN ORGANIZATIONAL INVENTORY AND INTERORGANIZATIONALARRANGEMENT

An **organizational inventory** (Part 1 of Form I) lists an organization that plays a role in **governing** a particular forest. One Part 1 will be completed for each organization. **Interorganizational arrangements** (Part 2 of Form I) are the relationships among organizations that engage in activities related to a particular forest, whether harvesting or nonharvesting activities.

B. PURPOSE OF THE ORGANIZATIONAL INVENTORY AND INTERORGANIZATIONAL ARRANGEMENTS FORM

The *Organizational Inventory and Interorganizational Arrangements Form* (Form I) specifies each organization and records the relationships among all organizations, harvesting or nonharvesting, that engage in operational, collective-choice, and constitutional-choice activities with regard to a particular forest. Form I provides researchers with a quick way to compare governance arrangements between the first field visit and future visits.

C. GUIDELINES FOR DATA COLLECTION

1. Defining Organizational Relationships in a Site

Each research instrument has a set of guidelines for specifically defining organizations in an IFRI site. Sources of information about organizations in a site include a knowledgeable local resident, the district office of the national forestry ministry, or a researcher who has done previous work in the area. Once the team leader has established that the activities of an organization do shape the use of the forest, he or she can begin to gather more detailed information. Organizations listed on this form can be either harvesting or nonharvesting. Examples of harvesting "organizations" may include the user groups and/or forest associations. Examples of nonharvesting, or forest governance, "organizations" may include a national forestry ministry that prescribes harvesting rules but does not harvest products, or a multinational private voluntary organization that provides technical assistance to local forest users.

2. Data Collection

Work on Form I is begun upon arrival at the research site, updated as research progresses, and completed and cross-checked after all other forms are complete. Complete one Organizational Inventory (Part 1 of Form I) for each user group with or without formal organization (see Section B of Form U), each forest and federated forest association (see Form A), and each Form V organization that governs the forest. Multiple Organizational Inventories (Part 1) will be completed for each site.

3. Highlights of Questions on Form I

Accurate completion of Section A (Type of Activity) in Part 1 of this form is of particular importance. This section classifies the relevance of the -organization to the forest and describes the types of activities in which it is engaged. Section A also relates organizational activities to IAD framework. The team leader identifies the activities that each organization carries out as well as the level(s) of activity at which the organization operates (operational, collective-choice, constitutional choice). -Organizations may operate at one level, at two levels, or all three levels of activity.

Part 2 of Form I applies to relationships among all organizations related to one forest. Therefore, only **one Part 2** will be completed for **each** forest.

4. Team Leader Responsibilities

Ideally, the leader of the research team will have some knowledge of the organizations involved in the governance of a forest before visiting the site. In other instances, however, the team leader may have no knowledge of the organizations involved. In either case, **the team leader should begin work on Forms U, A, V, and I as soon as possible after arriving at the forest.** This will give researchers the opportunity to develop an awareness of all organizations that have some impact on the use of the forest as quickly as possible. The team leader updates this form as new information becomes available during the site visit. The team leader must cross-check the answers in Section A with all coding forms. For example, in Part 1, if the type of organization is coded as "M," there should be a user group in the site that does not have a Form A. If "N" is coded, the researchers should have completed both Form U and Form A. The team leader also must make sure that one Part 1 of Form I is completed for **each** organization for **each** forest.

D. SPECIFIC GUIDELINES BY SECTION AND QUESTION

A. Type of Activity

The main challenge of questions A1–A3 is to classify the relevant organization by using the Organizational Inventory List on page one of Form I. All harvesting and nonharvesting forest-related organizations that have a relationship with the forest will fall into one of the categories in the list. If an organization cannot be classified using the list, use the letter "V" to indicate "Other type of organization" and provide a brief description of the organization. **Please note that each user group and any other organization related to this forest should be coded on this form.**

B0. Major Changes Since Last Site Visit

This question is answered for second and later visits to the forest site. At this time, examples of **major** changes will include the arrival or withdrawal of an organization that has an impact on the use of the forest or a change in the scope of an organization's -activities, such as a move from nonharvesting to harvesting status. The researcher should carefully read the materials provided from the earlier site visit(s) so it is possible to record any relevant changes

B. Interorganizational Arrangements

B1. A "Yes" indicates that the organizations governing this forest do engage in some sort of -coordination. Examples of coordination include policy making, exchange of information, or the pooling of resources.

B2. This question describes the relationship between organizations in relation to the forest. In other words, is the relationship between the organizations friendly, hostile, or something in between? Please describe conflicts that may have existed or -currently exist between the organizations.

B3. This question establishes whether there are current conflicts between the policies of the relevant -organizations and the desires of the day-to-day forest users regarding the use of the forest. For example, the harvesting rules prescribed by the national forestry ministry may be too permissive (or restrictive) in the judgment of local user groups.

C. Inter–User Group Arrangements

The questions in this section will be completed only if there are more than one user group present at the forest site. This section is completed only after multiple Form Us have been filled out for all user groups. The research team will then have a sense of the relationship between the user groups, if there are more than one.

C1. Examples of advantages include more efficient harvesting technology or more favorable treatment with regard to -harvesting rules, such as a longer harvesting period for some user groups or greater access to those forest products that are more valuable.

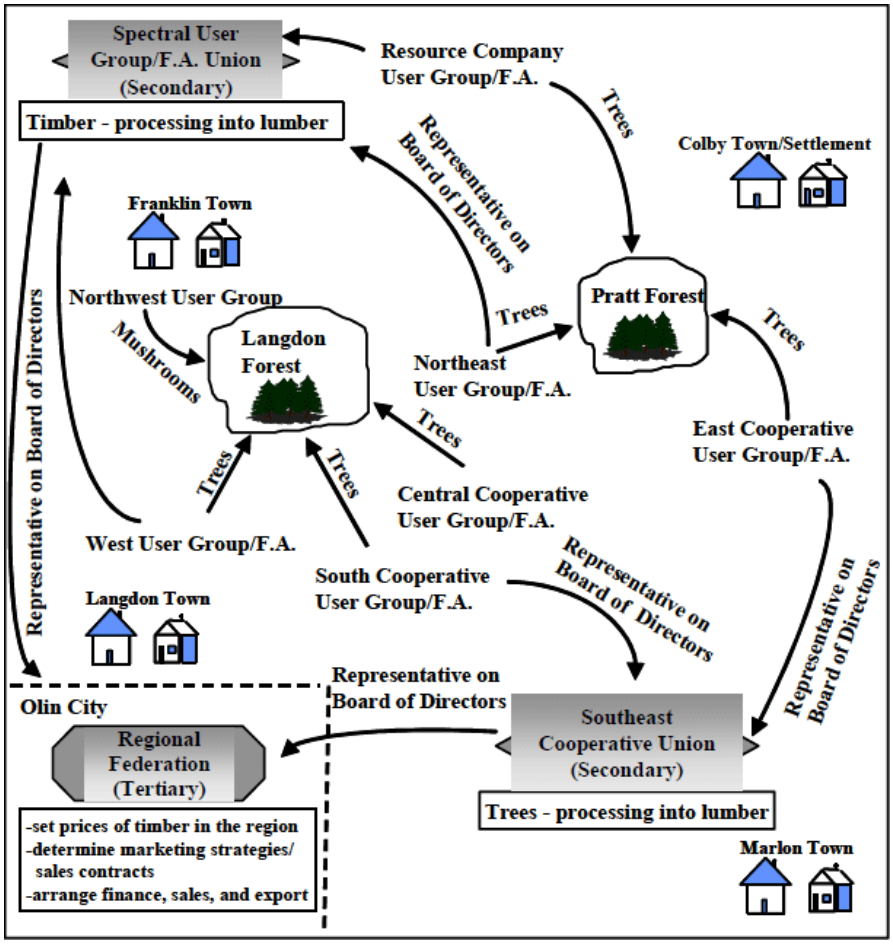
C2. Cooperation between harvesters/users may or may not be related to the use of the forest. Examples may include the sharing of -information about harvesting techniques or arrangements regarding the tending of livestock.

C3. This question asks whether conflicts among user groups affect the physical health of the forest. For example, conflict over a harvesting area that is claimed by more than one user group may lead to overharvesting where rules exist and grant rights to the group that can demonstrate the most intensive pattern of harvesting.

BOX 14: EXAMPLE OF ORGANIZATIONAL INVENTORY AND INTERORGANIZATIONAL ARRANGEMENTS

In the Franklin-Marlon-Olin Site there are two forests, one user group, and six user group/primary forest associations. Form U and Form A are completed for each of the primary-level forest associations. The site also contains two secondary-level forest associations and one tertiary-level forest association. Form A is completed for each of the higher-level forest associations.

One organizational inventory (Part 1 of Form I) must be completed for each organization related to each forest. In this case, the research team will code 13 Part 1s of Form I and two Part 2s of Form I (one per forest).



Franklin – Marlon- Olin Site

EXAMPLE OF HOW TO CODE FORM I

For the example above, the following codes and organizations will be included in the organizational inventories:

Type of Organization	Name or Organization
Langdon Forest	
L	West User Group/F.A.
M	Northwest User Group
L	Central Cooperative User Group/F.A.
L	South Cooperative User Group/F.A.
N	Spectral User Group/F.A. Union
N	East Cooperative Union
N	Regional Federation
Pratt Forest	
L	East Cooperative User Group/F.A.
L	Northeast User Group/F.A.
O	Resource Company User Group/F.A.
N	Spectral User Group/F.A. Union
N	East Cooperative Union
N	Regional Federation

IFRI FORM I

ORGANIZATIONAL INVENTORY AND INTERORGANIZATIONAL ARRANGEMENTS FORM

PART 1: Organizational Inventory

*An organizational inventory describes an organization, **harvesting** or **nonhavesting**, that plays a role in governing a particular forest through planting/other maintenance, protecting, harvesting, processing/producing, selling, using, or enforcing. Complete one **Part 1** for **each** organization.*

Research ID: 005 Country ID: GUA Site ID: 001

Date of site visit (mm-dd-yr): 07-31-96

Date(s) data collected for this form (mm-dd-yr): 07-31-96 through 09-27-96

►**Name of forest used <FK_FOREST>**: El Sitio

Name of person filling out this form: Clark Gibson

Name of person(s) with whom discussions held members of the organization

Location of discussions (fields, home of respondent, place of business, etc.): offices

Please give the name of this organization and select the type of organization from the list below. This organization does not have to be specifically related to forests but must engage in activities related to this forest (e.g.planting/other maitenance, protecting, harvesting, processing/producing, selling, enforcing).

►**Name of organization <INAME >**: Moran-Naranjo communities

►**Type of organization (select from the list below) <IORGTYPE>** : L

ORGANIZATIONAL INVENTORY LISTS

Government Organization

A = An aid agency of a foreign government (e.g., NORAD) B = A nonforestry agency of a national government
C = A nonforestry agency of a state government
E = A nonforestry agency of a district government
F = A nonforestry agency of a local government

Forest-Specific Government Organization

G = A forestry agency of a national government
H = A forestry agency of a state government
I = A forestry agency of a district government
J = A forestry agency of a local government
K = A unit of local government with a limited focus primarily on forests (e.g., van panchayat, in India)

Community-Based Entity or Organization

L = A local, communal entity with multiple activities including forestry
M = A local, forest-specific, informal entity
N = A local, forest-specific, formal, not-for-profit private voluntary organization
O = A local firm, company, or corporation organized for profit

Private Organization External to this Forest
(organization's "home" is not near the forest)

P = A for-profit regional or national firm, company, or corporation
Q = A for-profit multinational firm, company, or corporation
R = A not-for-profit, private, voluntary regional or national organization
S = A not-for-profit, private, voluntary, multinational organization
T = A cooperative operating in many locations
U = A labor or employee union
V = Other type of organization *(describe below)*

► This is a priority variable. Please make sure this question is answered.

A. TYPE OF ACTIVITY

See definitions of terms below.

Place check mark(s) in the column(s) representing the activity or activities that is/are undertaken and in the rows indicating the levels at which this organization operates.

Level of activity	Planting/other maintenance	Protecting forest	Enforcing rules	Harvesting/ using	Processing/ producing	Selling
A1. Operational Activities	<IR1C1>	<IR1C2>	<IR1C3>	<IR1C4> X	<IR1C5> X	<IR1C6> X
A2. Collective-ChoiceActivities	<IR2C1>	<IR2C2>	<IR2C3>	<IR2C4>	<IR2C5>	<IR2C6>
A3. Constitutional-Choice Activities	<IR3C1>	<IR3C2>	<IR3C3>	<IR3C4>	<IR3C5>	<IR3C6>

Definitions of terms:

operational activities: The day-to-day actions of forest users and others as to when, where, and how to withdraw products or otherwise use the forest, how to improve the condition of the forest, the monitoring of actions by others and imposition of sanctions and rewards, and/or the exchange of information about the forest. (Examples include harvesting of wood or thatch, planting trees, guarding the forest, assigning a fine, filling out a report.)

collective-choice activities: The policy-making activities of users, user group officials, and others, or an external authority about operational activities. (Examples include the activities of an elected council deciding when the forest will be open for harvesting for a particular product or which harvesting technique will be authorized.)

constitutional-choice activities: The decision-making activities about who will make rules. (Examples include the decisions at an annual meeting about the setting up of a council to meet more regularly and determining what actions such a council could take.)

← Read Section I.D. for a more thorough understanding of operational, collective choice, and constitutional-choice actions

harvesting/use activities: The day-to-day consumptive harvesting and nonconsumptive use from or in the forest by forest users. Consumptive harvesting is the harvesting of products in the forest for subsistence needs, for commercial purposes, and for transfer to others. Consumptive harvesting could be cutting forage for animals, timber collectors cutting timber for sale to a furniture manufacturer, or firewood gatherers cutting firewood for the settlement. Nonconsumptive use means using the forest for worship, birdwatching, or taking a walk.

GEN. GENERIC QUESTIONS FOR USE BY RESEARCHERS

Please write your question(s) and the answer(s) where indicated below. ***Enter the methodology and all questions together into the database under <IWKSPMEMO>.*** *Enter each answer into the database under the data name specified for each answer below. See Section II of the Field Manual for more detailed instructions.*

Please describe why you are asking the generic questions below and/or what methodology you used to collect the data provided below. *(long text)* <IWKSPMEMO>

Question 1 (answer requires a whole number):

Answer to question specified by researcher *(integer)* <IGENSNUM1>_____

Question 2 (answer requires a whole number):

Answer to question specified by researcher *(integer)* <IGENSNUM2>_____

Question 3 (answer requires a whole number):

Answer to question specified by researcher *(integer)* <IGENSNUM3>_____

Question 4 (answer requires a whole number):

Answer to question specified by researcher *(integer)* <IGENSNUM4>_____

Text question 1:

Answer to question specified by researcher *(text)* <IGENTEXT1>

Text question 2:

Answer to question specified by researcher *(text)* <IGENTEXT2>

▶ This is a priority variable. Please make sure this question is answered.

Text question 3:

Answer to question specified by researcher *(text)* <IGENTEXT3>

Question 1 (answer requires a decimal number):

Answer to question specified by researcher *(decimal)* <IGENLNUM1>_____

Question 2 (answer requires a decimal number):

Answer to question specified by researcher *(decimal)* <IGENLNUM2>_____

Question 3 (answer requires a decimal number):

Answer to question specified by researcher *(decimal)* <IGENLNUM3>_____

Question 4 (answer requires a decimal number):

Answer to question specified by researcher *(decimal)* <IGENLNUM4>_____

Answer(s) to question(s) specified by researcher that require(s) more than 250 characters *(long text)* <IGENMEMO>

PART 2: Interorganizational Arrangements

This interorganizational arrangements part of the form codes information in the research site about the relationships between all organizations, **harvesting** or **nonharvesting,** that govern a particular forest. One Part 2 must be completed for each forest.

Research ID: 005 Country ID: GUA Site ID: 001

Date of site visit (mm-dd-yr): 07-31-96

Date(s) data collected for this form (mm-dd-yr): 07-31-96 through 09-27-96

►**Name of forest used <FK_FOREST>**: El Sitio

Name of person filling out this form: Clark Gibson

Name of person(s) with whom discussions held members of the organization

Location of discussions (fields, home of respondent, place of business, etc.): offices

►**Has this interorganizational arrangements structure been coded before? <ICODED>**

(1) X No
(2) _____ Yes
(3) _____ Uncertain
(4) _____ Yes, with a different name (If this response is checked, write old and new names in B0.)

B0. MAJOR CHANGES SINCE LAST SITE VISIT

►**B0.** **Have there been any *major* changes in the interorganizational relationships since the last visit, and if so, what are they? *(long text)* <IHISTCHNG>**

Do not complete if this is the first visit to this site to record information for the IFRI database.

N/A

B. INTERORGANIZATIONAL ARRANGEMENTS

►B1. Is there any coordination among organizations that govern this forest? <ICOORDORG>

Mark only one answer.

(1) X No

(2) _____ Yes

Do the organizations which govern this forest coordinate resources, personnel, or information about any activities?

►B1a. If yes, please describe. *(long text)* <ICOORDDESC>

(Do they make policy together, loan funds, exchange information, etc.?)

There is an exchange of information between members of the community and the Nature's Defenders' extension agent who lives in Morcin. The extension agent has spoken with members of the community about Nature's Defenders' policies, especially with respect to the uses of the forest that are permitted in three management zones (Buffer Zone, Sustainable Use Zone, and Nucleus Zone) that are found whithin the Reserve. The extension agent also has spoken about the infestation of Barkbeetles in the pine forest in the watershed and has recruited members of the community in the cutting and burning of infected trees. The extension agent is paid by Nature's Defenders, and members of the community are paid by the Municipality of Rio Hondo. Nature's Defenders supplies information toward educational and environmental porgrams and to work with local teachers. Nature's Defenders has been authorized by the National Council for Protected Areas (CONAP) to administer the Reserve, since CONAP is responsible for all of the protected areas of Guatemala.

►B2. How do organizations for this forest generally relate to each other? *(long text)* <IRELATEORG>

Please describe how the organizations relate to each other and if there are any incipient (becoming apparent) conflicts among the organizations which govern this forest.

The regional office of CONAP does not have a presence in the Santiago River Watershed. Members of the regional office have said that they have not been convened to have regular meetings with the personnel of Nature's Defenders and that the relationships between the personnel of both organizations have been limited to emergencies (for example, the Barkbeetle infestation). There is also a misunderstanding about which of these organizations should be responsible for the development of community committees, which should form parts of the Directive CounciI of the Reserve (according to Decree No. 49-90 and the Master Plan of the Sierra de Las Minas Biosphere Reserve). Each organization believes the other is responsible for this task.

Officials of the Municipality of Rio Hondo believe that they have good professional relations with Nature's Defenders. The meet about five times a year. The interaction between Nature's Defenders and the community of Morcin-Naranjo is limited to the educational efforts undertaken by Nature's Defenders. These efforts are conducted or led by the local extension agent and local school teachers. The local extension agent informs community members about the rules that are in effect within the Reserve.

Members of the communities do not entirely understand all of the rules nor the intentions of Nature's Defenders in the area. They are concerned about the restrictions on their activities, especially those that impact their agricultural activities. There does not appear to be a conflict between extension agents and community members, at least not for now. We did not complete a Forest Governance Form for CONAP nor for the Municipality of Rio Hondo, because there is no evidence that their activities affect the actual use of the forest we were researching in this study.

►**B3.** **Are there currently conflicts between organizational policies and what the users would like in terms of forest governance?** <ICONFLICTS>

(1) ____ No
(2) X___ Yes

►**B3a.** **Please explain:** ***(long text)*** <ICONFLDESC>

See B1a and B2

C. **INTER–USER GROUP ARRANGEMENTS**

Ask only if there are multiple user groups.

C1. Do any of the user groups have advantages over all other groups for harvesting or using forest products? <IADVANUSER>

Mark only one answer. N/A

(1) _____ No
(2) _____ Yes

C1a. If yes, please describe. *(long text)* <IADVANDESC>

N/A

C2. Do harvesters/users from different user groups cooperate with each other? <ICOOPUSERS>

Mark only one answer. N/A

(1) _____ No

(2) _____ Yes

C2a. If yes, please describe, with respect to using the forest, farming, house building, sharing information, etc. *(text)*

<ICOOPDESC>

N/A

C3. Do conflicts among user groups affect the overall use of the forest? *(long text)* <ICONFLUSE>

N/A

GEN. <u>GENERIC QUESTIONS FOR USE BY RESEARCHERS</u> for Part 2, Interorganizational Arrangements

Please write your question(s) and the answer(s) where indicated below. ***Enter the methodology and all questions together into the database under <IWKSPMEMO>.*** *<u>Enter each answer into the database under the data name specified for each answer below.</u> See Section II of the Field Manual for more detailed instructions.*

Please describe why you are asking the generic questions below and/or what methodology you used to collect the data provided below. *(long text)* <IWKSPMEMO>

Question 1 (answer requires a whole number):

Answer to question specified by researcher *(integer)* <IGENSNUM1> _____

Question 2 (answer requires a whole number):

Answer to question specified by researcher *(integer)* <IGENSNUM2> _____

Question 3 (answer requires a whole number):

Answer to question specified by researcher *(integer)* <IGENSNUM3>_____

Question 4 (answer requires a whole number):

Answer to question specified by researcher *(integer)* <IGENSNUM4>_____

Text question 1:

Answer to question specified by researcher *(text)* <IGENTEXT1>

Text question 2:

Answer to question specified by researcher *(text)* <IGENTEXT2>

Text question 3:

Answer to question specified by researcher *(text)* <IGENTEXT3>

Question 1 (answer requires a decimal number):

Answer to question specified by researcher *(decimal)* <IGENLNUM1>_____

Question 2 (answer requires a decimal number):

Answer to question specified by researcher *(decimal)* <IGENLNUM2> _____

Question 3 (answer requires a decimal number):

Answer to question specified by researcher *(decimal)* <IGENLNUM3>_____

Question 4 (answer requires a decimal number):

Answer to question specified by researcher *(decimal)* <IGENLNUM4>_____

Answer(s) to question(s) specified by researcher that require(s) more than 250 characters *(long text)* <IGENMEMO>

IV. GENERAL GUIDELINES FOR CONDUCTING AN IFRI Study

A. IFRI RESEARCH METHODS

Research methods shape what the researcher sees, begins to analyze, and reports back to the community (Emerson, Fretz, and Shaw 1995). The IFRI research program uses a combination of research methods to collect data at a site. The methods include observation, structured and unstructured interviews, ethnography, and data collected from secondary sources. The closest description of the combination of methods used in an IFRI study is the ***ethnographic research method*** and ***individual or group interview***. Ethnography is a method of observing and interviewing groups of people or individuals that is as unobtrusive as possible, and provides guidance about how to interpret field data.These methods are derived from empirical field methods in the social sciences. IFRI researchers also use ***biological and soil science research methods*** when collecting data in settlements, forests, and forest plots.

IFRI researchers pursue two ethnographic tasks: (1) entering into a setting that is not "home" to most of the researchers on the field team, and getting to know the range of actors and actions involved in the setting; and (2) writing down and interpreting the accumulated perspectives, experiences, and observations that one has while in the setting (Emerson, Fretz, and Shaw 1995).

Unlike survey methods, the IFRI researchers do *not* conduct individual or group interviews with the research instruments in-hand. The IFRI research instruments serve as a guide to the researcher, but are used as face-to-face or as self-administered questionnaires. The questions are memorized by the fieldworker and responses are noted down in a small field notebook. These notes are later transcribed onto the research instruments.

The IFRI research instruments are similar to survey research instruments in certain ways, however. There is a questionnaire that is dictated by hypotheses and questions that "guide the choice of what to ask" (Manheim and Rich 1995:115); the research instruments are predesigned. However, the questions can be open-ended, with freedom to write text in explanation of a variable, or closed-ended with preselected variables.

1. The Individual/Group Interview

Individual and group interviews provide information to researchers and respondents from a wide selection of people. Interviews can be conducted with key informants, or people with specific knowledge about a particular topic (such as a school teacher who may be the person responsible for keeping census data for a town).Researchers use many interactive tools, including community mapping and ranking techniques. Individual and group interviews have often been criticized as a method open to personal bias on the part of the interviewer and the respondent. The data also can be skewed by elites dominating conversations, or discussions centering on ideals rather than realities (Molnar 1989:26). Discussions can be interpreted from vastly different perspectives, depending on the research teams' experience.

The IFRI research program minimizes such biases by:

a. Obtaining Local Knowledge

One way to keep personal reaction to a minimum is to try, at all times, to uncover "indigenous meanings" behind respondents' discussions to understand what "their experiences and activities mean to them" (Emerson, Fretz, and Shaw 1995:12). Several questions in the IFRI research instruments address the indigenous definition of forests, forest health, forest use, wealth, and nuclear family. The researcher should always try to distinguish between actual behavior, indigenous interpretation, and researcher speculation.

b. Selecting Respondents Carefully

Another way to limit bias is to describe in detail how local informants are selected. Interviews should be conducted with a wide variety of people, from both genders and from many classes. The types and numbers of people who are selected and what role they play in their community must be carefully recorded in IFRI research notes.

c. Recording Field Notes

Researchers should take mental notes during interviews. They need to review them with other team members in private. This should be done daily. The longer each member takes to transcribe and discuss his or her impressions, the more likely he or she will forget important details. Establishing routines to record impressions is vital. Finally, while it is not a good idea to take copious notes during an interview, another researcher may take schematic notes using key phrases, mnemonic devices, and the like.

d. Asking Interview Questions in Diverse Ways

The way in which interview questions are asked is critical. Researchers must seek ways to phrase questions so the respondent would like to share and not withhold information. For example, rather than asking a person a direct question such as: "Do you own cattle?" the interviewer might want to ask "Tell me about your farm." It is important, in other words, to ask questions without offending respondents or making them uncomfortable.

The way in which questions are asked is especially important for sensitive subjects, such as trying to find out about wealth, business interests, or family life. "Unless questions are carefully phrased, the respondents will give the interviewer the answer that he or she wants to hear or the more socially acceptable answer, regardless of their own opinions" (Manheim and Rich 1991:138).

Manheim and Rich (1995:138) suggest three ways to receive more genuine responses in interviews:

- Indicate that socially unacceptable views exist and are legitimate in opening phrases about the question, such as many people find that illegal harvesting from a forest actually occurs because of the need for firewood. Others don't believe this at all. Tell me what you feel about this situation.
- Construct questions so respondents are assumed to engage in or hold opinions that are unpopular, so they can then deny the opinions if they do not apply to them.
- Provide questions that give the respondents opportunities to express positive opinions or praise, so the respondent gets a sense that questions are balanced.

Molnar (1989:26) also suggests that smaller, homogeneous groups might work better in getting individuals to respond openly to questions. If women, for example, attend a large group interview, and the conversation is dominated primarily by men, women may not feel as free to discuss their views about issues as they might in a smaller group made up of women only.

Freudenberger (1994:1)suggests that mapping exercises and walking through the site (conducting a transect) while discussing ecological zones, boundary markers, land tenure, and a variety of other issues "may be less intrusive than if the same question is asked in a more formal interview situation."

e. Incorporating Ethics into Interviews

It helps to inform communities of the goals of the study in advance. Researchers should also discuss the methods they use in the field. A dialogue about preliminary findings prior to leaving the field is a responsibility of researchers. Providing information through discussions, through a site report presented to the community shortly after field research, also upholds the integrity of findings.

2. Observation Techniques

Many IFRI questions require observation to code responses. For example, discussions about the rules-in-use to restrict the quantity harvested of a certain product, or discovering technologies employed in a forest, may reveal only part of the story. Observing the rule in action is also part of the process of understanding whether rules-in-use exist. Permission should be granted prior to attending meetings or group functions to assess rule making, monitoring, and sanctioning activities. All observation methods must be noted in the research methodology section on the *Site Overview Form* (Form O).

3. Attitude of Researcher: Primacy of Rapport

Robert Chambers (1992), the "father" of Rapid Appraisal techniques, suggests that the integrity of data rests in the attitude of each researcher.

Outsiders have been conditioned to believe that respondents are ignorant or have interviewed them by asking rapid questions, interrupting, and not listening. "Participation of the respondent in some levels of discovery of findings is essential to all studies . . . each study must include some materials and methods which empower villagers to express and analyze their knowledge" (Chambers 1992, as cited in Freudenberger 1994:9).

The team member who is willing to participate, to try new methods, and to listen carefully to team members and respondents is a valuable member of any research team. Team leaders should select researchers who possess these qualities.

4. The Role of Rapid Appraisal in IFRI Studies

Rapid Appraisal (RA) is a "process of learning about rural conditions in an intensive, iterative, and expeditious manner, specifically to improve quality and timeliness of collecting data, and to reduce cost" (Molnar, 1989: foreword). Dialogue in small interdisciplinary teams, working directly with local people, is a hallmark of the RA method.

A key distinction between RA tools and Participatory Rural Appraisal (PRA) tools for collecting data is that the RA research is "mostly managed by outsiders, while in PRA research belongs to the community" (Freudenberger, 1994:7). In PRA, the community is in charge of the research process, and "the outsiders' role is limited, to provide training in the methods and later to facilitate their use" (Freudenberger 1994:7-8). This is not to say that the community is not in charge of some elements of the research process in RA, and that researchers do not play some key roles in applying PRA techniques. Building rapport is part of both methods, and both methods can actually empower communities to do future studies. But the ultimate responsibility for the outcomes of the research rests on the outsider in RA.

The IFRI research program is a mixture of traditional research methods and RA techniques. The community participates in mapping exercises, draws up calendars, assists in identifying plants, and discusses historical patterns with researchers in IFRI studies. Like RA, IFRI includes the use of triangulation to check data, review of secondary sources, use of guides that are linked to open-ended interviews with respondents, interdisciplinary research teams and individual and group interviews (Molnar 1989, Freudenberger 1994). Every IFRI study includes a site report, which is written by the end of the study. Researchers also discuss preliminary findings with the community during presentation of the site report. Researchers then edit the site report, enter and analyze the data, and report back about findings.

RA techniques are not generators, in and of themselves, of "statistically sound data" (Molnar 1989:1). RA is highly dependent on the researcher's quality of analytical judgment in combining the elements of the tools in the RA toolkit and determining what generalizations can be made from the combination.

a. Mapping: A Key PRA Technique Used in IFRI Studies

The most prominent PRA "tool" that IFRI researchers use is a mapping exercise conducted at the beginning of each IFRI study and used as a technique with subgroups throughout each study. "In conventional mapping, the trained outsider draws a map of the village or territory, or brings in predrawn maps to the community" (Freudenberger 1994:26). The participatory method is a process of discovering respondents' impressions of forest and community boundaries.

A large open space in a central location is used for this exercise. Researchers invite a representative sample of community members to discuss the IFRI study and their perceptions of their community. Community members are in charge of the mapping, either drawing the map on large sheets of white paper, on a blackboard, or on the ground. If the map is drawn on paper, different colored pens can be used to mark central landmarks, boundaries of forests, and settlements. If respondents are drawing the map on the ground, they can use shells, stones, pine cones, or beans, etc. to mark central locations. Respondents are not interrupted during this exercise.

This map will serve as a point of departure for IFRI researchers to talk with respondents about their community, to assess their perceptions in relationship to other maps of the area and to identify boundaries for continued interviewing. The map may be displayed in the place where it is drawn or in a local community center so community members can look it over during the site visit. It can also be included as part of the IFRI site report to the community.

The community map serves as the foundation for additional discussion with individuals from different genders, age groups, and professional backgrounds. For example, a representative sample of women could be asked to assess the map and make any additions or changes to it. Or the community can also add social information to the map, including markers about where the land owners live, or where the cattle owners live. It can also be used to map out farming patterns in relationship to forest boundaries. Aerial photographs can also be used with respondents to see how they might transcribe what they see in the aerial photograph to reality on the ground (Carson 1989).

IFRI researchers can use other RA techniques. These include using transects to identify types of resource use in an IFRI site by altitude, and calendars to talk with respondents about seasons of harvesting and use of forest resources and agricultural land. They can also use historical and classification matrices utilizing on-the-ground technique or different colored pens. Molnar (1989) and Freudenberger (1994) offer detailed accounts of these methods.

B. PREPARATION PRIOR TO DATA COLLECTION VISIT

Prior to collecting data at a site, researchers must identify the purpose of the study. They will need to select and review potential sites, hire a team of researchers, read available secondary sources about these sites, and order supplies (see Table 10). The team leader or principal investigator will be responsible for overseeing the study. A team leader will be responsible for organizing the research team throughout the study of a particular site.

1. Site Selection

The selection of a particular site depends on a research design. The selection process must include consideration of the size and composition of the forest(s), access of the settlement(s) to the forest(s), type and number of user groups, and seasonal accessibility. The team should also consider logistical convenience and community interest in the study. For a representative study, researchers should sample areas that reflect a cross-section of institutional, ecological, and economic characteristics and conditions. It is particularly important to include some communities that are heavily dependent on forest resources and those in regions where the demand for energy resources from forests is particularly high.

The researcher should also be alert to exploit opportunities for naturally occurring experiments. For example, the Uganda Pilot Study Team discovered a private forest immediately next to a government reserve. The two forests shared the same history for many years until one became the property of a family, and the other became - government property. That so many crucial variables—including ecological conditions, access to roads, and demographic pressures—are identical permits researchers to claim that property arrangements are responsible for different uses and conditions of these forests.

Table 10: IFRI Research Study Timeline Prior to Site Visit

6-12 months (in advance of study)	3-4 months	2 months	1 month
Design the study. A design can be part of a country-wide study, in a particular ecological zone, or an area know for self-governance of forest resources.	Develop lists of potential forests in each ecological zone by researching the kinds of institutions - governing these forest(s) and the sizes and types of forest(s). Study the names of communities around the forest(s).	Obtain general maps that depict topography, political jurisdictions, and roads for counties or subcounties.	Visit the site to walk - forest boundaries; meet with settlement officials, village elders, and - government officials; and set up research base for team.
		Hire field researchers/ plan site visit.	Train research team.
		Research social, - economic, environmental, and developmental features of the site.	Prepare computer - equipment (if applicable).
		Visit university, botanical garden, or agricultural/- forestry research station to research forest species in the study zone.	Purchase field supplies. Assign Site IDs prior to arrival at site.

The researcher's assumptions about a site should be carefully examined as the site is being selected. Differences in the physical condition of a forest thought to be the result of institutional differences, for example, may simply be the consequence of ecological conditions. To control for this possibility, the researcher should try to find a "natural -reference" forest in the same ecological zone as the forest(s) being studied. (Nature preserves that have a history of careful protection for scientific monitoring can usually provide a baseline.) In some locations, a natural reference forest may not exist. In this case, one has to compare the composition of several forests in the same region.

A site could be a forested area that is considered by many individuals in a country as an important place to study. It could also be very close to a regional center giving researchers flexibility to study the site yearly or -frequently. (The research team will need to be careful not to select this type of site frequently in a country, but it will be quite fruitful to have some sites selected for this reason.)

2. Research Team Composition and Selection

The team should be made up of at least one member from the area in which the study is being conducted, one - forester (with a botany background), and one social scientist. In addition, the team may need at least two more people to take care of technical details, data verification and entry, and general support activities. Local villagers may need to be hired on-site to help with forest plot measurements.

The forester on the team must be able to identify site vegetation and species in the local language as well as in botanical terms. In order to complete 30 plots, the forester will need a recorder (preferably someone well trained in collecting forest plot data) and an assistant. At least 6 to 10 days should be allotted to complete 30 plots. If local experts can be hired on a short-term basis, the team leader can assemble more than one plot team. The number of days required to complete 30 plots can thereby be reduced. If possible, everyone on the team should collect forest plot data as well as the social science data.

The social scientist on the team should be knowledgeable about the diversity of human groups in the area including divisions based on ethnicity, caste, occupation, religion, etc. Several members of the team should be able to understand (and speak, if possible) the local language and be informed of the general characteristics of the site. At least one member (particularly the team leader) should be familiar with the IAD framework and its links to the research instruments.

If possible, a woman should be selected to be on the research team. In addition to her skill as a researcher, a woman may enable the team to approach a women's group more easily, as men may enable the team to approach men's groups, or encourage women to participate in mixed-gender discussions.

One person on the team should be designated as team leader. This person should be in charge of organizing the team prior to carrying out fieldwork. While in the field, this person should help organize and supervise data collection, brainstorm about emerging patterns with team members, and organize feedback to give to the village leaders, review research instruments, and clarify data that is unclear with the research team. The team leader will need to develop a stylized map (section II, Figure 5) with the research team, check unfinished questions on the research instruments and tabulate number of forms completed (see *Appendix 1—Section IV*) prior to leaving the site.

Ideally, at least one person on the team should be familiar with Microsoft Access and experienced with software installation. Knowledge of the relational database management system (RDBMS) software used for the IFRI database and application is desirable. The team member should be responsible for making backups of database tables and for coordinating the rotation of backup CDs or USB drives, if a computer is used on-site.

3. Background Research

The collection of secondary data is important for understanding the local and regional context in which the research will be conducted. Academic researchers may have already documented the social and historical conditions in the area. Aside from books and articles, a variety of government reports are often available describing social, economic, environmental, and development features. The survey department or local forestry office may have large-scale maps available while local forest maps may possibly be obtained from the Forest Department. Research teams need to allocate time for collection and analysis of such background documents.

Researchers should obtain, in advance, information about exchange rates, laws and regulations about forests, and land tenure systems. If official census data are not available for the research site, they should be familiar with the education and income levels of the population in and around it. Researchers should consult censuses or local ethnografies to learn about the ethnicity, gender roles, and religious beliefs of the forest site populations. They should also interview official and university-based foresters and agricultural scientists about local land use patterns.

If available, they should obtain current listings of vegetations, which are typically found in government or NGO offices.

4. Computer-Related Preparations

Taking a laptop computer to the research site is optional. Having a laptop allows researchers to begin entering data. Even with a computer, researchers are still responsible for completing hard copies of all IFRI forms. If they take a computer with them, team members should make sure it is in good working order and has adequate free disk space. It is also important to take appropriate plug adapters, a supply of battery packs, and CDs or USB drives. They should also take along two lead bags of they are planning to travel through airports. The first lead bag should hold CDs or USB drives containing copies of the RDBMS software and the IFRI database and software. The second should hold a second backup copy of the data; it should be carried by a team member other than the member responsible for the first lead bag.

5. Supplies Needed in the Field

Equipment needed for one team (one item per team unless otherwise indicated):

- clipboard
- caliper (to measure DBH of trees and shrubs)
- altimeter (if available)
- 15-meter to 25-meter tape (to measure concentric circles)
- compass (for determining plot locations and slopes)
- set of 6 marker flags (for marking concentric circles)
- calculator [if tree is too big for calipers, then measure circumference and divide by pi (3.14)]
- Cover Estimation Guide (see Figure 12)
- Sunto Clinometer or Blume Leisse Clinometer (to measure height of trees and to measure slope in degrees or percentages)
- hypsometer (optional, for estimating height of trees)
- plant press (for samples of unidentifiable species)
- roll of surveying ribbon
- 2 notepads that are 8 1/2" x 11" in size or cut to this size to be used when there is not sufficient space for a list within a form. One should carefully staple a sheet into the coding form right after the place where the list originally appears
- At least one stapler for each team with a box of additional staples
- 8 1/2" by 11" grid notepads that could be used in sampling
- 20 dark (but not smearing) pencils
- portable pencil sharpener (a sharp knife will do)
- flashlights
- DBH tapes
- canteen (or vessel to carry water for soil tests)
- alcohol (for preserving fruit from tree plot samples)
- Post-it notes (These can be made by cutting strips of paper, and color coding if necessary. They could then be used with glue to mark areas in need of attention on the research instruments.)
- scale maps (if available)
- computer equipment (if applicable, see IV.B.4.)
- shovel or soil coring device
- relevant Munsell Color Chart pages
- carbon paper
- binoculars
- first aid supplies

C. PREPARATION DURING ON-SITE DATA COLLECTION

1. Timing and Duration

The timing of a field data collection visit is critical. It is important to select a period of at least two weeks when rural families are least busy and have the most time available to converse with researchers. For example, the early part of the monsoon (rainy) season in India, Nepal, and most African countries would be a poor choice for timing a field visit due to possible difficulties in preparing the site and inaccessibility to farmers who may be intensively planting or ploughing in this season.

Researchers should take into account the political climate of the region, country, city, or village to be studied. If elections are scheduled, for example, this can greatly determine the availability of respondents since a number of them could be involved in campaigning and other election-related activities. Often, villager cooperation may depend on the local political situation as well. Thus, selecting a time period when the area to be visited is relatively peaceful, from a political standpoint, is important.

2. Locating and Setting Up the Site Visit Research Base

Wherever and whenever possible, the site visit research base should be located within a settlement under study. This will enable the team to build rapport with the local population. If this is not possible, a room or house could be rented in a neighboring village or town. The research base should be sufficiently large to hold discussions among team members and work on coding forms.

3. General Data Collection Guidelines

The team leader should visit the site leaders, walk the boundaries of the forest, and make decisions about the referent forest(s) prior to the team's arrival. This will familiarize him or her with the site and provide an opportunity to settle as many administrative details as possible prior to the arrival of the entire research team. Housing for the research team could also be arranged at this time.

When entering a settlement and talking with local residents, team members should establish rapport by introducing themselves and explain the purpose and duration of the visit. Leaders could call a general meeting of villagers to inform as many of them as possible of the team's presence. Even after the team has been introduced to the village, the team members should remember to introduce themselves and explain their purpose when visiting new households or neighboring communities. If researchers from other countries are on the team, extra effort should be spent dissuading villagers that donor funding is on its way. These actions go a long way toward reducing local suspicions of the team.

Team members should begin each day by discussing sections or subsections of forms. They should memorize as many questions as possible so the coding form manual is left at the research base. Researchers must take schematic field notes (see section IV.A.1.c), except when completing the *Forest Plot Form* (Form P).

Researchers should interview forest users in local areas that are perceived as neutral. In most sites, schoolhouses or trees are acceptable, protect interviewers and users from the elements and give everyone a chance to rest. Creating a friendly and relaxed atmosphere is indispensable for obtaining accurate responses to questions. Team members should avoid using local government offices, guest houses or other locations that intimidate villagers.

Discussions should begin with key respondents who can provide information about the broader system beyond their own experience. These individuals can include local leaders, school teachers, and local merchants. To offset status and gender biases, it will be important to do follow-up interviews with less prominent individuals.

Researchers should interview small-scale farmers, landless laborers, and women to obtain an array of views.

Researchers should hold discussions with small groups of local people. It is a good idea to interview no more than 6-8 at once. This allows everyone to participate, thus encouraging locals to open up to team members. It also minimizes the possibility that less-outspoken locals will withhold responses useful for the team. Researchers can also converse with individuals to verify the information obtained in group interviews.

The timing and duration of discussions are important. If most respondents are men, for example, perhaps researchers should choose times when women cannot be present. Researchers should schedule interviews that are mindful of work routines, gender roles, ethnic and religious proscriptions. Poor timing can result in data that are not representative of all views in a settlement.

The use of tape recorders and cameras should be considered carefully. These have the potential to inhibit the respondents from responding, either partially or completely. Asking permission to use such devices could reduce or remove this risk.

After an interview, the researcher should make "fine notes" (i.e., details easily lost if not recorded immediately), identify missing data (go back to respondent—if convenient, immediately), note modifications, and then move on. If the answer is **not** known by the respondent, a question mark should be written in the margin of the form. If two members of the team are working together, one member could take notes as the other asks questions.

After each day's session, team members should discuss findings, research style, problems, sort through unknowns from forest plots, and plan the next day's session. This activity at the end of a day's work also provides a useful forum for discussing individual performance.

4. IFRI Mapping Instructions

Many of the questions on the IFRI forms have specific locations associated with them (e.g., forest plots, settlement boundaries, forest boundaries). Each user group or settlement may have their own understanding or definition of where these locations exist. These spatial interpretations are critical to analyzing the responses collected on the IFRI forms. These maps should be developed for every IFRI case collected, and compared to scale maps (see *Form F—Forest Form: Guidelines*, section III.A.2). Therefore, the *Site Overview Form* (Form O, question C12), the *Forest Form* (Form F, questions B1 and B1a), and the *Forest–User Group Relationship Form* (Form G, question A3) all require maps to be developed that identify locations of specific data.

Two main tasks comprise the development of these maps. The first, referred to as "IFRI Paper Map Development," uses PRA techniques to develop locally drawn maps of the area of interest. These maps should be developed for every IFRI case and compared to scale maps (see *Form F—Forest Form: Guidelines*, section III.A.2). It would be preferable to have one person on the research team review and edit the maps while the research team is on site. The second is "Geographic Information Systems (GIS) Data Collection."

a. IFRI Paper Map Development

1. Creating a generic map of the forest region

Two alternatives for producing accurate generic maps are suggested here. The technique chosen is very much dependent on available mapping resources, and therefore, decisions are left to the judgment of field researchers. The instructions below give ideas about how to get this done.

a. When a map of the forest and forest surroundings is available:

If possible, the team should acquire a map of the region of study prior to data collection in the field (see section III: Form O, Form F, Form G). Obviously, different IFRI cases will have different maps available, of different quality, size, and scale. Ideally, the map should be of a large enough scale that detailed forest attributes can be marked on the map (e.g., settlement locations, forest grazing areas). If such a map exists, the researcher should then investigate the possibility of copying these maps at a size that is easily transportable. In addition, the research team should select a sample of people from the settlement and from different user groups to draw the maps in Form O, Form F, and Form G using **RA** methods. If the research team is conducting research in an area where women may not be included in the mapping exercise, or do not contribute during the design of the map, researchers should ask women in the settlement to draw a map of the forest. These maps will provide an overview of the villagers' interpretation of the mapped areas. These maps should then be compared to the scale maps by the research team.

b. When a map of the forest and forest surroundings is unavailable:

If no map exists, a hand-drawn version should be made of the forest as early in the data gathering process as possible (see section III: Form O, Form F, Form G). This could be done initially, as the field research team (preferably the forester on the research team) is getting acquainted with the site, and with the assistance of the community. Utilizing RA methods, the researcher should select a sample of people from the settlement and from user groups to draw this map. Information should be cross-checked with specific user groups at a later time [see subsection (3)]. It is preferable to have developed the generic map prior to data collection, simply because it may disrupt the flow of that data collection effort.

2. Preparing the generic map that can be used for all map questions

The scale and RA maps should be used to guide map development of each map question (Form O, Form F, Form G). Using clean generic maps is a very useful strategy when holding discussions with different user groups. Different groups may have diverse perceptions of the same forest, so using a generic map without the information posted to it by prior groups helps to evoke differences in perception if they are there. If a photocopier is available, the team can make several copies of each map. Otherwise, the team needs to draw copies by hand, perhaps by putting a blank sheet of paper on top of the original map and tracing the original.

a. Make a large version of the map and laminate or put plastic over it.

This map then could be utilized in data collection of every map question by using an erasable pen. Once the map is completed, a photo should be taken (preferably with a Polaroid, so that the clarity of the photo can be seen instantly). A paper version could be developed later of this photograph.

3. Using the generic map

For each map question, use a clean map. The drawings should be as accurate as possible. All appropriate land markers should be drawn on all maps. For example, if a large boulder is used as a boundary marker, then it should be identified. The map should also identify roads, trails, borders, vegetation boundaries, rivers, and streams.

Depending on the number of people involved in the creation of a map, it may be reasonable to have the drawing developed on some medium which all participants can easily see. If the generic base map is made of paper, it may be too small for all participants to see. Perhaps a chalkboard is available, or perhaps several people could make a large map in the dirt, utilizing rocks, twigs, etc., to describe landmarks. Once the

discussion about the map is complete, researchers should transfer the large drawing to a permanent paper copy or to a plastic-covered version. Careful interpretation of locations must be taken in this transfer. A photograph should be made of the larger drawing. If a photograph is taken, researchers should note this on the map question.

b. Geographic Information Systems (GIS) Data Collection

IFRI researchers are expanding their use of GIS as an aid to mapping sites. We also use global positioning system (GPS) technology to pinpoint specific forest locations. After all maps above are drawn, the field researcher would (with perhaps the assistance of a community member who is a "neutral" party) go out and physically locate boundaries and features of interest drawn on the paper maps.

D. LEAVING THE SITE AND REPORTING BACK

When the team is finished collecting data, handwritten research instruments should be checked carefully to determine if any sections are incomplete. The team leader should use a grid similar to the one in *Appendix 1—Section IV*, to tabulate the number of research instruments per site. The team should draw a stylized site map to depict the relationships between research instruments (see Section II, Figure 5). Hold additional meetings to answer unfinished responses. Researchers should make every effort to write a brief report to give to the village leaders and respondents about the preliminary findings of the study. This could include such topics as a review of the history of the settlement(s), and a list of forest species. Sharing a last meal or drink with villagers on an informal basis could go a long way in putting closure on the interview process with members from the settlement or village. Prior to departure, the team should conduct an inventory of all equipment, numbers of research instruments, computer equipment, etc.

E. ADDITIONAL ISSUES FOR CONSIDERATION

1. Confidentiality/Data Storage

How information is stored is another issue that researchers need to confront. Storage of completed forms and of the database is vital to ensure that researchers can retrieve information at later dates. Taking adequate measures to save data for the future ensures that information is shared among the CRCs and other researchers. Developing procedures also protects the confidentiality of informants. Unless researchers take these steps, they may compromise their ability to receive high quality and accurate responses to their questions.

2. Computer Technology

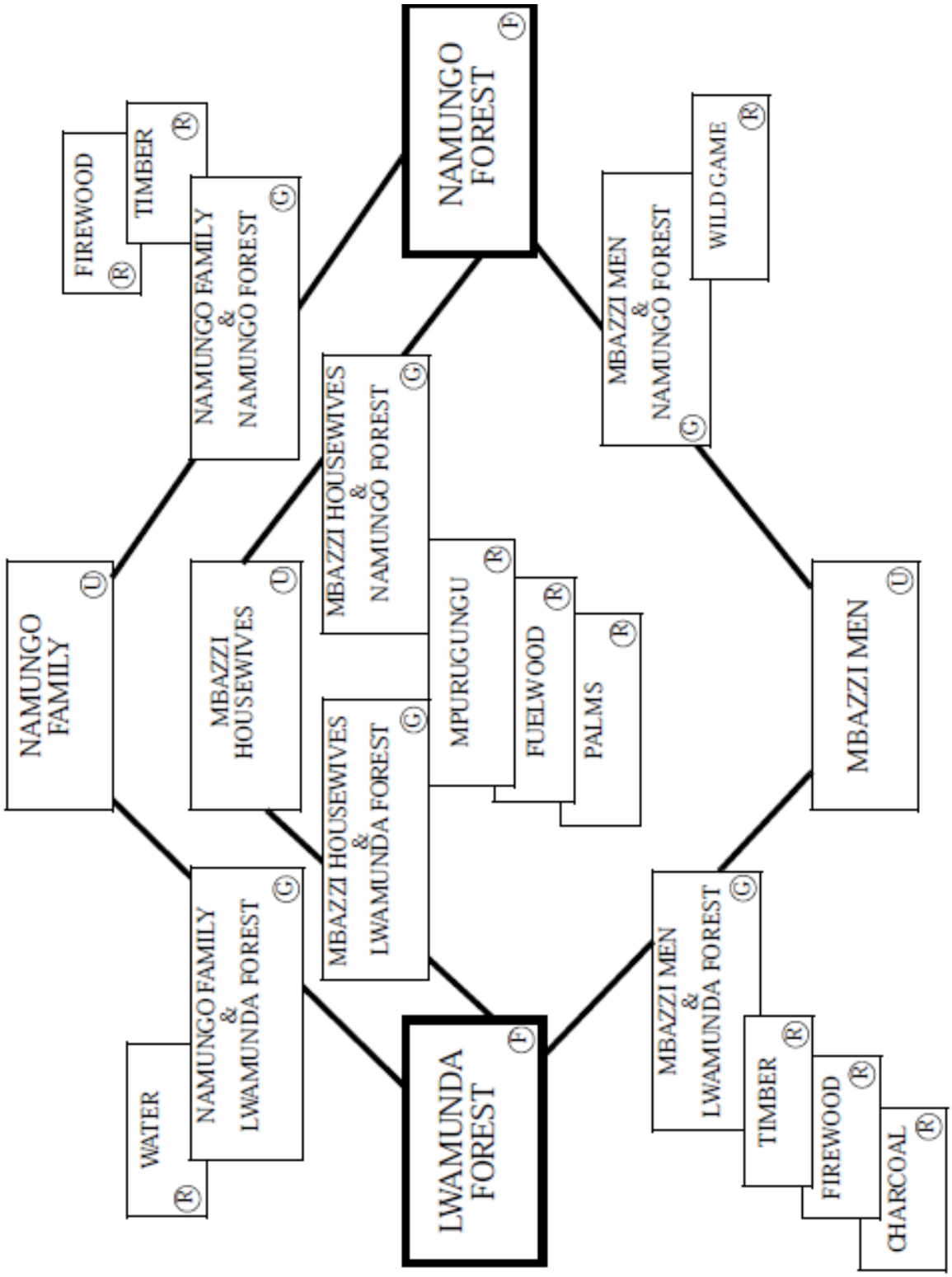
The instruction manual contains a minimum set of guidelines about the use of computers and allied technology. However, the design of the database has included use of laptops and consideration of GIS technology. Increasingly, the direction that field research has been taking is more toward using computerized data-recording methodologies. Supplemental manuals will contain guidelines relevant to the use of these technologies.

Appendix 1—Section IV Total Number of Research Instruments per Site

Using a simple grid, such as the one pictured below, allows the research team to tabulate how many coding forms are complete. It also is useful for the person(s) entering data. Researchers should complete the grid as they draw the relationships of the forms to the forest(s) (see section II, Figure 5).

Site ID	Form 0	Form F	Form P	Form S	Form U	Form A	Form G	Form R	Form V	Form I

Appendix 2—Section IV Sample Diagram of the Relationships between User Groups and Forests



V. GLOSSARY

RESEARCH INSTRUMENT GLOSSARY

administrative center: a location where some government officials reside or where there is a government office that interacts to at least some extent with the settlement residents.

appropriation: the process of withdrawing consumptive or non-consumptive products from a resource system.

coding form: an individual series of questions about some feature of the forest system that will be asked using extended interview methods rather than traditional survey methods.

climber: (hanger) a woody or herbaceous plant that either grows up into the canopy as a vine or liana, or drapes down from the canopy and becomes rooted and is dependent on other woody vegetation for support.

collective-choice activities: the policy-making activities of users, their officials, and others, or an external authority about operational activities. (Examples include the activities of an elected council deciding when the forest will be open for harvesting for a particular product or which harvesting technique will be authorized.)

collective-choice rules: the rules that are used by appropriators, their officials, or external authorities in making policies about how a forest should be managed.

common-pool resources: A resource where it is difficult to exclude individuals from benefiting from a good, and it is easy to subtract the benefits consumed by one individual from those available to others. A good or resource that is non-excludable and subtractable is a common-pool resource.

constitutional activities: basic decision making about who is eligible to use a forest and how future collective-choice decisions will be made. (Examples include the decisions at an annual meeting about the setting up of a council to meet more regularly and determining what actions such a council could take.)

constitutional rules: the rules that determine who is eligible, and determine the specific rules to be used in crafting the set of collective-choice rules. These affect operational activities and rules.

consumptive use: extraction of resources from a forest for subsistence needs, for commercial purposes, or for transfer to others. (Harvesting wood, minerals, or fodder would be examples of consumptive use.)

demography: the statistical profile of a human community, especially with reference to size, density, distribution, health, and material well-being.

distribution: the flow of sending a quantity of goods from one location to another within or outside of a resource.

epiphyte: a plant that grows on another plant, often on the branches of trees and shrubs (e.g., bromeliads, ferns, orchids, etc.)

federated forest association: two or more forest associations that work together to accomplish some joint activities and/or objectives with rules, policies, and/or guidelines, some of which have been developed by the federated association for itself or have evolved over time.

forest: a surface area of at least 0.5 hectares, containing woody vegetation (trees, bushes, shrubs, etc.), exploited by at least 3 households, governed overall by the same legal structure.

forest association: one or more user groups with rules, policies, and/or guidelines about the forest, some of which users have prescribed for themselves.

forest system: the whole of human and natural elements connected to a particular forest resource.

Geographic information system (GIS): a GIS is a system for storing and organizing spatial information in a computer. A GIS allows users to overlay layers of geographically based information (e.g., soil type, vegetation, forests) into a single, integrated electronic map. For the IFRI database, overlays will include property rights/land tenure and harvesting rules.

herbaceous plant: a non-woody stemmed plant (e.g., grasses, forbs, ferns).

indigenous: originating in or living naturally in a particular region or environment.

infraction: the breaking of a rule.

institutions: sets of working rules that are used to determine who is eligible to make decisions in some arena, what actions are allowed or constrained, what aggregation rules will be used, what procedures must be followed, what information must or must not be provided, and what payoffs will be assigned to individuals independent of their actions.

market: a location where the residents of the settlement can buy articles of daily necessity as well as sell some of their products such as fodder, fuelwood, or agricultural crops.

model: a simplification of, and approximation to, some aspect of the world (King et al., 1994:49).

monitor: to watch or check.

myth: a traditional story possibly related to historical events that shapes the world view of a people or explains a practice, belief, or natural event.

non-consumptive use: uses of the forest which do not extract resources. (Examples would include birdwatching, enjoying nature walks, or using the forest as a sacred shrine.

operational activities: the day-to-day decisions and actions made by users of a forest and others as to when, where, and how to withdraw products or otherwise use the forest or how to improve the condition of the forest, the monitoring of actions by others and imposition of sanctions and rewards, and the exchange of information about the forest. (Examples include harvesting of wood or thatch, planting trees, guarding the forest, assigning a fine, filling out a report.)

operational rules: rules that directly affect the day-to-day decisions made by harvesters concerning when, where, and how to withdraw the products, who should monitor the actions of others, how and what information should be exchanged and withheld, and what rewards and sanctions will be assigned to different combinations of actions and outcomes.

provision: refers to decisions that determine what goods and services will be made available to a community; provision criteria are concerned with how best to satisfy the preferences of the citizens.

rapid appraisal: "a family of methods designed to get practical information on development issues in local communities quickly" (Freudenberger 1994)

reprimand: a severe or formal warning.

rules-in-use: those rules actually used, monitored, and enforced when individuals make choices about the actions they will take (Commons 1957); they may differ considerably from legislative, administrative, or court regulations (Wade 1988).

sapling: a young tree with a stem diameter greater than 2.5 cm (1 inch) and less than 10 cm.

seedling: a young tree or shrub which is less than 1 meter tall and has a stem diameter less than 2.5 cm (1 inch).

shrub: a woody plant with several stems instead of one main trunk; an area of bushes and shrubs may be called "scrub vegetation"; shrubs usually range in height from 0.5 m to 3 m (shorter than trees). For the purpose of this database, all shrubs are defined as having stem diameters greater than 2.5 cm (1 inch) and less than 10 cm; larger shrub growth forms are classified as trees.

shunning: avoiding deliberately and habitually.

site: the area of study during an IFRI field visit. It should contain at least one forest and at least one settlement.

successional stage: a developmental phase of a natural forest. When a forest is cleared by human or natural forces, it takes time to grow back to its mature state. Early stages of regrowth are usually composed of different plant communities from those found later. If successional stages are known for the type of forest under study, please state whether the forest is in an early, middle, or late stage. The terms "pioneer" (young or early), "climax" (mid to late), and "ancient" (very late with many old and dying trees) are successional stages of natural forests.

territorial jurisdiction: the area in which the organization has the right to implement policy.

topography: the natural and artificial features of a particular region.

tree: a woody perennial plant with one main stem or trunk which develops many branches, and is usually over 3 meters tall.

triangulation: "one of the principles of Rapid Appraisal that tries to ensure that the results of a study are as accurate and unbiased as possible. Triangulation means looking at any problem from as many perspectives as possible, but at least: (1) gain the perspectives of three people with different points of view, (2) ensuring a wide range of people are interviewed and all information is verified with at least three sources, and (3) information gathering using different tools for the same issue" (Freudenberger 1994).

user: anyone who makes consumptive or non-consumptive use of the forest(s).

user group: a group of users who share the same customary and/or legal rights to products from the same forest(s).

GLOSSARY OF FOREST TERMS

afforestation: the planting of trees on land formerly used for purposes other than forestry; this contrasts with reafforestation, the restocking of existing woodlands that have been depleted.

agroforestry or social forestry: any land management practice in which farmers are encouraged to incorporate the cultivation of trees and shrubs along with crop production and animal husbandry.

boreal forest: a major vegetation formation that extends in a continuous belt between latitudes 50 degrees and 70 degrees in the northern hemisphere. Boreal forest is dominated by the severity of winter: snowfall is heavy and long-lasting, and the soils are severely affected by permafrost.

clear-cutting: in forest management, the practice of completely felling and removing a stand of trees. The cleared area usually is quickly replanted with a single species, an example of monoculture.

coppicing: the periodic felling of mature trees and subsequent regrowth of new side shoots from the old tree stump.

crown: the leafy head of a tree.

deciduous forest: any forest of trees that shed their leaves or needles in response to an unfavorable climatic event, usually the onset of autumn, when illumination and temperature levels become limiting factors for growth.

deforestation: the permanent clearing of forest land and its conversion to non-forest uses. Deforestation can bring soil erosion; desertification; sedimentation of water courses, lakes, and dams; alteration of local climates through disruption of the energy balance and hydrological cycle; and extinction of plant and animal species.

evergreen forest: any forest composed of tree species that retain their leaves or needles for more than one year. Typical of the evergreen habitat are plants that grow in environments free from climatic adversity (typically the low latitude tropical rain forests) and plants that grow in environments with very marked seasonal change (typically the Mediterranean and the boreal forest biomes).

forest climate: the microclimate developed over forested areas and often characterized by variations in albedo, diurnal temperatures, wind, and humidity patterns compared with surrounding non-forested areas.

forest management unit: a section of a forest that has been set aside for certain purposes.

hardwood: the wood of any such broad-leaved trees as oak, beech, or ash. Hardwood timber is used widely in the construction of good quality furniture.

keystone species: a group of species that makes an unusually strong contribution to community structure or processes. A keystone species "may be a major predator, whose presence limits the abundance of prey and thereby reduces their competitive interactions; a unique food source, such as species groups of figs and palms that fruit during seasons of fruit scarcity for tropical frugivores; or a species that maintains critical ecosystem processes, such as nitrogen-fixing bacteria or phosphorus-mobilizing fungi (Meffe 1994:129)."

microphyllous forest: a type of forest found in semidesert arid areas. Microphyllous forest occurs extensively in South America, on the Indian subcontinent, and less widely in Africa and Australia. Leaves are small, spiny, and thickly covered with cuticle to minimize evapotranspiration losses. Thick protective bark is also typical, as are deep roots to tap the groundwater.

primary forest: any original, virgin forest unmodified by human activity.

reafforestation: the planting of trees on land that has carried forest within the previous 50 years, or within living memory, but which has been removed by natural or human agency.

selective harvesting: the removal of trees or shrubs of a particular species or size.

shelter belt or windbreak: a stand of trees planted to modify local climatic conditions in windswept areas. Acting as a windbreak, a shelter belt is designed to reduce soil erosion and protect crops from direct effects of high-velocity winds. The effectiveness of protection depends on the height, density, and shape of the plantation.

softwood: the wood of coniferous trees such as pine or cedar. Softwood timber is particularly suitable for conversion to cellulose and paper pulp; otherwise its use is usually confined to rough carpentry.

stand: any area of trees comprising one or, occasionally, two species of similar or identical age. The stand in forestry is synonymous with the field in agriculture, representing an area in which uniform management techniques can be used.

thinning: removal of small, poorly formed trees to provide more nutrients, light, and space for other trees.

tropical rain forest or selva: the dense forest found in tropical areas of high rainfall. Specific climatological criteria distinguish tropical rain forests from all other biomes: almost continuous high temperatures, high annual rainfall, and a diurnal variation in climate that is often greater than the annual variation.

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