

## Indigenous Land Use Mapping in Central America

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### ABSTRACT

Projects undertaken by Native Lands to assist Central American Indigenous groups in mapping their land use have resulted in very accurate maps based on the work of Indigenous surveyors and their communities. These maps serve as an important tool in the struggle to secure Indigenous land rights in areas that were previously seen as empty. As well, the mapping effort itself has served to foster community organization and cooperation in seeking to press claims. Continued Indigenous management of these areas is critical in conserving the last remaining forested areas in Central America.

### INTRODUCTION

In 1987, I began working with Cultural Survival on a program to assist the Indigenous peoples of Central America. We concentrated our efforts along the Caribbean coastal slope, for this has traditionally been the neglected region of Central America.

The first thing we found out about the situation of the Indigenous people of the lowland areas, where the last remaining forests are found, is that the people are not well known. In Central America as a whole, there are approximately 30 million people. Of these, 6 to 6.5 million are Indigenous, spread out among 43 distinct ethnic and linguistic groups, yet, even within their own countries, they are not well known. Several years ago, someone from a publishing house phoned me and asked how to spell the word “Pech.” The Pech are an Indigenous group with a population of about 2,000 people living in northern Honduras. He was editing a book about Honduras and before calling me he had contacted the Honduran embassy to ask them. No one in the embassy had ever even heard of the Pech.

This situation is generally true throughout the Caribbean region of Central America, even among groups that are known by name, such as the Miskito of Honduras and Nicaragua, and the Kuna of Panama. While we know what they look like — Kuna women in particular are quite visible with their *mola* blouses — and have heard some stories about them, it must be said that we know virtually nothing about what they think, and consequently we have little idea of who they really are or how they go about organizing their lives. For this reason, we began visiting them and spending some time among them to find out what issues they were concerned with.

In 1991, we began working on a map of the region with the National Geographic Society, and the following year we published *The Coexistence of Indigenous Peoples and the Natural Environment in Central America*, a map supplement to the journal *Research and*

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*Exploration.* This map shows in considerable detail the relative distributions of remaining forests and Indigenous peoples.

We can see that the majority of Central America's Indians live in two discrete and difficult-to-reach areas: the volcanic highlands of Guatemala and the densely forested Caribbean coastal plain, which stretches from Belize down through Panama to the Colombian border. During the time of Conquest and after, the Indians fled into these refuge areas to maintain their autonomy and ways of life. Over the centuries, they were gradually pushed back and displaced, forced into ever-tighter circles across the densely populated highlands or still deeper into the humid rainforests of the Caribbean littoral. These hideouts had remained relatively inviolate to outside incursion until only recently, when the forces set loose by national and international market economies combined with the impact of new technologies to mount an assault against the region's remaining base of untouched natural resources

Now the last stands of tropical forest, and the lives of the Indians living inside them, are threatened by advancing loggers, cattle ranchers, and landless peasants. And the pace of destruction has accelerated during the last 50 years. It is estimated that fully two thirds of the original forest cover has been cut back and burned off since 1940.

Clearly, the most pressing problem facing Indigenous peoples of this region is the invasion and destruction of their land and natural resources. But while this became clear to us, it was difficult to figure out what to do about it or where to start. In one area, the Mosquitia of Honduras and Nicaragua, we realized that while the local inhabitants had a fairly clear idea of what was happening to them, this understanding was atomized at the level of the community. People in one community knew the names of non-Indian peasants who had moved into their lands; they had business deals — generally illegal — with loggers, and some worked as peons for large cattle ranchers who had recently arrived. By contrast, they had only a fragmentary understanding of what was occurring in other villages, and they had little interest in their problems: "If they have problems, that's their business."

At the time, we had three priority areas in which we were working: the Mosquitia region of Honduras and Nicaragua, inhabited by the Garífuna, Miskito, Pech, and Tawahka peoples; the Talamanca/La Amistad area along the Atlantic coast of Costa Rica and Panama, with the Cabécar, Bribri and Teribe peoples; and eastern Panama, including the Kuna areas of Kuna Yala, Madungandi, Wargandi, and Púcuru and Paya, and the Emberá and Wounaan region of the Darién. All three of these areas are threatened; all needed help.

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Our difficulties resided in the fact that the inhabitants of these areas did not have a global vision of what was occurring, and it was consequently impossible to devise initiatives covering an entire region. This was when we hit on the notion of carrying out a mapping project.

### DEVisING A STRATEGY

The first area we worked in was the Mosquitia of Honduras. We had been talking with several Honduran organizations about what was at the time an undefined project that would serve to focus peoples' attention on the land issue. These discussions went on for more than a year. Finally, in 1992 the support group MOPAWI (*Moskitia Pawisa* — Development of the Mosquitia) and the Miskito federation MASTA (*Moskitia Asla Takanka* — Unity of the Mosquitia) combined forces to carry out a participatory land use mapping project in which the Indigenous peoples would gather the bulk of the information (see *Tierras Indígenas de la Mosquitia Hondureña 1992: Zonas de Subsistencia*, MOPAWI and MASTA).

The following year, in 1993, we supported a similar project in the Darién of Panama. This was a collaborative effort of the Indigenous General Congresses of the Emberá, Wounaan, and Kuna Peoples and the Panamanian support group the Centro de Estudios y Acción Social Panameño (CEASPA). The result was *Tierras Indígenas del Darién 1993: Zonas de Subsistencia* (Emberá, Wounaan, and Kuna General Congresses and CEASPA).

In this talk I would like to use examples from the mapping project in Panama as a way of illuminating the general lines of the methodology used.

### THE DARIÉN

The Darién region of Panama, with a total land area of 16,803 square kilometers and approximately 45,000 people, is the most sparsely populated and least known area of the country. It contains the largest remaining chunk of intact forest and serves as a natural barrier separating Central from South America. Indeed, since the 1970s, it has been designated a buffer zone protecting North America from the spread of hoof-and-mouth disease from Colombia, where it has been endemic for decades. The only uncompleted stretch of the Pan-American Highway running from Alaska down to southern Argentina is found between the Panamanian town of Yaviza and the Colombian border, a distance of just over 100 kilometers.

Thirty years ago, all of eastern Panama — containing Darién

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and part of Panamá Provinces — was a region of largely intact tropical rainforest inhabited almost exclusively by three Indigenous groups: the Emberá, the Wounaan, and the Kuna, as well as small colonies of *darienitas*, the descendents of escaped African slaves. Today, it has become a battleground on which the native inhabitants are struggling to stem the incursion of loggers, cattle ranchers, land speculators, and landless colonists from Panamá's overcrowded interior provinces. Since the opening up of the region in the mid-1970s through the construction of the Bayano Hydroelectric Dam and the extension of the Pan American Highway as far as Yaviza, the lush forests have been rapidly disappearing, together with the subsistence base of the local people. Now the region is faced with a new menace as plans are made to complete the final link in the Highway, joining the North and South American continents for the first time.

#### LAND USE MAPPING

We held discussions with Indian leaders over a period of more than a year before the mapping proper was begun. We discussed the purpose of the project, potential benefits to the local communities, and the methodology to be used in the field. Over the years, the Indian groups have heard considerable talk about projects in their region but they have been invariably disappointed. We had long talks; they returned to their people and talked some more; we talked again, answering their questions. We had joint meetings with CEASPA. Finally their suspicions were overcome and we all decided to move forward.

In May 1993, we initiated work in the field. We assembled a team of cartographers and 22 Indigenous "surveyors" from communities in the region to compile maps detailing the physical features as well as the land use patterns of the local communities. Each surveyor had responsibility for a zone encompassing between three and six communities, which amounted to a manageable range for a single person to cover. In this way, all of the territory inhabited and exploited by the Indigenous peoples of the Darién was covered.

The mapping was carried out through a series of three workshops. The first was held in the Emberá community of Arimae, where Andrew Leake (the coordinator of the mapping project in the Mosquitia), Nícanor Gonzalez of Native Lands, and three Indigenous coordinators — Genaro Pacheco and Facundo Sanapí, both Emberás, and Gerales Hernández, a Kuna — met with the surveyors, who had been selected by the Indigenous leaders of their respective groups. Together, they prepared two questionnaires, one dealing with the use of natural resources and the other to ascertain the population of the region. The surveyors tested their questionnaires

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in the community during the evenings so they would be adjusted to the realities of the region. In similar fashion, they roleplayed the explanations they would give to villagers about the mapping project.

Another important component of the first workshop was training in creating hand-drawn maps with the community. Nicanor Gonzalez, who is an architect by training and a skilled cartographer, gave them elementary lessons in representing spatial relations, explained what they should put in and what they should leave out, and discussed orientation according to the four cardinal points. To keep track of information that would not fit on the maps or in the land use questionnaires, the surveyors were given notebooks.

After a week of preparation, the surveyors set off into the field, where they worked on census counts, questioned villagers extensively, filled out their land use questionnaires, and began putting together careful cartographic records of their zone with community members. This was rugged work, and for this reason all of the surveyors were men. They travelled by bus and by canoe, and made their way on foot along muddy trails through the forest. They carried with them a green plastic folder with a sheath of loose-leaf bond paper, pencils, pencil sharpeners, and ball-point pens. The most essential materials were three 60 cm x 80 cm sheets of blank manila paper, which were used to draw the maps. Official government base maps were not utilized, since the idea was to stimulate the surveyors and villagers to create their own maps with their own symbols. In the field, the manila sheets with the drawings were carried in sections of plastic tubing with rubber stoppers.

In collaboration with villagers, especially the elders, the surveyors made meticulous drawings of the river systems and the areas where they hunt, fish, cut firewood, and gather materials for construction, medicines, and fruit. In this fashion, the maps were built out of the accumulated geographical knowledge of the Indians, a type of "ethnocartography." It must be said that some surveyors produced better maps than others, but the best among them, crafted with copious detail and admirable artistic talent, are works of art of great scientific value.

There were problems of course. Some communities initially refused to give out information; several wanted payment; a number of the surveyors, in the beginning, were too shy to ask for complete information and their work was spotty. Project coordinators intervened in most of these cases and things were set straight. In the end, all of the 22 surveyors worked through to the end of the project, and all completed their jobs satisfactorily.

At the end of the fieldwork period, the surveyors returned to a second workshop, where they worked with Peter Herlihy, a University

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of Kansas geographer who had worked on the mapping project in Honduras and who had spent many years in the Darién, and several cartographers from the National Geographic Institute “Tommy Guardia” and the University of Panama. They worked together in intensive sessions to construct composite maps from government base maps, existing aerial photographs, and the new, community-drawn maps. The surveyors utilized the information from their questionnaires, notebooks, and the hand-drawn maps; the cartographers worked with government base maps, topographical sheets, and aerial photographs. They combined all of this information, correcting errors in the government maps, adding Indigenous names to rivers and other landforms, and plotting the extent of Indigenous land use.

After this extremely compact three week session, the surveyors journeyed back to their zones to consult community members with the draft maps, fill in gaps, confirm boundary lines, and correct errors. They then came together again for a third workshop, where they put the final touches on the maps. At the end of the process, the team of Indians and cartographers managed to produce a 1:250,000 master map of all the Indigenous territory of the Darién together with twenty-two 1:50,000 zonal maps that detail the river systems and the land use patterns.

The government and university cartographers who participated estimate that the maps produced by this process are far more accurate and detailed than anything that has ever been done in the Darién. For years, the ever-present cloud cover had impeded aerial photography of the Darién, a circumstance that made official maps of the region no more than approximations. Confidence in the Indigenous maps, however, is so high that the Instituto Geográfico recently utilized the new information, including Indigenous place names, to update the official map of the Republic of Panama.

## RESULTS

The most important outcome of the maps, however, is the depiction of Indigenous land use. For the first time, it gives a clear indication of the extent of the territory utilized by the Indigenous peoples and provides a basis for understanding the way they manage their natural resources.

The maps, of course, are a good deal more than academic exercises. Beyond their scientific worth, they have an important practical value as tools to protect Indigenous lands and conserve the region’s biodiversity. Before the project began, individual Indian villagers had little sense of how loggers, cattle ranchers, and landless peasant

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farmers were affecting the resources within the region as a whole. In this sense, working together on the maps provided a thorough education: it has raised their awareness of the numerous threats to their well-being and motivated them to seek collective strategies to curb the invasion of their lands. Conservationists, at the same time, can see from the maps that the areas of Indigenous land use are also areas of relatively intact forest. The implication of this is that perhaps the best way to preserve what is left is to strengthen Indigenous control over the land and work toward common conservationist goals.

One of the most important achievements of the process was the refinement of the mapping methodology, which manages to combine maximum participation of the local people with the generation of products of truly scientific value. In a wider context, the methodology is presently being adapted for work in other areas of Central America. At the present time, the Center for the Support of Native Lands is collaborating with the Indian Law Resource Center, University of California-Berkeley geographer Bernard Nietschmann, and Indigenous groups on similar mapping projects along the Miskito Coast in Nicaragua and in Toledo District of southern Belize. Because of the simplicity of the mapping methodology, it can be utilized by Indigenous people throughout the world to map their own territories.

Thank you very much.

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#### QUESTION & ANSWER SESSION

**Q:** When you make maps as a means of legitimizing claims, you are also showing what exists in these territories. Might these same maps not be used against these people as a tool to aid in the theft of their resources or in helping to suppress their activities?

**MC:** That is a very good question. It reminds me of some of those anthropological studies that were done in Vietnam which were picked up by the CIA and used to infiltrate and undermine all of the groups out there, in the Highlands especially. One thing that the Indigenous people did not want to do was map where the gold, minerals, or sacred sites were; they said “that’s out.” With this mapping process, they can map anything they want. That’s the beauty of the system — you can use it for any purpose you want. Of course, it’s still sensitive information; what we did was find out where the resources are. We found out where they cut their timber for dugouts, and they know where the areas of mahogany are, for example.

They are telling us where their medicines are, where the game is, and so forth.

I think a hundred years ago Indians would have been crazy to produce a map like this. Today, things have changed considerably. They are trying to work within the political system and through the courts of law, and they need this kind of information to make a case. They are less afraid of revealing where their resources are so the CIA can take them than they are anxious to make a claim for legitimizing this land. And I will say that this thing was presented as a simple land use mapping project, a very technical exercise, but the Indians were interested from the beginning in using it as an aid to getting claims to the land.

- Q:** Since the surveyors were all male, was there a difficulty in eliciting information about land uses that are the provinces of the female members of these societies?
- MC:** We had men as surveyors simply because it was judged too dangerous for the women to be traveling between communities, but they had communal meetings where the women were certainly involved in discussing all of this stuff and they drew the maps together.
- Q:** How did you standardize the various maps produced by the surveyors; did they have compasses, for example?
- MC:** No, we didn't use compasses. On the maps they didn't put down North and South. They put down where the sun came up and where it went down. They oriented themselves idiosyncratically, according to each surveyor. A lot of them used "behind the village" and "in front of the village," so as soon as they located it on the river, it straightened itself out. As far as distance goes, they had a certain measure they calculated, which was how long it took to walk a kilometer — they would keep these in the notebooks. It took two and a half hours to walk to X place and that's how they figured out distances. They also wrote down exactly where in the bend of the river it was, so they used both physical and temporal determinants.
- Q:** When you are dealing with a territory that is a composite of communities, what happens when one group doesn't agree with its neighbor about a boundary?
- MC:** In the Mosquitia and in the Darién there was an awful lot of overlap when it was the same Indigenous group. There are

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Emberá villages that were all wrapped around each other, but where Emberá and Kuna communities abutted, they came up to a river and that was it. It was very different — there was no argument at all. There are definitely lots of situations in Latin America and around the world where this would be an issue, and it would have to be worked out in the mapping process.

MAC CHAPIN

Mac Chapin received a BA in History from Stanford University, and a Master's and PhD in Anthropology from the University of Arizona. He has worked with Indigenous people in Central America since 1967, when he served as a Peace Corps volunteer among the Kuna Indians of Panama. He has worked for the Agency for International Development, the Inter-American Foundation, World Wildlife Fund, and Cultural Survival. He is presently the Director of the Center for the Support of Native Lands, which assists Indigenous groups of Central America's tropical forests in their struggle to protect their lands and their natural resources.

## Mac Chapin Working Group

Mapping of Indian areas is designed to help Indigenous groups make claims to their land and natural resources. These maps have shown that Indigenous areas are generally sustainably managed, as evidenced by high levels of green in satellite imagery. Indigenous groups can utilize maps to prove to the government they have a legal right to the area. By using Indian names for areas and features such as rivers, these maps strengthen their claims. As a result of the Indigenous mapping process, governments now use Indian names for these resources, further cementing their claims. In addition, governments have a better knowledge of where local Indigenous groups live, which reduces their ability to lease the Indian land for development projects or waste sites. This mapping process does not purport to determine topography, identify land tenure, or demarcate Indigenous territories. It is merely a tool to empower local populations and educate them about their resources and land area.

The role Mac Chapin and Native Lands take in the mapping process is to initiate the idea, offer technical training, and help local groups achieve their goals. The point of training is to teach representation of spatial structure — it is not to alter the views of the Indians towards their environment. When initiating a new project and subsequent survey, it is necessary to work with the group's leaders. It is the responsibility of the leaders to determine who will survey the area — those most knowledgeable about local resources. Women are not currently included in the surveying process, since in those Indigenous cultures in which mapping has been done, it is not acceptable for women to travel between communities. This raises the question of whether women's resources are excluded from the maps. Women are, however, included in the community analysis of the maps and often give input at this stage. After the initial success in Honduras, it was possible to show other Indigenous groups what has worked, which can give them ideas to help them to achieve their goals. Because mapping is designed to help Indigenous groups make claims to their land and resources, they must be the ones who ultimately decide how their project will proceed.

The following excerpts expand on some of these themes:

**Mac Chapin:** By way of introduction, we are working on a case study and methodology manual of what happened in Nicaragua and Panama. There is a lot of interest from around the world about using these methodological tools. Those interested include

groups from Vietnam, Indonesia, and Africa. Many groups want to map their homelands in order to get the land from the government, but there exist many political problems. Conservation groups are becoming too involved. Mapping methodology could be adapted to just about anything — game animals or habitat types for natural resource management, for example. With local knowledge, you can do this mapping because Indigenous people already know where these resources exist.

Problems arise with political dimensions. The whole process must be *managed* by groups within the country and must be done *through* local groups. This mapping serves to empower local groups, and educate them; the maps belong to the community. They are having workshops to discuss land issues — mapping gets them focussed on these issues. With maps, they are able to know what is going on in nearby communities and share information.

**Julie Greenberg, Yale F&ES:** If the knowledge is already in peoples' heads, what does it mean to “train” mappers? Does it alter the way they see things? What does the training include?

**MC:** No, it does not alter their views. It is technical cartographic training — how to represent space. It takes their knowledge (in time traveled, for instance) and teaches them how to represent scale — just technical stuff. They are very good artists, they just need to learn how to make maps. We did not want to give them base maps to fill in, since the product would not be their own map. Some maps are messed up on distance, but they use aerial photographs to correct them.

**Jane Dixon:** To what extent is map making traditional for Indigenous groups?

**MC:** The Kuna Indians have mapped sacred sites for years — for their own protected information. They love to list the names of places along a river. They understood the idea of mapping immediately. Some groups do not, and that is another problem.

**Brian Guse, Indiana University School of Public & Environmental Affairs:** Do you have intergenerational teams work as surveyors to give a historical view of the depletion of natural resources and the emergence of outside influences?

**MC:** No, but it is true that elders know the region the best. We go into a community and talk with the leadership, who then appoint a team of surveyors. They choose the most knowledgeable people to work on a survey. A lot of discussion takes place. Continual checking of maps with the community also takes place. The material is then presented to the community. This facilitates discussions of resources and so on.

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**Carlos Ramirez, Department of Biology, Lehman College, CUNY:** Who designed the original questions?

**MC:** It was a collaborative effort between MOPAWI, a development organization, and MASTA, a local Indian organization. There is a difference between academic and applied research. Applied research is a group effort, whereas academic research has a principal researcher and assistants. Advisors from the outside should be considered as just technical assistance. The information belongs to Indigenous people.

**George Appell, Borneo Research Council:** If you were to apply the technique to Borneo, you would get two different ethnic groups with two different land tenure policies, but the maps would look the same. Land tenure is critical, but maps do not include this information.

**MC:** Mapping is simply land use. There are several reasons for doing this: the goal for Honduras was for the Mosquitia to show the government they owned or occupied land. Government at times thinks no one lives somewhere. The goal was to document that the area could not be used as a waste site because it was occupied by Indigenous people. They used government geographic maps to show vegetation patterns. This way the government could not deny their claims because it was the government's own map. These maps also showed that areas used by Indigenous people were used sustainably, that is, the areas were still verdant.

**Jake Kosek, Yale F&ES:** How would you compare the accuracy of your maps to government maps — how different are they in terms of what they are mapping? Are there different priorities or ideologies?

**MC:** Our maps did not include topography, some government maps do. Government maps are just physical features. One difference is Indian names for all the rivers, which legitimizes their claim to the land. After this, the government began to put the Indian names of rivers on their maps.

**Henry Kernan, Forestry Consultant:** What happened to the pulp and paper mill project in Honduras?

**MC:** Initially, the project was opposed by conservationists. Many conservation groups went there to stop the plan. After the plan was stopped, the Indians took over to block the Stone Container Corporation's plans to develop the area.

**John Friede, Worldview Ltd.:** Through The Nature Conservancy, the Earth Foundation is planning on purchasing land in the Darién Gap. Will this stand the test of time? Will it contribute to the maps, and will the maps be useful? Is debt purchasing of land helping, or are there conflicting agendas?

**MC:** Yes, The Nature Conservancy is associated with ANCon, a local NGO that owns large ranches and farms. They are involved in

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conflict with Indian lands because they buy up large parcels of land. Right now they have one parcel of land that actually has an Indian village inside it. They have had some tremendous conflicts with Indians. They keep trying to tell Indians how to behave. Indians do not appreciate these programs because they are not sensitive towards Indigenous needs or desires. They need to find a middle ground where they can work together. The strategy is to find a common interest.

The Kuna are coming out with a book with Jorge Ventosillo, *Plants and Animals in the Life of the Kuna People*. It includes articles and essays on Kuna life. It mixes western knowledge of animals with Kuna ideas of these animals. There is a section on medicinal plants, and essays on how resources in their area are disappearing. They blame capitalism, but also blame themselves for playing into capitalism. Currently, organizations are trying to work with local Indigenous groups to manage their resources together.

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**Susan Place, Department of Geology, California State University, Chico:** Are women's resources excluded from these male-made maps?

Would women's teams show different resources in their maps?

**MC:** Men tend to manage things in Latin America. Women do have a say, but men tend to be in charge. Indigenous women's groups are becoming more popular. When working with Indigenous people, men tend to come forward, making it more plausible to work with them.

**Ted Macdonald:** It is the communities themselves who do not put the women forward to work on designing maps. Culturally, it is against the women's roles to go from community to community. They are looked down upon if they do this.

**JG:** Do women play a role when maps are being reviewed? Are women able to state what has been left out of a map?

**MC:** Maps are presented to the community as a whole, so at that time they do have an ability to say something. Often women are extremely vocal.

**TM:** Men travel farthest from the community and experience most areas while hunting. Also, they maintain culturally modified trees to mark boundaries between villages. How are you able to map these areas?

**MC:** The farthest area away from the village was the most difficult part to delineate and map, and a lot of vagueness remains. You have to make sure they do not exaggerate their area, which could have negative effects in future land claims.

**TM:** What do they use as justification of outermost limits?

**MC:** You accept it or you don't. Mapping was done and accepted by

the entire tribe. It was also legitimized by the government. It is the best you can do.

**Michael Dyssel, International Development Program, Clark University:** How applicable is this mapping in semi-arid regions where resources are not well defined?

**MC:** They do have markers in these regions. They know a specific place, and can use a visual marker. Aerial photographs are much easier in these regions because there are no clouds or canopy to obstruct photos.

**Bronson Griscom, NYU/NY Botanical Garden:** What was the initiation process of the project? You went to the groups to see whether they were interested?

**MC:** Discussions began and solidified. When we went to Panama, we already had something to show. We asked if local groups would be interested. After many meetings with Indian leaders, they discussed their priorities, and found the project would benefit them. You must explain what is going on, offer something, and then allow them to determine what they need from it. Mapping is not the most difficult aspect, but, rather, the social organization of the project is the complex part. How you select surveyors, how they are trained, and how they interact with the community is the part that is difficult to implement.

**JG:** How essential are maps to formalize claims? Do you think maps are essential?

**MC:** At some point during the process, maps are essential for land claims.

**JK:** How do you deal with people being afraid of mapping because it will codify today's resource use patterns, while resources change over time? How do you deal with demarcation and enforcement?

**MC:** We made it very clear that this is just land use — it has nothing to do with demarcation. We do not say we are going to demarcate Indian lands because governments will oppose it. Governments support these projects because the local Indian groups went to the ministries to gain their support and collaboration. They billed it as a technical exercise, which gained further government support. About fixing resources, yes it is a problem. It is always a problem, but it is important for these groups to hold on to what they have.

**JF:** While there may be a genuine value to mapping for the Indigenous cultures to know where their resources exist, isn't there a threat that developers and investors can use this information to better exploit these resources? Do you have a system to make information available to local groups but keep it from large developers?

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**Janis Alcorn:** Because of satellite imagery, these big groups already know what is there without going into the area. They can, however, hide some valuable resources, such as gold mines. It is always hard to know how knowledge will be used by different groups.

**GA:** It is nice to see there are countries where resource use is negotiable by the people, and not just by the government deciding how the resources will be used.