MAPPING CUSTOMARY LAND IN EAST KALIMANTAN, INDONESIA: A TOOL FOR FOREST MANAGEMENT

by

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Abstract

Effective forest management requires balancing conservation and local economic development objectives. This project demonstrated a method for mapping customary land use systems using oral histories, sketch maps, and GPS and GIS methodologies. These maps can form the basis of talks for identifying customary forest tenure boundaries in order to assess how indigenous ways of organizing and allocating space might support or conflict with the objectives of forest protection; for evaluating different means of coordinating indigenous resource management systems with government-instituted systems of management; and as a basis for formal legal recognition and protection of customary forest tenure arrangements. The constraints on this process include the accuracy of the base maps, the ability of social scientists and mapmakers to accurately capture the complex relationships of traditional resource management systems on maps, and the political will of the parties involved for recognizing different forms of land rights.

Introduction

A network of national parks and preserves has been established in Southeast Asia to protect tropical forests from the pressures of commercial timber harvesting and agriculture conversion. The viability of many of these preserves, however, is threatened by resident peoples who for generations have collected forest products from these lands (Collins 1990). The need to protect biological diversity while meeting the livelihood needs of people who live in and around protected areas has focused the attention of scientists and policymakers on integrating traditional forest management systems into national-level forest management plans (Poffenberger 1990; Fisher 1991). While this principle may be widely accepted in theory, there have been few detailed investigations of the limitations and opportunities provided by traditional forest management systems. One barrier has been the lack of basic information about the form and

function of these systems in contemporary social contexts. This study focused on one of these elements-namely, the location and nature of customary forest tenure boundaries. These boundaries define the areal limits to which any tenurial right, duty, privilege, or disability applies (Crocombe 1974).

The identification and definition of customary forest tenure boundaries are of primary importance in determining how indigenous ways of organizing and allocating space might support or conflict with the objectives of forest protection. An understanding of these boundaries is also necessary for evaluating different means of coordinating indigenous resource management systems with government-instituted systems of management, and as a basis for formal legal recognition and protection of customary forest tenure arrangements. With few exceptions, research has not been directed toward systematically documenting the spatial organization that forest dwellers mentally impose on the landscape. And there are only a few instances where boundaries have been surveyed and recorded on cadastral maps.

Indonesia can be divided into two major areas: "Inner Indonesia" (Java, Madura, and Bali) and "Outer Indonesia" (Kalimantan, Sumatra, Sulawesi, West Irian, and the remaining Sunda islands). The Outer Islands account for 93 percent of the nation's land mass and 38 percent of the population (Crocombe 1974). Approximately 98 percent of the country's forest resources are in the Outer Islands, and 72 percent of the land mass of these islands is classified as state forestlands (Biro Pusat Statistik 1991). These forests contain some of the most biologically rich ecosystems in the world and encompass more than one-half of the rain forests remaining in tropical Asia (FAO 1986). Their current exploitation for timber, nontimber products, and shifting cultivation makes a major contribution to the national economy (Dove 1985, 1993).

Despite the importance of forest resources to the Indonesian economy, as well as to its total land mass, no one knows how much forest area is claimed under customary law (*adat*) by indigenous, forest-dwelling peoples. While customary rights are recognized by national law (Basic Forestry Law, No. 5/1967), no programs exist to delineate customary land rights in forested areas (Dove 1988). When tenurial maps are prepared, as was done for some provinces by the Director General of Agriculture (in the Ministry of Home Affairs), local people are not consulted and local claims are thus ignored (Moniaga 1986).

The lack of data on the tenurial claims of local communities in forested areas ensures, at the very least, that government plans for resource use will conflict with, and thus be opposed by, the local population. Until a credible data base is established, satisfactory answers cannot be given regarding customary tenurial territories and the population of indigenous resource managers in the forested lands of the Outer Islands. Accurate demographic and tenurial data are a prerequisite for any credible forestry development and management program.

This project sought to demonstrate a method for mapping customary land use systems that could be officially recognized by the Indonesian Forest Department as the basis for talks for resolving land use and boundary conflicts. The specific objectives of this case study were to (1) map the customary lands of a village in East Kalimantan (Long Uli) using oral history, traditional knowledge, sketch maps, and a global positioning system (GPS); (2) use a geographic

information system (GIS) to overlay this information with official land use maps in order to clarify land-boundary conflicts; and (3) identify management alternatives.

Methods

Sketch Maps and Interviews

Researchers worked closely with villagers to record traditional resource management and customary boundaries on sketch maps (Fox 1989). An initial survey helped researchers to understand village dynamics and select research assistants and informants. Villagers then showed researchers important sites relating to resource use and land boundaries, and the researchers located these sites on a topographic map using compass triangulation and altimeter. Using interviews with individuals and groups, the researchers were able to map the oral history of migrations. All information was recorded and cross-checked with other informants.

Surveying with Global Positioning System (GPS)

GPS, a navigation system developed by the U.S. Department of Defense, can determine spatial location within 2-3 meters of accuracy.1 In this study, two Trimble Navigation receivers were used, one as a base station and one as a mobile unit. GPS recordings were taken every 50-100 m along the Bahau River. The river was chosen as a feature for comparison because it is common to all the maps, easy to locate on the ground, and numerous points could be taken. In addition, villagers acted as guides to take researchers to places marked on the sketch map. GPS positions were used to identify protected lands, the village road, swidden sites, and important cultural sites. Because the outer boundary of the village was too large to circumnavigate, GPS positions were taken at key points and the topographic map was used to extrapolate village boundaries. Altimeter readings were also taken at each point. Over a period of ten days, 117 GPS survey positions were collected from the river, and numerous positions were surveyed on the river.

Geographic Information System (GIS) Operations

A GIS is an organized collection of computer hardware, software, and geographic data designed to efficiently capture, store, update, retrieve, organize, manipulate, analyze, and display spatial information (Burrough 1986). A GIS provides a means to integrate many layers of spatial information, develop dynamic models, analyze trends over time, and simulate scenarios. With these capabilities, GIS can be an effective tool for land use planning.

In this study the GPS data points collected in Long Uli were entered into a GIS (ARC/INFO). In addition, five maps used by the Indonesian Forest Department for forest planning and management activities were digitized and entered into the GIS. The objective of the GIS analysis was to identify the position of customary land boundaries and the amount of overlap with forest concessions, the nature reserve, and other land classifications.

Results

Long Uli Village

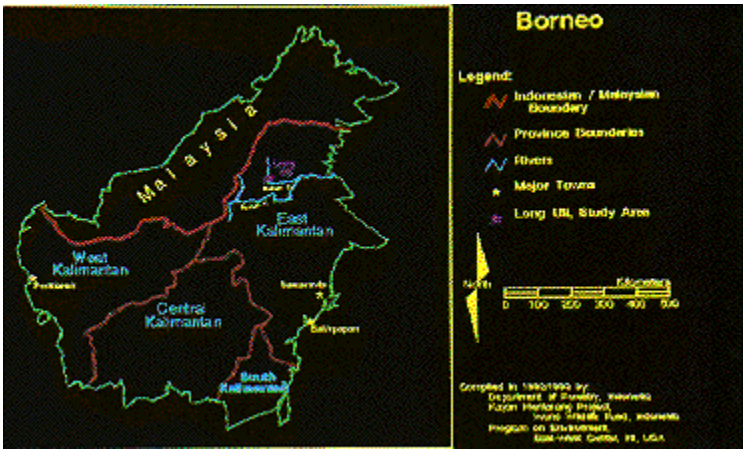

Figure 1.1 Long Uli study site, East Kalimantan (island of Borneo)

Long Uli is located in Pujungan subdistrict, East Kalimantan province, about 800 km northwest from Samarinda, the provincial capital, and about 25 km from Sarawak (Eastern Malaysia). The village is located on the Bahau River, a branch of the Kayan River (Figure 1.1). The river has many rapids but is navigable to the coast. Long Uli is inhabited by Kenyah Uma Lung people and is surrounded by other Kenyah villages. The subdistrict has one Kayan, two Punan, and eighteen Kenyah villages.

The Kenyah are found primarily in the more isolated upriver regions of East Kalimantan and Sarawak, with the two major areas of settlement being in the upper Barum River region of Sarawak and the Apo Kayan region of East Kalimantan. Approximately 40,000 Kenyah are divided into 40 named subgroups (Whittier 1973).

Migration History. The people of Long Uli were the last group of Kenyah people to move down from the Apo Kayan plateau to the Bahau River after World War II. They have been gardening and using the forest around Long Uli for 52 years. The Bahau River area is now divided and under the jurisdiction of two chiefs-Kepala Adat Besar Pujungan (Kenyah Uma Alim) and Kepala Adat Besar Ulu Bahau (Kenyah Lepo Ma'ut). Over the years, the Kenyah Uma Lung relocated due to outbreaks of disease, disputes between aristocrats, for accessibility to facilities, and for job opportunities in Sarawak. Boxes 1.1 and 1.2 outline the migration history of the community and significant government decisions affecting the community.

Land Tenure. Weinstock (1979) writes the following about customary tenure among the Kenyah:

The basic unit of production and consumption in a Kenyah village is the *lamin*, or household, which is generally a stem family of three generations. Land rights are supervised by the *lamin* head, a position usually held by the eldest resident male.

All children residing in the *lamin* receive equal rights to household goods. Swidden land inheritance is bilineal. Initially rights to land are established by the felling of primary forest. Inheritance is not to property per se, rather it is inheritance of use rights to land. These use rights, however, are of varying degrees. Children remaining in the natal *lamin* receive primary use rights to all *lamin* property. Children residing outside the natal *lamin* but still within the natal village receive secondary rights to the *lamin* property. Those children who leave the natal village to settle in another village receive only tertiary rights to *lamin* property [Whittier 1973].

Under this system no one individual obtains absolute control of a parcel of land, and parcels are never fragmented. The same is true of fruit trees. Rights to fruit trees descend bilineally from the original planter of the trees. If an individual wishes to pick the fruit from a tree, all who have rights to that tree must be informed so that they too may share in the harvest. A person who moves out of the village is considered to have relinquished his rights to fruit trees in the village territory.

The Kenyah Uma Lung of Long Uli manage their customary land as so described. In addition to designating land for settlement and cultivation (*ladang*), villagers have designated land for protected forest (*tanah ulen*), fruit-tree groves (*pulung bua*), and fishing and hunting. Villagers have developed regulations (*hukum adat*) for harvesting and distributing timber and nontimber forest products, deciding when designated land can be opened for collection purposes, and prohibiting cultivation of this land. Long Uli has two separate forest protection areas: products from one are reserved for the village council to be used for village development, and those from the second are reserved for orphans and widows.

Villagers make most decisions about resource use as a community. For example, every pig season villagers meet to discuss regulations for the hunt that year. They also meet to plan the schedule, workforce, and location of swidden fields. The first person to open the primary forest establishes use rights. Every family cultivates more than one swidden each year, including short-term dry rice (*padi sangit*) and wet rice fields (*sawah*). If a person wants to use another piece of fallow land, he or she must ask permission of the owner.

Villagers collect rattan and *gaharu* (aloe wood, *Ausilaria* sp.) in the forest surrounding Long Uli, especially along the Batu-bala, Telao, Tuan, Pata Lung, and Lutung rivers. In a 0.4ha plot, researchers have found 70 rattan plants of 10 local species (*uvey seka, uvey semole, uvey ayeng, uvey beloko*) from five genera (*Calamus, Daemonorops, Korthalsia, Plectocomiopsis,* and *Ceratolobus*) (Sirait 1992). Traders came to the area in the early 1970s because of a demand for *sega* rattan (*Calamus caesius*) and *gaharu*. Their presence caused conflicts, and villagers wrote customary regulations for assessing fines to outsiders if they did not contribute to the village community.

Mapping Long Uli

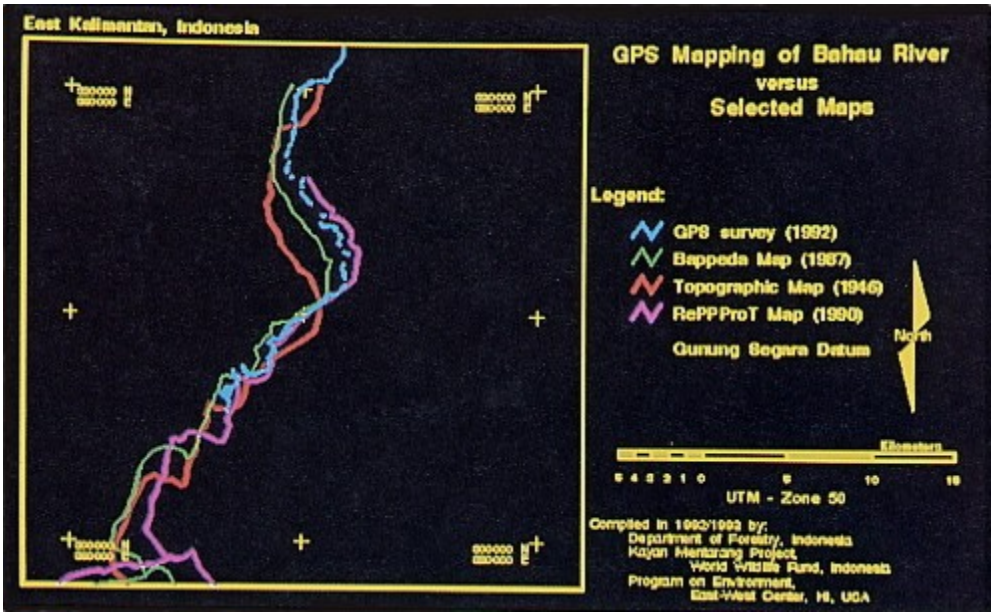

Figure 1.2 GPS mapping of Bahau River versus selected maps

Government Maps and Errors. The project first plotted the GPS positions acquired along the Bahau River with the maps used by the Indonesian Forest Department for forest-planning activities. Figure 1.2 shows the river course, as plotted by the GPS data and as found on the two maps deemed most reliable by Forest Department personnel-a 1946 topographic map developed by the U.S. Army (1:250,000) and the 1987 BAPPEDA map (1:100,000) developed in cooperation with the German Technical Agency for Transmigration Development. We have also plotted the river as shown on 1990 topographic maps developed by the Regional Physical Planning Programme for Transmigration (RePPProT) (1:250,000). While the RePPProt maps provide the best source of topographic information, they are not officially recognized by the Indonesian Forest Department.

The location of the river differs on the topographic and BAPPEDA maps by as much as 2 km. The GPS data correspond fairly closely with the RePPProt maps, but in order to produce a product that could be recognized by the Forest Department and to facilitate further analysis, we chose to use the topographic map as the base map. A nonlinear transformation was performed on the GPS data so that they would overlay the topographic map.

The following estimates of the villagers' perspective of their land area were taken directly from the topographic map; the estimates of the Forest Department's perspective are from their forest classification (TGHK) and forest concession maps (both at 1:500,000 scale). Land area estimates may be off by 5-15 percent due to operation errors (registration and digitizing) and can vary greatly due to errors in the source map. Estimates of village land area are probably more accurate than those of the Forest Department land area because of differences in the scale of the original maps and because boundaries on the Forest Department maps were drawn in large pens and the maps folded repeatedly.

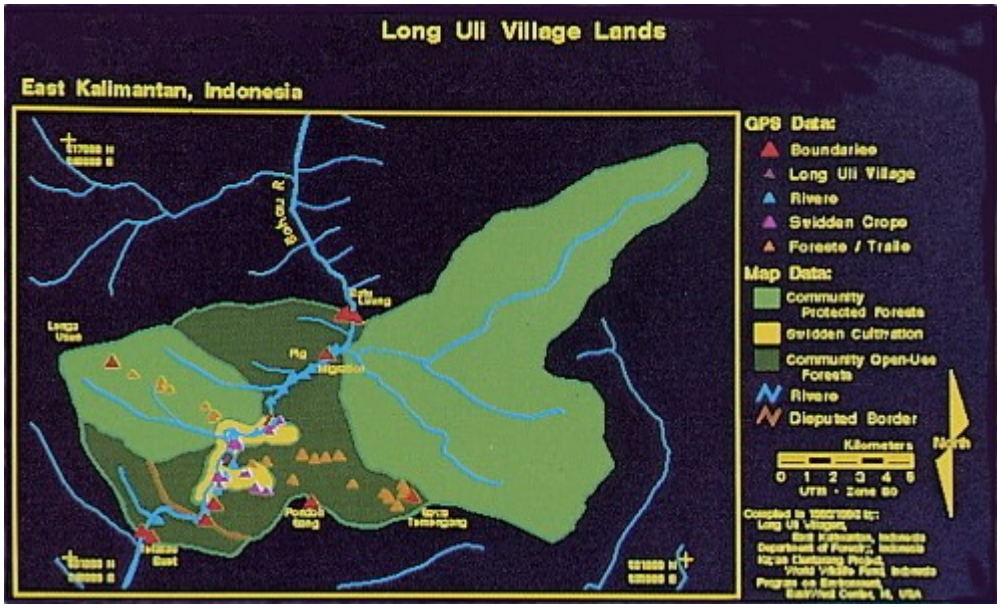

Figure 1.3 Long Uli village lands

Village Land Area. Figure 1.3 is the village map. The outer boundary of the village follows the ridge lines on both sides of the Bahau River valley. The settlement and the cultivated land are situated in the relatively flat river valley. Long Uli village land has a total area of 18,231 ha (Table 1.1). Land under rotational swidden cultivation, including fallow, covers 631 ha (approximately 3 percent of the village land) stretching along 4,000 m of the Bahau River near the settlement. On this land, villagers clear swidden and plant fruit groves and rattan.

Two subwatersheds that feed into the Bahau River have been designated by the villagers as forest protected areas. These watersheds cover a total of 12,175 ha (67 percent of the village land). The rest of the village land is unrestricted forest that can be used for collecting firewood, construction wood, resins, fruits, and other nontimber forest products. This land covers 5,425 ha (30 percent of the village land).

Population Density. The population of subdistrict Pujungan is small, with a density of 0.4 person/km2 and a growth rate of 1.6 percent. In Long Uli village, 136 people have access to 18,231 ha, for a density of 0.75 persons/km2 or, in terms of cultivated land (631 ha), 22 persons/km2. Dove (1982) calculated the territorial needs of swidden cultivators in West Kalimantan to be approximately 640 ha/100 persons, or 16 peersons/km2. The population density on cultivated land in Long Uli is thus approximately the same as that recommended by Dove.

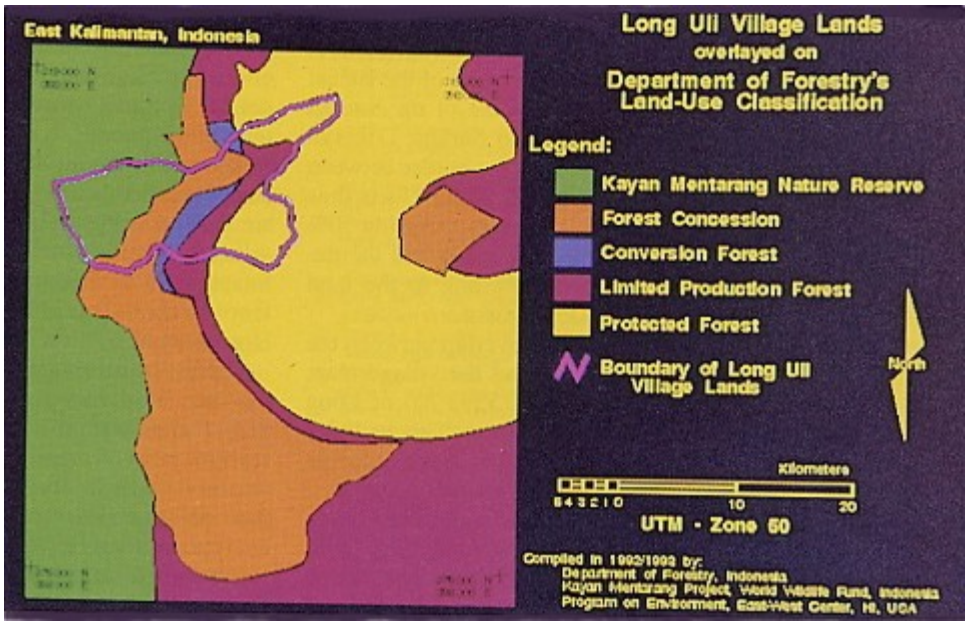

Figure 1.4 Long Uli village lands overlaid on Department of Forestry's land use classification

Land Use in Long Uli as Determined by the Forest Department. Figure 1.4 is the Indonesian Forest Department's land use classification map for Long Uli. In 1980, the department designated the western side of the Bahau River as the Kayan Mentarang Nature Reserve (SK CAKM 1980). In 1984, the department completed its forest land use (TGHK) map, which classified the Pujungan and Lurah valleys and a large area on the west bank of the Bahau River as conversion forest (i.e., land that can be converted to agriculture).

In 1990, the department granted the eastern part of the Bahau River (some of the conversion forest and some of the limited production forest) as a forest concession to Sarana Trikarya Bhakti (STB). Today the Bahau River forms the border between the nature reserve and the forest concession. Long Uli is thus divided in the middle by two external land users, covering 50 percent of Long Uli land. Both the STB forest concession and the nature reserve were established roughly according to the land suitability criteria used by the Forest Department.

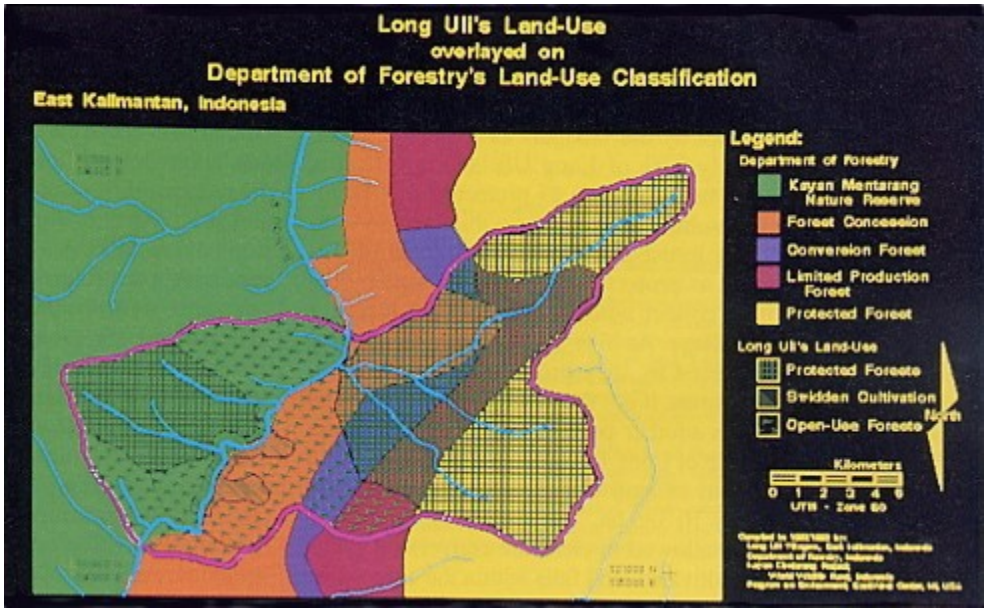

Figure 1.5 Long Uli's land use overlaid on Department of Forestry's land use classification

Land Use Conflicts. Figure 1.5 shows the overlap between the department's land use classification map and the village land use map. According to Table 1.1, approximately 30 percent (5,393 ha) of Long Uli village land overlaps the nature reserve. This includes the cultivated area along the Telao River (39 percent of the village's cultivated land) and the village's protected forest on the west bank of the Bahau River (20 percent of the village's protected land). The rest of the overlap is on the village's unrestricted forest (49 percent of the village's unrestricted forest). The STB forest concession on the east bank of the Bahau overlaps 20 percent (3,714 ha) of the village land. This includes 61 percent of the village cultivated land, 34 percent of the village's unrestricted forest, and 12 percent of the village's protected forest. All of the village's cultivated land is in either the nature reserve or the forest concession.

Table 1.1 also shows that most traditional land uses overlap compatible forest land use classifications. About half the village land that overlaps the nature reserve is already kept by the villagers as protected forest. In addition, approximately 27 percent of Long Uli land is officially designated by the forest land use map as protected forest; villagers are theoretically prohibited from using this land for cultivation or for collecting forest products. All but 7 ha of this overlaps land that is designated as protected community forest by the villagers, who use it to collect nontimber forest products for certain members of the village. As long as customary regulations already in place are adhered to, they provide appropriate protection for the protected forest, if not the nature reserve. The land areas can be viewed in another perspective: within their village boundaries, the people of Long Uli protect 12,175 ha of land in total, while the amount of land classified as nature reserve and protected area is only 10,335 ha.

Long Uli villagers are allowed to clear the conversion forest and, indeed, all of their cultivated land falls within the conversion forest. However, only 8 percent of Long Uli land is both conversion forest and outside the nature reserve and the forest concession. Villagers claim this land is too far from the river and the village and is too steep to be used. Limited production forest

covers 15 percent of Long Uli land, which means this area could be granted as a forest concession for selective cutting in the future.

Implications for Management

The forest land use classification (TGHK) represents the legal management options for this land. Accordingly, most land used by Long Uli villagers has been designated to specific managers (i.e., STB manages the forest concession, and the Parks Department (PHPA) of the Forest Department manages the Kayan Mentarang Nature Reserve). Because of their legal status, the Kayan Mentarang Reserve and the forest concession present the greatest restrictions when seeking management options that satisfy both the villagers and the Forest Department. Lands outside the reserve and forest concession also have land use restrictions that are only slightly more flexible for the villagers.

This study shows, however, that land use practices found in this village are long term (villagers have been using this site for over 50 years) and are basically compatible with the overall objectives of the forest land use classification. The traditional management of the protected community forest meets the objectives of the government-designated protected forest. Villagers do not clear the area or cut trees for construction; they only collect nontimber forest products for their own use or for sale to support poorer sectors of the village. In selecting sites for protected community forests, villagers themselves have chosen steep forested watersheds, which suggests that they follow similar reasoning as the forest land use planners. In addition, villagers have internal regulations to prevent overharvesting of forest products. Because these regulations are theirs, villagers are more likely to accept them than those developed by the Forest Department.

Finally, because of poor communication between villagers and foresters, most villagers are unaware that their land overlaps that of other land users. Better communication could be achieved with the help of maps, a visual reference that can be easily understood by both. The sketch map helps the villagers to present their point of view, and the government maps show the foresters' perspective.

Working from this foundation, a few management alternatives become evident. A first option is to change the status of the Kayan Mentarang Nature Reserve to a national park or a biosphere reserve. Under either of these designations, the management plan could identify a core reserve area and a support zone for sustainable traditional uses-achieving both conservation and development objectives and partially recognizing the customary lands of this village. This option requires good communication and cooperation among the Parks Department, other Directorate Generals of the Forest Department, and the villagers. The success of this option also depends on factors outside the reserve. Half of the village's cultivated land and much of its unrestricted forest is in the forest concession. When the concession begins logging, villagers will inevitably put more land use pressure on the Kayan Mentarang Reserve.

Thus a second option is to cancel or change the boundaries of the forest concession, leaving the conversion forest for the villagers' use and reducing their need for forest products in the nature reserve and the protection forest.

A third option is for the villagers, the Forest Department, and the concessionaire to agree on the best land use management for the area. According to Forest Department policies, the concessionaire is obligated to recognize the existence of customary land and to reach a consensus with the villagers about its management. Actual implementation of this policy suggests that villagers have legal advice and organizational support from nongovernment organizations (Moniaga 1993). After all, it is the villagers that will either manage or not manage this land when the concessionaire is gone.

Discussion

This project suggests that modern technology (e.g., GPS and GIS) is useful for mapping customary land tenure and comparing villagers' perceptions of landownership and land use with those of the state. This technology may be a useful tool for implementing forest management policies that build on traditional forest management practices. Several problems, however, were noted. First, GPS technology provides information that is more accurate than the base maps used by the Forest Department in East Kalimantan. Before the full power of this technology can be used, accurate base maps need to be prepared.

Second, the process of understanding the spatial organization imposed by traditional peoples on landscapes, as well as mapping customary lands, suffers all the usual methodological difficulties of studying human subjects. Moore and Golledge (1976) write that a "very obvious stumbling block to continued development of environmental cognition relates to the fundamental methodological problem of trying to determine what people know about environments. There are no universally accepted methods and techniques for extracting environmental cognition at this point in time." Although the difficulties of conducting environmental cognition research are widely acknowledged, there is little agreement among researchers from different disciplines (or even within the same discipline) as to what types of methodological procedures might overcome these problems.

However, Canada-another country where a large portion of the national land mass is claimed under customary law-recognizes aboriginal claims to land as demonstrated by use and occupancy. Land use and occupancy studies in Canada rely primarily on the "map biography" method, in which a large sample of the claimant population (normally weighted to include the most experienced and widely traveled persons) records the lifetime extent of their habitation and travel for "traditional" purposes (hunting, trapping, fishing, gathering, and visiting) on large-scale maps (Freeman 1976; Elias 1989; Usher 1990). The outer limits of this travel, as plotted on a composite map, represent the boundaries of the land in which the claimants have an interest. Other data are also recognized as significant indicators of use and occupancy-habitation sites and burial grounds, place names, ecological knowledge of particular places, and stories and legends about such places. Usher, Tough, and Galois (1992) argue that the map biography has become virtually the sole method used in Canada for documenting official claims because of the ease and straightforwardness of documentation, the visual effectiveness of the composite map, and the aura of "scientific objectivity" derived from the survey methodology.

Finally, Vandergeest and Peluso argue in a forthcoming article that the state's ignorance of local complexes of rights and claims renders boundaries on land and resource use more ambiguous than mapmakers and state land planners assume. Locally, property rights and claims were and continue to be a complex bundle of overlapping and hierarchical rights and claims distributed among many persons and related to other social relationships within and outside particular communities. This contradicts the clear boundaries assumed by state title programs, which has been an important cause of the slow progress in land titling and the difficulty the state has encountered in trying to claim property for the state. People's disruption of territorial strategies by noncompliance or open resistance has rendered territorial control complex and inefficient. State land management agencies are forced to recognize local rights deriving from local classification, modes of communication, and enforcement mechanisms. "The result has been an administrative nightmare," say Vandergeest and Peluso. Yet, Vandergeest and Peluso also argue that many cultivators now favor state-guaranteed property rights in land. This is especially true in more commercialized areas where cultivators want to use land as security to obtain institutional credit, and in areas where the government has threatened to forcibly move people off the land they are cultivating.

In conclusion, this project demonstrated a method for mapping customary land use systems using oral histories, sketch maps, and GPS and GIS methodologies. These maps can form the basis of talks for identifying customary forest tenure boundaries in order to assess how indigenous ways of organizing and allocating space might support or conflict with the objectives of forest protection, for evaluating different means of coordinating indigenous resource management systems with government-instituted systems of management, and as a basis for formal legal recognition and protection of customary forest tenure arrangements. The constraints on this process include the accuracy of the base maps, the ability of social scientists and mapmakers to accurately capture the complex relationships of traditional resource management systems on maps, and the political will of the parties involved for recognizing different forms of land rights.

Note

1. GPS is based on a constellation of 24 satellites in high orbit and works by measuring the time it takes for a coded radio signal to travel at the speed of light from three or four satellites to a receiver on the ground. GPS accuracy is a function of the sum of satellite clock error, receiver errors, and atmospheric-ionospheric interferences. In addition, the U.S. Department of Defense purposely degrades GPS signals for civilian use by creating what is called "selective availability." When selective availability is applied, it is the single largest component of GPS error. Selective availability can be corrected by using two receivers-one kept at a fixed point as a base station, the other moved to the locations for which positions are to be determined. Both receivers record the same radio signals. Differential calculations are performed on the two sets of data, thereby significantly reducing error due to selective availability. Positions can then be fixed with 2-3 m of accuracy.

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Boxes

Box 1.1 Migration History of the Long Uli Community

Pre-1932 Lived in Apau Urung (Usun Apau) near Sarawak border.

1932 Moved to Long Lurah. Led by Imung Alang, obtained permit to buy the land from the Kenyah Badeng of Long Peleiran and the chief of Pujungan.

1932-40 Lived closely with the people of Long Peleiran, sharing the land for cultivation and dividing the forestland-Lutung River for Uma Lung aristocrats, and Lurah River for Badeng aristocrats. Made a boundary to the north along the Nggeng Iut River and to the south along the Benang River.

1940-44 Gradually moved their cultivated area to Long Uli.

1944 Moved settlement to Benato, led by Imung Alang.

1948 Finished building long house at Benato. Chief of Kenyah Lepo Tau of the Upper Baram River in Sarawak, Malaysia, came and made a peace treaty with Chief Pujungan and Chief Ulu Bahau.

1948-60 Many people moved to the upper Baram for work.

1950 Moved settlement from Benato to Long Uli because of epidemic.

1960-67 No movements to Malaysia because of effects of Indonesia/Malaysia confrontation.

1967 Chief Ulu Bahau traveled to Sarawak and made a peace treaty with Chief Lepo Tau. Many people moved to Bayangkara, led by Imang Bilung, and some moved to Malinau (Batu Kajang).

1967-92 Many people left for work in Malaysia (Sabah, Sarawak) and Brunei.

1968 Kenyah Lepo Ke' moved from Ngiam River and settled in Long Tebulo, north of Long Uli. The new border between Long Uli and Long Tebulo is Batu Lu'ung.

Box 1.2 Significant Government Decisions Affecting Long Uli

1972 Forest Department stopped *banjir kap*, a system of selective logging along river sides, in which the villagers were sometimes employed. The villagers went back to collecting nontimber forest products.

1979 Indonesian Government legislated the Village Administration Act. This act standardized the administrative structure and dissolved the traditional leadership structure-thus weakening traditional resource management systems.

1980 Sungai Kayan Mentarang was designated as a nature reserve by the Forest Department, connecting several watershed protection areas. The reserve has an area of 1.6 million ha and includes the western part of Long Uli village. It was established by Forest Department Letter Number 847/Kpts/UM/11/1980.

1990 Forest concession given to Sarana Trikarya Bhakti Ltd. by Forest Department Letter Number 20/Kpts II/1990. This concession includes Long Uli village, Long Peleiran land, Long Pujungan land, and Long Aran village. The concession has not yet started operations but plans to begin soon.

1990 WWF/Kayan Mentarang Project established as a collaborative effort by WWF, WALHI, and academic researchers from various universities. Studies are being done on the flora, fauna, anthropology, and traditional resource management in the Kayan Mentarang Nature Reserve.

Tables

Table 1.1
Areas of Overlap Shown by Overlay of Village, Nature Reserve, Forest Concession, and Forest Land Use Maps

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Village Land Use

Total
Protected Community Forest Cultivation Land Unrestricted Forest Village Land

% of % of % of % of % of % of
Area Village Land Area Village Land Area Village Land Village
Land Designation (ha) Land Use (ha) Land Use (ha) Land Use Area Land

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Kayan Mentarang
Nature Reserve 2,477 14 20 246 1 39 2,670 15 49 5,393 30

STB forest
concession 1,496 8 12 385 2 61 1,833 10 34 3,714 20

Conversion
forest 1,053 6 9 0 0 0 439 2 8 1,492 8

Limited produc-
tion forest 2,214 12 18 0 0 0 476 3 9 2,690 15

Protected
forest 4,935 27 41 0 0 0 7 - - 4,942 27

Total 12,175 67 100 631 3 100 5,425 30 100 18,231 100
