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## **SOCIAL FORESTRY NETWORK**



### **AERIAL PHOTOGRAPHS AND THEMATIC MAPS FOR SOCIAL FORESTRY**

*Jeff Fox*

Jeff Fox is a Research Fellow at the Environment and Policy Institute, East-West Center, 1777 East-West Road, Honolulu, Hawaii 96848.

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I. INTRODUCTION

Farmers struggling to provide food, fuel and housing for themselves and their families annually destroy and degrade large areas of tropical forests. Successful forest management consequently requires that subsistence needs of local people be taken into consideration. In most tropical countries, however, forest policies and legislation still emphasize forest protection and the collection of forest revenue. As a FAO (1985) report states: "professional foresters perform the role of protector of the gazetted forest reserves and of collector of fees and revenues". In order to protect remaining forests and to rehabilitate degraded lands, there is an urgent need to develop a new understanding of the role of forestry in modern societies. Forest management practices need to be developed that are based on a thorough understanding of present land use systems and that are responsive to the subsistence and development needs of local people.

Aerial photographs and thematic maps are two well known methods of studying land use practices. Aerial photographs are used to inventory these practices

and thematic maps are used to disseminate this information. Neither aerial photographs nor thematic maps, however, have been used to collect information from villagers and farmers who are actively involved in using forest lands. The major objective of this project was to explore the use of aerial photographs and thematic maps as interviewing tools for collecting information on land use practices in Java.

## II. SKETCH MAP EXERCISE

The Ford Foundation and the Indonesian State Forest Corporation (Perhum Perhutani) are sponsoring a social forestry programme on Java. Villages throughout the island have been selected as pilot areas for this programme. Community organizers (COs) have been trained and stationed in these pilot villages. The COs are expected to acquire an understanding of land use practices (forest, village lands and private lands) in these villages and to help identify forest lands that could be managed by the community for meeting their forest product needs.

In order to achieve these objectives the COs need to understand present forest use practices. The COs also need to be able to identify competition between neighbouring villages for forest lands and to be able to locate forest plots that could serve as a basis

for a formal agreement between Perhum Perhutani and the villagers. This sketch map exercise was conducted in order to develop a methodology by which COs could make sketch maps of the pilot villages. These maps are to serve as a tool for acquiring an understanding of spatial relationships in the village. Hopefully, the maps can also be used for identifying forest lands for communal management.

#### BACKGROUND

Indonesia possesses recent (1981) medium scale (1:30,000) colour infra-red aerial photographs of most of Java. These photographs provide an excellent basis for mapping land cover in rural Java. The first objective of this study was to examine the ability of villagers to understand these photographs and to determine if aerial photographs could be used as an interviewing tool for acquiring a spatial understanding of land use practices and for mapping these practices.

Unfortunately, before the 1981 aerial photographs can be purchased permission to acquire them must be obtained from military authorities. This is a very time consuming and frustrating process. In the absence of aerial photographs, existing thematic maps (< 1:25,000) might be useful for understanding village land use practices. The second objective

of this exercise was to examine the ability of villagers to understand these maps and to assess the usefulness of these maps as an interviewing tool for learning about present land use practices.

#### AERIAL PHOTOGRAPHS

The study began in Sukathani, a village in the Puncak area of West Java for which aerial photographs were acquired. The author and Ir. Pohan, a forester working for Perhum Perhutani who had participated in a recent social forestry study, spent 3 days in Sukathani using the aerial photographs to conduct interviews with a number of farmers met in chance encounters as well as with farmers identified by an assistant to the Pak Lurah (village headman).

An interview began by trying to place the farmer at ease. This was done by explaining who we were and that our objective was to improve communication between the farmer and the forest department about forest practices and forest management. We then proceeded to explain the photographs to the farmer. This was done by locating well known objects on the photographs and by eventually asking the farmer to locate other identifiable objects himself. Once the farmer was familiar with the photographs the interviewer proceeded to inquire about the use of privately-owned lands: where villagers owned rice lands; where other villages owned rice lands; where

villagers owned garden lands; the location of tea plantations; the location of village-owned wood lots; privately-owned woodlots; etc. This information was recorded directly on sheets of clear plastic overlaying the aerial photographs. Pens, colour-coded for different types of land use, were used to record the information in a readable format.

Eventually, the interviewer attempted to acquire information about forest use practices. In Sukathani this was difficult as the villagers have experienced a great deal of pressure (including gun-carrying foresters) to refrain from using forest lands. With gentle prodding, however, it was possible to learn a little of the history of these forests, the places in the forest where most people go to collect firewood, why villagers did not use other forest lands, what lands were used by other villages, etc.

Because the study was intended to be a rapid appraisal of land use practices, only about 12 heads of households were interviewed. Respondents were selected on the basis of chance encounters and from people introduced by the village headman. Consequently, statistically valid statements cannot be made about the population.

However, an effort was made to include poor as well as wealthy respondents.

The study succeeded in documenting major forest practices and in identifying a logical piece of land for communal management. The interviews also demonstrated that most villagers could understand aerial photographs of their own village. Unfortunately since women were not included in the sample no conclusions can be made about the ability of women to understand the photographs. Among men, old men seemed to have more difficulty understanding aerial photographs than young men.

#### THEMATIC MAPS

The second village visited by the interview teams was Ciramaeuwah Girang located northwest of Cianjur in West Java. The team did not have aerial photographs of Girang but was able to obtain a 1:10,000 map (peta kerja) from Perhum Perhutani showing the boundaries of the state owned forest. The team also obtained from the headman of Girang a 1:25,000 map of the village (peta kecamatan) showing the boundaries of the village as well as of the state forest lands. The team used the forest department's map to correct the boundaries of the forest lands on the village map (there was significant omission of forest land on the village map). Copies of the village map were then made showing the boundaries of the village and the state-owned forest lands (Map 1).

A few interviews were conducted with village informants to locate the relative positions of well known physical



objects on this map. These objects included the location of kampungs (housing settlements) as well as the location of rivers, roads, and major hills. After compiling the data from several interviews onto a single map the team field checked the map by hiking around the village. Photocopies of the corrected map (Map 2) were then made.

The corrected maps were used in interviews with villagers about land use practices in a procedure similar to that outlined for aerial photographs. This proved to be a very useful method for mapping hiking trails, schools, mosques, etc. (Map 3); for understanding the spatial distribution of privately-owned lands (Map 4); and for identifying the ways in which villagers use forest lands (Map 5). Interviews with forestry officials were useful for mapping the trees planted in the forest as well as the areas the department considers difficult to control (Map 6).

### III. DISCUSSION

Both aerial photographs and thematic maps are useful interviewing tools for acquiring information on land use practices in a spatial context. Aerial photographs are generally more useful than maps because they are more accurate and detailed and do not have to be extensively field checked. Aerial photographs may also be useful for delineating the boundaries of forest lands to be used in community forestry projects whereas maps cannot be used

for this purpose without surveying. The village thematic maps, however, are easier to obtain than aerial photographs (at least in Indonesia) and are sufficiently accurate to facilitate an understanding of land use practices.

Aerial photographs and thematic maps are tools to help the interviewer place information into a spatial context. The final results of an interview, however, are dependent primarily on the interviewer's ability to conduct a good interview. Aerial photographs and thematic maps will not be useful if the interviewer fails to make sure the farmer understands the aerial photographs/map, if the interviewer asks questions that are too broad or too sensitive to be answered, if the interviewer fails to show sufficient respect to the farmer, etc.

The final activity of this study was to write a brief text in Bahasa Indonesia on how to make sketch maps. This method was taught to community organizers trained to work in the Ford and Perhutani social forestry project. Future plans call for using sketch maps in other social forestry projects in Indonesia and Thailand.

The ultimate objective of the social forestry programme in Java is to establish village forestry committees that can assume responsibility from Perhum Perhutani for managing pieces of forest land near the village.

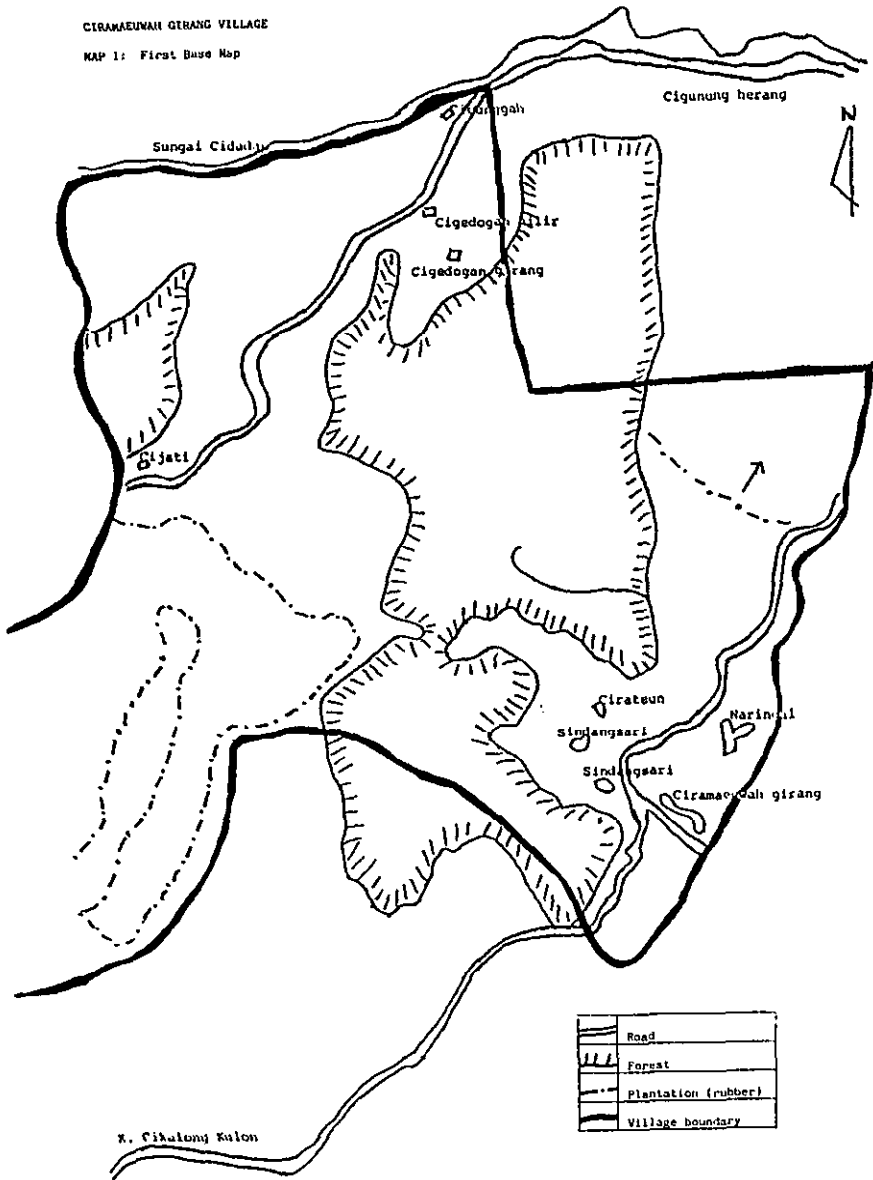
Hopefully, sketch maps can be used as tools for understanding current land use practices and for identifying pieces of land to be managed by the community to meet their needs for forest products.

#### References

FAO, 1985. Tropical Forestry Action Plan, Committee on Forest Development in the Tropics, Rome.

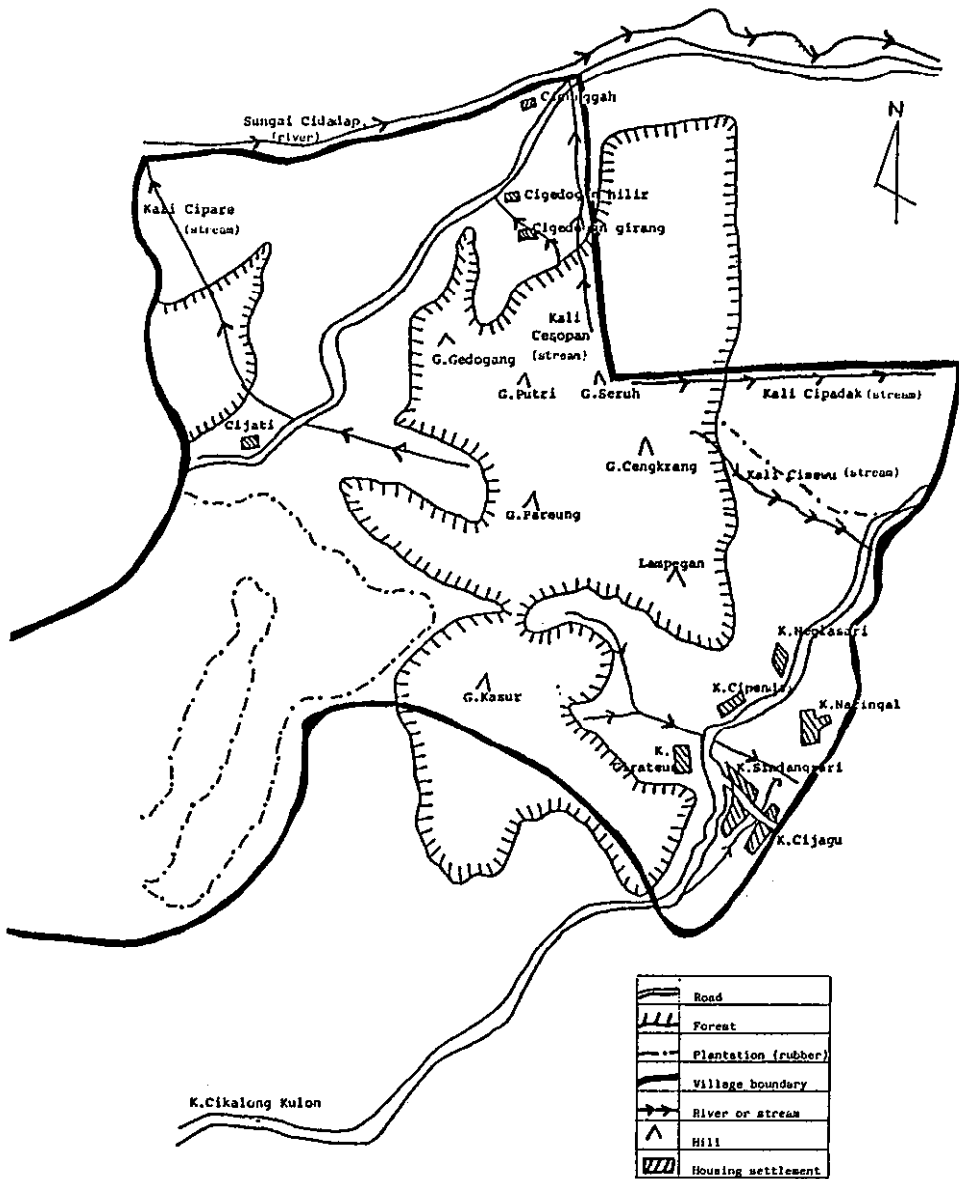
CIRAMAEUNAH GERANG VILLAGE

MAP 1: First Base Map



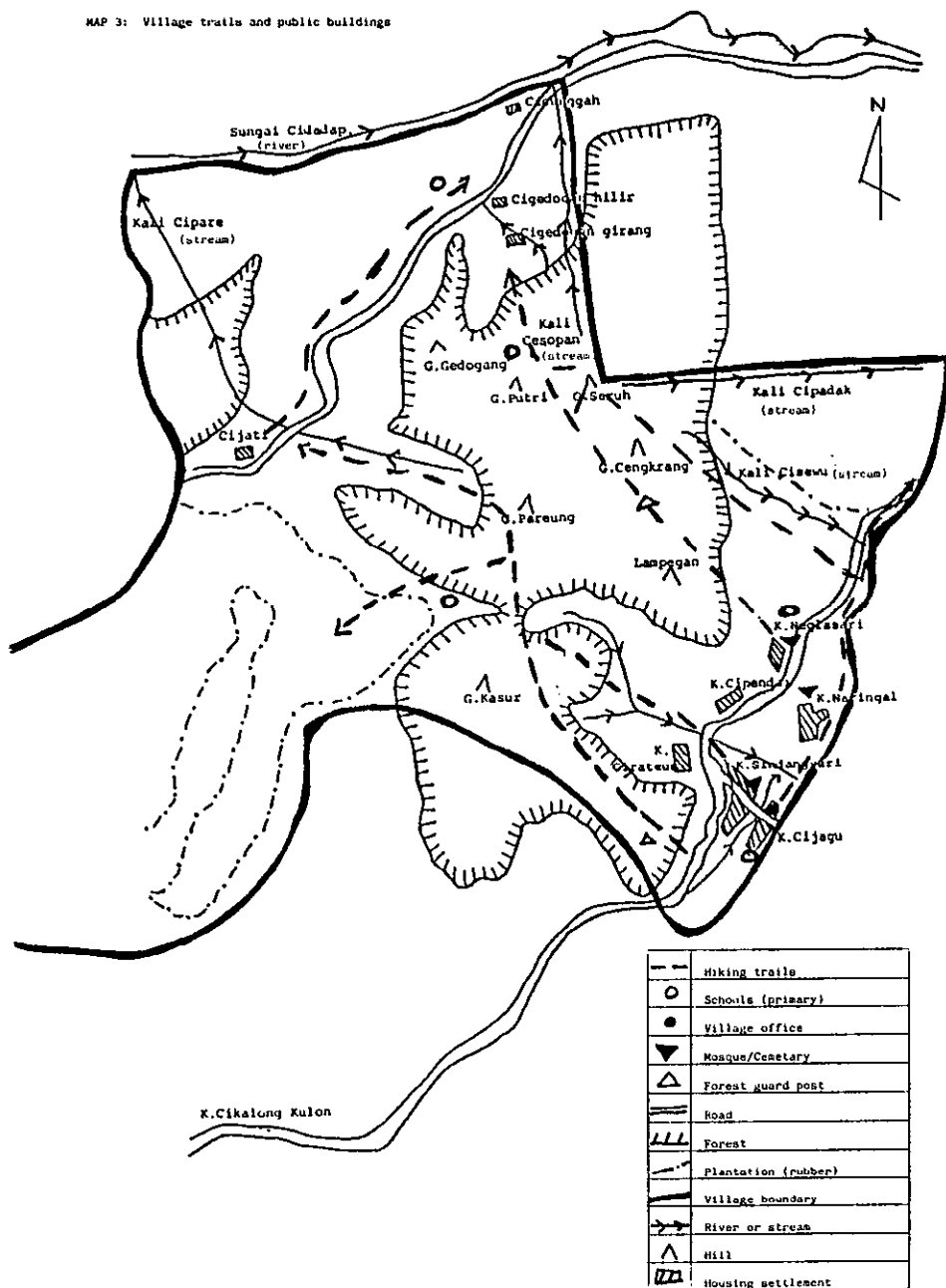
CIRAMAUWAH GIRANG VILLAGE

MAP 2: Second base map



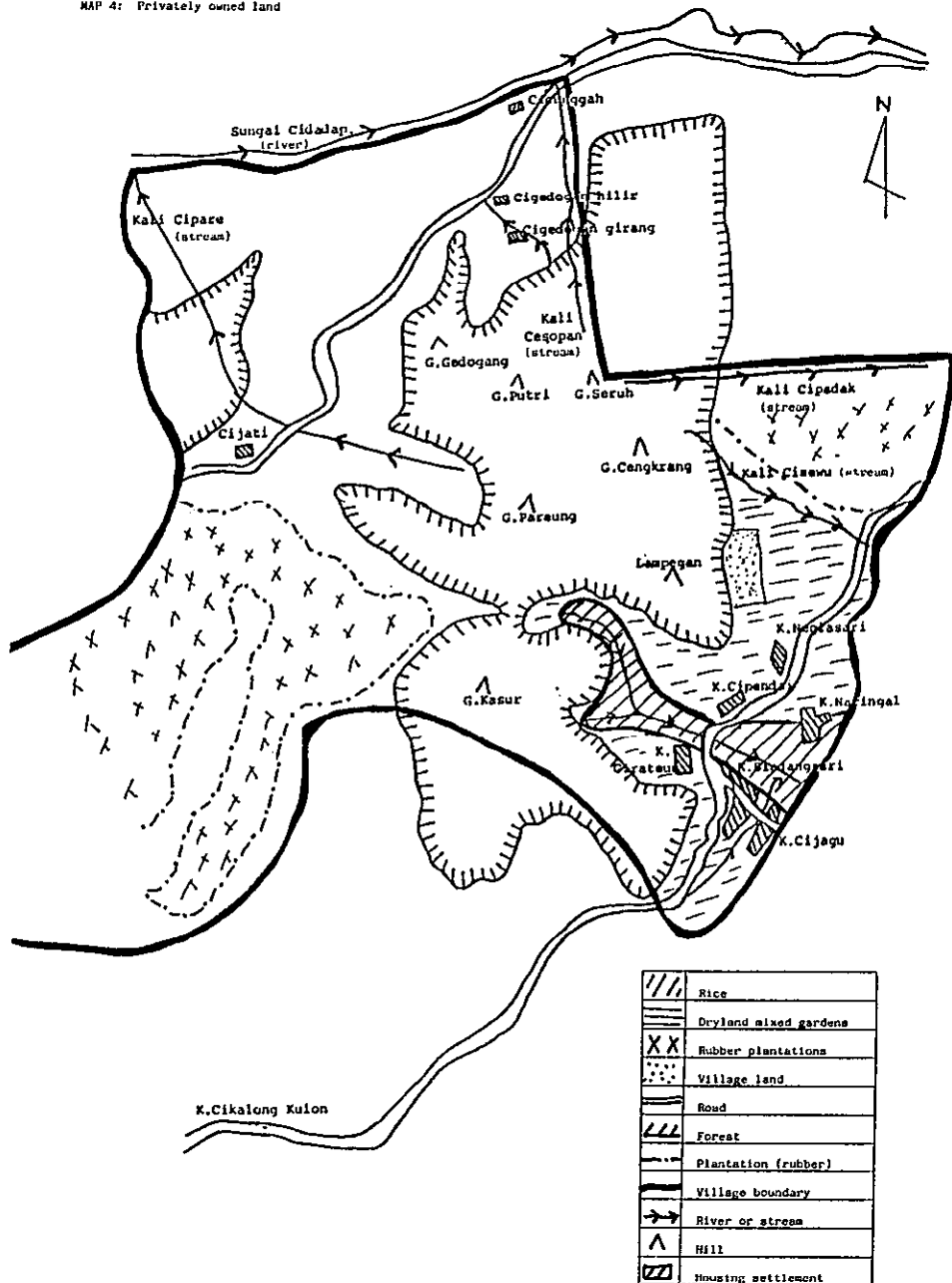
CIRANAEUWAH GIRANG VILLAGE

MAP 3: Village trails and public buildings



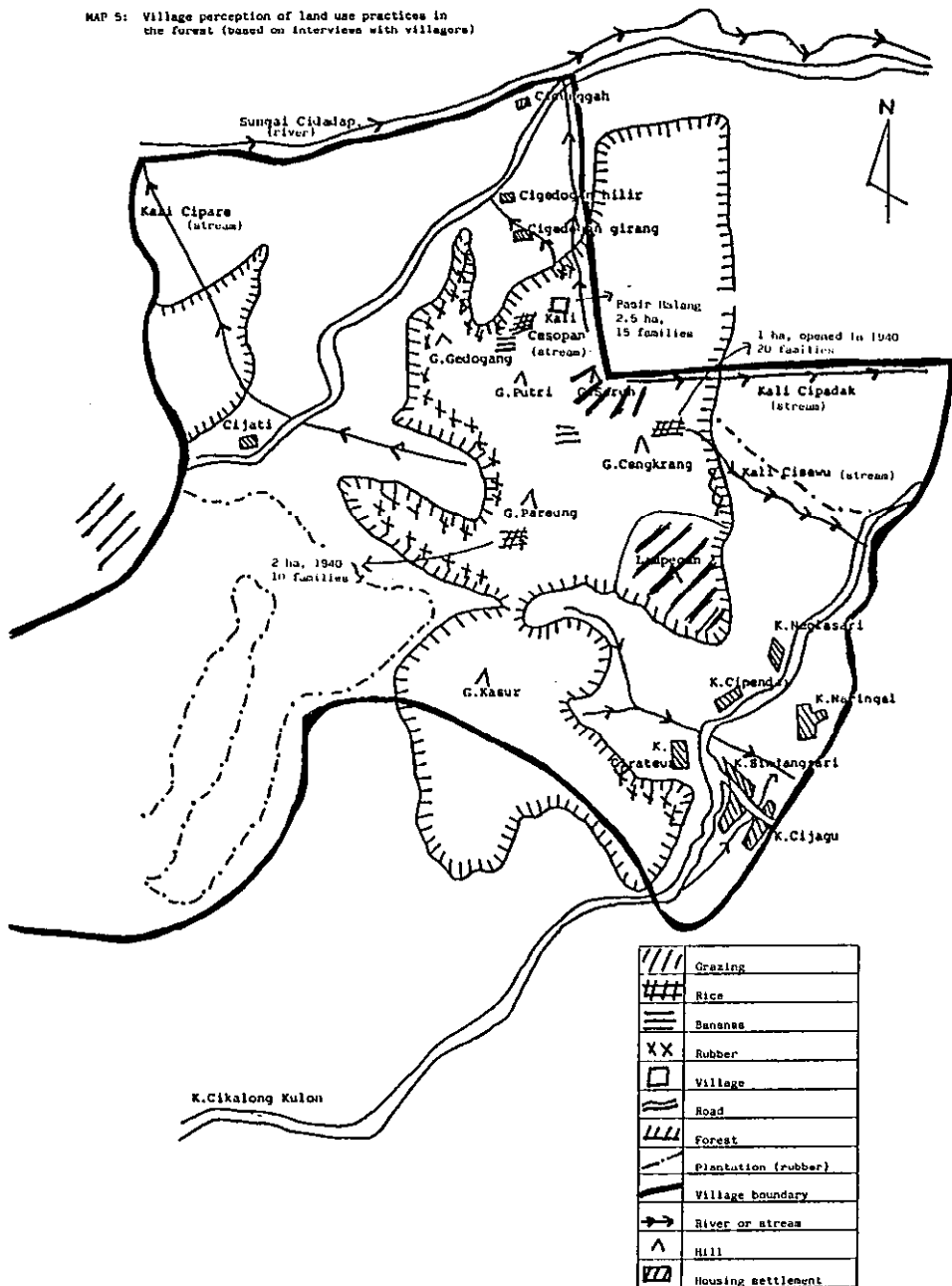
CIRAMAUWAH GIRANG VILLAGE

MAP 4: Privately owned land



CIRAMAEUWAH GIRANG VILLAGE

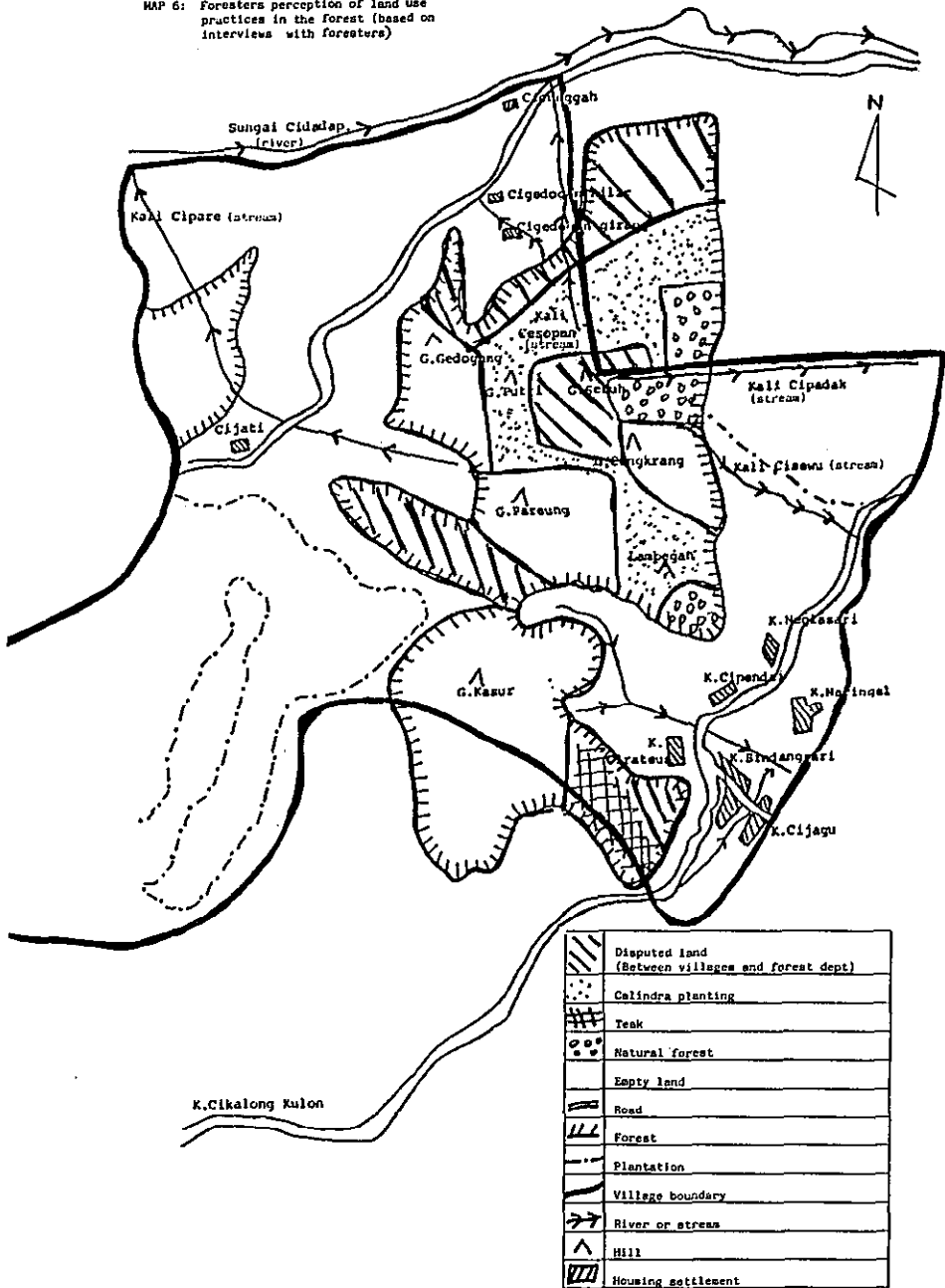
MAP 5: Village perception of land use practices in the forest (based on interviews with villagers)





CIRAMAUHAN GIRANG VILLAGE

MAP 6: Foresters perception of land use practices in the forest (based on interviews with foresters)





**Agricultural Administration Unit**

Regent's College  
Inner Circle  
Regent's Park  
London NW1 4NS  
Tel: 01-935 1644