

Mapping Dreams in Nicaragua's Bosawas Reserve

Author(s): Anthony Stocks

Source: *Human Organization*, Vol. 62, No. 4, Participatory Mapping of Indigenous Lands in Latin America (Winter 2003), pp. 344-356

Published by: Society for Applied Anthropology

Stable URL: <http://www.jstor.org/stable/44127815>

Accessed: 29-01-2018 16:05 UTC

JSTOR is a not-for-profit service that helps scholars, researchers, and students discover, use, and build upon a wide range of content in a trusted digital archive. We use information technology and tools to increase productivity and facilitate new forms of scholarship. For more information about JSTOR, please contact support@jstor.org.

Your use of the JSTOR archive indicates your acceptance of the Terms & Conditions of Use, available at <http://about.jstor.org/terms>



JSTOR

Society for Applied Anthropology is collaborating with JSTOR to digitize, preserve and extend access to *Human Organization*

Mapping Dreams in Nicaragua's Bosawas Reserve

Anthony Stocks

The advent of Geographic Information Systems (GIS) and Global Positioning System (GPS) technology has occasioned a plethora of mapping processes throughout the world concerned with indigenous rights. Yet many of these projects and processes seem to end with the maps, occasionally to the detriment of the people subject to the mapping. This paper argues that mapping is a necessary but insufficient goal if the aim is to further indigenous land and resource rights, especially in a context in which there are many more powerful forces, hostile to the empowerment process. The paper uses the case of the Bosawas International Biosphere Reserve to illustrate parallel processes of mapping (with appropriate documentation), protection, political harmonization, institutional strengthening, and appropriate scientific input that have been employed there. All of these processes together have begun to make a difference, and the colonist agricultural frontier that threatens indigenous lands within the reserve has been notably slowed, although secure land and resource rights have continued to evade Nicaragua's indigenous people.

Key words: mapping, Bosawas, Mayangna, Miskitu, Nicaragua

Anthony Stocks is professor of anthropology at Idaho State University (ISU). I work on issues of indigenous land tenure and neotropical rain-forest conservation. The Bosawas work has been going on for over nine years, and the list of supporters is daunting. I would like to thank USAID, The Nature Conservancy, Idaho State University, and the Alistar Foundation for direct financial support. The St. Louis Zoo has recently become a partner in the work as well, and I have greatly enjoyed working with Cheryl Asa and Paule Gros from the zoo. My anthropology colleagues at ISU have made it easy for me to find the time to do the work. Kathy Moser and later Karen Luz of The Nature Conservancy deserve special recognition for their unflagging support. Francisca Zamora and Victor Roberts have been with me almost from the first and, although we lost our good friend and compass, Brady Watson, along the way, we all continue to share the vision of where all this is headed. Anuar Murrar, director of the Alistar Foundation in Nicaragua during the relatively short life of that organization, was helpful in keeping that vision alive. I am extremely appreciative of the long-term collaboration with attorney Lilliam Jarquín in Nicaragua and with Joel Beauvais, both of whom have at times been coauthors of other publications and both of whom have helped develop many of the ideas in this paper. Graduate students Kristin Ruppel, Erik Burkhart, Todd Miller, Todd Bolton, Jeremy Peirsol, Marvin Friel, and volunteers Kathy Stocks, Nick Stocks, and Leanna Peterson have all been extremely helpful at different times in the field studies. The many indigenous leaders with whom I have worked over the years are too numerous to list here, but you all know who you are and how much I admire your courage and vision. As you know better than I, the omelette is not yet cooked in Nicaragua and there is much to be done.

Finally, some of what I have written about Bosawas has been objected to by the Nicaraguan Environmental Ministry, specifically by the Technical Secretariat for Bosawas (SETAB). They allege that I militate against them with indigenous organizations and that, when I write, I don't discuss the advances they themselves feel they are making and thus distort the record for Bosawas. In fact, I see the role of the state, and of SETAB in particular, as extremely important. I would simply like to see them do their job better, to protect the reserve, to address the legitimate questions of indigenous land and resource rights, clarify their policies toward Mestizo invaders, and employ the kind of participatory approach that has enabled the work on which I report.

The title of this paper is intended in two senses. First, it is a respectful bow in the direction of Hugh Brody who, in 1981, wrote the inspiring ethnographic classic, *Maps and Dreams*, about his work on indigenous land use maps in western Canada. Brody was one of the 20th century pioneers who worked directly with indigenous groups to document their land uses in an effort to assist them in the defense of their homelands. However, to Brody and the Athabaskans with whom he worked, maps were not just a graphic way to represent what was then taken to be the ordinary palpable realities of land use. Maps could also be pure ideological products, as in the case of hunters dreaming of taking game in specific locations; once the animal is taken in dream, the hunter need only find the trail from his dream map and collect the physical body of the animal. Maps, for these Athabaskans, were sometimes dreamed even to find heaven, the trails to which lay at particular intersections in dream maps (Brody 1988:44-48). Dream trails to heaven were sometimes drawn up on paper and buried with the hunter.

In the sense of maps as guides to the possible, the maps about which I write in this paper speak to the aspirations of the Mayangna and Miskitu indigenous communities in the Bosawas International Biosphere Reserve.¹ Their maps are a way of talking about their identity as indigenous communities and their dreams for land rights in one of the most politically vexed countries in the world.

The other sense of my title is more blunt: if we think maps of constituted indigenous land use, territories, or homelands can stand by themselves as empowering productions in a world where many more powerful forces are arrayed to gobble up indigenously occupied natural resources, we are dreaming. As dreams, maps are ideological constructs in the Marxist and postmodern sense that, to have a lasting effect on the realities they presume to influence or create, must be

accompanied by concrete social, legal, and economic processes, long-term planning, and support. Otherwise, we are simply having “mapping dreams” that—in the real world of indigenous geopolitical negotiations with the states in which they unhappily find themselves—can quickly become “mapping nightmares.” By this, I mean to suggest that mapping of indigenous land-claim boundaries, or indigenous land uses, may only rarely stand alone as an appropriate objective for those who would use mapping to assist indigenous communities in their negotiations with the state. A number of other longer-term supports are necessary, and even when those are present, the vindication of indigenous land claims can be predicted to be a long and complex process. The case taken up in this paper illustrates the problem through an examination of the indigenous territories in the Bosawas International Biosphere Reserve of Nicaragua.

Lands and Indigenous Identity in Nicaragua

Accidents of Geography

Geography plays an important part in the Nicaraguan ideological construction of indigenous people. On maps, and as popularly constructed, “authentic” indigenous people live in the Región Autónoma Atlántico Norte (Autonomous Region of the North Atlantic [RAAN]) or the Región Autónoma Atlántico Sur (Autonomous Region of the South Atlantic [RAAS]) that were negotiated between the Sandinista government and the ethnic populations of the Atlantic Region during the Contra War. They have their own governing bodies and their existence is embedded in the Nicaraguan constitution. This construction has made it difficult for the indigenous people of Bosawas who live in Jinotega Department, outside the RAAN, both Mayangna and Miskitu, to be accepted as indigenous, even by the RAAN indigenous leaders (see Figure 1). Meanwhile, the RAAN itself is considered to be indigenous, even though over 51 percent of its residents are listed as “Mestizo” in the most recent national census.

In the more detailed sense of mapping the relations of people with specific areas of land, ethnic and family identity (often the same thing) and communal land tenure are so closely entwined that they can only be separated heuristically. Land provides a basis for subsistence and ties with the land through subsistence activities, and subsequent distribution practices identify the family and person socially through their place in sharing and exchange networks (for an economic statement of this principle, see Sjaastad and Bromley 1997). Land is often the home of spirits, not just the spirit owners of the various “natural” elements that enter into production, but also human-like societies of spirits that interact with the living, and, of course, the spirits of the dead, especially ancestors.² Thus, at the root of human biological, social, and spiritual survival, land holds a transcendental importance for indigenous identity.

It is sometimes difficult for people enculturated in the values of capitalist economies to appreciate this correspondence

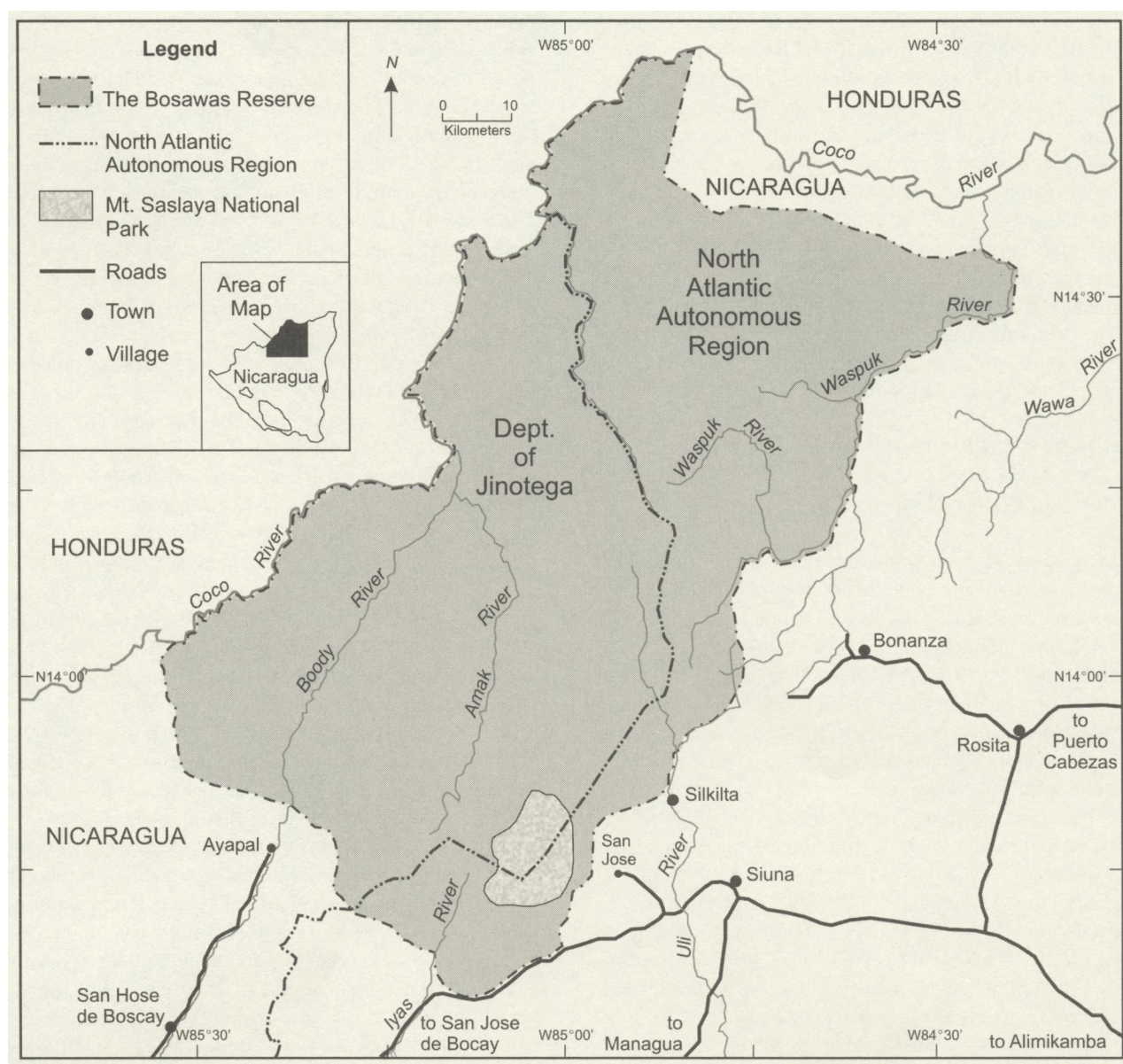
of land and identity. For us, land is a factor of production, a commodity on the market. It can be bought, sold and accumulated. However, traditional common property usufruct systems often have very explicit rules about land accumulation. For example, in the *Adat* system of Malaysia, one was strictly prohibited from accumulating more land than one could use personally (Arentz 1996). This rule, with greater or lesser degrees of strictness, applies informally in many neotropical indigenous common property regimes (e.g., Chirif, Garcia, and Smith 1991; Stocks 1983) and is true with regard to the Bosawas indigenous holdings. Such a rule is incomprehensible in an economic system where land is a commodity. For many of us, sentimental ties attach to the family home place or the favorite park or recreation area, but homesteads are sold and parklands are usually places to go for recreation, not permanent contexts in which we realize our humanity.

Much of the current indigenous struggle in Nicaragua involves an attempt to prevent nonindigenous actors, prominently including Mestizo colonists and large multinational businesses, from destroying resources critical to cultural and economic survival. The correspondence between forest occupation, use, and group identity is quite common in the indigenous world. As an illustration, in Thailand, Karen ethnic identity is intimately involved with the use of forest resources. Without the forests, the Karen may well become assimilated to the dominant Thai society (Bryant 1996), as has happened to indigenous groups in Central America that remain in place but without natural habitat (Chapin 1992). In the Central American case, groups overrun by nonindigenous peasant communities, dispossessed of their native lands, but still located in part of what was their homeland, may retain a weak indigenous identity, but without indigenous language or much distinguishable cultural content. While the theoretical reason for this disappearance can be debated, it is clear that the control of one’s own natural resource base is a powerful factor. One could argue, in fact, that ethnic identity itself is a way of talking about access to resources. Ethnic identities are often linked to access and control of specific economic or political resources. When access to resources cannot be controlled and outsiders excluded, the costs and benefits of maintaining ethnic identity are weighed in each individual case, often with disastrous results for identity. For Nicaragua’s indigenous peoples, as the title of a recent participatory action research dissertation in eastern Nicaragua has it, “In a country without forests, no life is good” (Christie 1999).

Maps Are Not Enough

The above discussion supports the notion that mapping indigenous lands and land uses is a necessary step in the process of assisting indigenous people to secure rights to both land and resources and maintain ethnic identity. Participatory mapping, because it is a political process, also enhances the chances they will have both the ability and the will to engage in sustainable resource management. Geographic Information Systems (GIS) and Global Positioning System (GPS)

Figure 1. The Bosawas Reserve, North-Central Nicaragua



technology enable many people to produce maps cheaply and quickly in support of indigenous land or resource claims, but often without much thought about the next step, or indeed any orderly process dealing with the more difficult aspects of indigenous land and resource rights. To secure these rights, indigenous groups need much more than maps. In fact, requisites for the intertwined interests in cultural survival and sustainable resource management might look something like the following list:

1. An adequately sized, physically demarcated land base, which may include marine or river rights, with secure tenure over both land and resources. I should here emphasize the extreme importance of a land (or marine) base of sufficient size to allow for the management of conservation areas

that preserve fundamental ecosystem services, flora, and fauna;

2. Territorially based representative political structures capable of negotiating with the state, commercial interests, and nongovernmental organizations (NGOs);
3. The ability to exclude outside appropriators;
4. Acceptance as the legitimate managers or comanagers of the resources by all outside parties;
5. An adequate response to cash needs that does not degrade the resource base and is autonomously controlled by people in the territory; and
6. Equal access to health and education.

Maps, Power, and Process

That “maps are not the territory” has become trite. What is more to the point is that maps create the territory, making of many a geographer, explorer, or anthropologist, a politician. “Like any other production, a map is contingent on its sponsor and its producer and on their cultural, social, and political world and desires” (Craib 2000:8).

Maps, like all other ideological products, simultaneously constitute and threaten. They can always be viewed as propositional arguments with some constituted “other.” Occasionally the argument can boil down to silliness and personal vanity, such as in the first European map of Lake Victoria in Africa, when Sir Richard Burton arbitrarily placed the Ruwenzori Mountains between the lake and the Nile River on his “official” map to frustrate his companion Speke’s claim that he had discovered the source of the Nile (Moorehead 1960). More often, with indigenous peoples, the argument involves either the state or local nonindigenous peoples as the opposing “others.” The differences between state and indigenous maps of the same area can be great indeed, as Orlove’s (1991) work shows along the shores of Lake Titicaca in Bolivia.

In a recent survey of mapping projects, Poole (1995) listed 63 projects around the world in which the creation of maps, with varying levels of technology, is being used in a way that, in his opinion, contributed to biodiversity conservation. Poole distinguishes between the production of informal maps at community levels, which are generally used for local land management, and technical maps, which are most often used by indigenous peoples to “regain control of their traditional territories.” The majority of the cases cited by Poole are of the latter type.

The power of maps...has been used to good effect by indigenous peoples, as they realize the negotiating potential which is inherent in the deployment of more supportive data when dealing with external agencies. Specific expressions have been coined for this strategy, such as “counter-mapping,” i.e., using maps to defend traditional territory, or reclaiming historical places by renaming them in the vernacular language (Poole 1995:2).

Such an exercise, if done in a participatory way, can be a powerful political tool for consciousness raising and construction of identity, and, as such, mapping exercises are tools of empowerment. However, in the rush to use the latest technologies in support of favorite indigenous causes, what is frequently forgotten is that power is not a free good. It comes only at the cost of wresting it from those who have it, and it is nearly always a long and complex process in which maps are only the beginning.

For example, production of GIS maps for the land claims of the new indigenous territories of eastern Bolivia under the new Agrarian Reform Law (Centro de Planificación Territorial Indígena 1996)—with little juridical or police backup from the state that promulgated the law—has led to a flurry of logging and other extractive activities, as nonindigenous

resource extractors attempt to cash in quickly before they lose access to certain lands. It could easily be argued that many communities are worse off for the mapping. The maps will be the basis of a much more protracted process of rural cadastral (*saneamiento*) to determine prior claims and properties that, in theory, will eventually pave the way for adjudication. However, by the time this takes place there may be little of value left in the forests (Stocks 1999).

In another set of cases, in both eastern Honduras (Herlihy and Leake 1997) and eastern Nicaragua (see Gordon, Gurdian, and Hale, this volume), the first regional mapping of indigenous community locations and “turfs” in the 1990s—under the auspices respectively of Cultural Survival and the World Bank—was done without the intention of forming a social process of agreement on boundaries between territories or a linked program to carry the claims forward. They were both relatively quick projects that produced maps with many territorial overlaps. While such overlaps often represent areas of shared use or close kinship connections, in both cases the maps were used by unfriendly politicians to support their argument that if the indigenous people themselves cannot agree on their boundaries, the state has little reason to intervene on the side of indigenous land legalization (Nicaraguan indigenous rights attorney L. Jarquín, personal communication, 2000). One positive effect of the mapping in Honduras was the stimulation of seven Miskitu regional divisions of the parent ethnic organization, MASTA, based on the territories implied by the mapping. However, the impact of these organizations has been small because there has been no consistent follow-up process that would integrate them into regional planning or assist them in asserting any degree of sovereignty (K. Luz, TNC Honduras/Nicaragua director, personal communication, 2000). On the contrary, both the Honduran and Nicaraguan military and political authorities seem to have been made more sensitive to possible separatist movements by these political developments (L. Jarquín and A. Murrar, Alistar Nicaragua director, personal communication, 2000).

The issues become even more complex when it comes to the process to which indigenous land-use mapping is linked. Poole’s (1995:vii) review of mapping projects presents five uses of maps to gain indigenous control over land and implies that they are steps in an orderly process as “one application precipitates another”:

1. Recognition of land rights;
2. Demarcation of traditional territories;
3. Protection of demarcated lands;
4. Gathering and guarding traditional knowledge; and
5. Management of traditional lands and resources.

While these “steps” may appear sequential, in practice they are usually messy and intertwined chronologically. In

some cases, such as the Oxfam-sponsored project in Peru that aims to map all of Peru's native communities (mentioned in Stone 1998, and see Robert Smith et al., this volume), the recognition of land rights actually did come before GIS mapping. Most of these communities were legalized in the mid-1970s under Peru's Native Community Law, but few of their boundaries are accurately located on maps. However, the typical case does not agree with Poole's model and, in my opinion, too many researchers operate almost exclusively in the area of step 4 without ever doing much of anything concrete about step 1 (e.g., Tabor and Hutchinson 1994). Part of the reason for this lack of agreement between the model and the external world is that step 1, "recognition of land rights," is often the final outcome of a protracted struggle in which all the other kinds of activities may play a part to secure the first objective. In the course of developing the land claims, identities may be developed, massaged, and manipulated, along with "traditional" territorial boundaries.

This is the case in the Bosawas Reserve, where the entire process of working with indigenous land claims to secure a homeland and protect forests can be thought of as a series of "preemptive strikes" that capitalized on the desire and ability of indigenous peoples to organize to "map before they are mapped" (Stone 1998), to plan before they are planned out of existence, to defend their resources, to demonstrate that they can produce and follow management plans, and recently to "do science" before science is used against them. The lessons of the Bosawas work are echoed by Christie (1999), in Pearl Lagoon, Nicaragua, where he argues that a period of empowering institutional development, self-study, and analysis should precede linking local communities directly in negotiation with the state over natural resource rights. The remainder of this paper describes the philosophy that has underwritten the Bosawas experience and the sequence of actions themselves.

The Bosawas Process

Background on the Reserve

Much of the detailed background on the indigenous issues in Bosawas International Biosphere Reserve has been published elsewhere (Stocks 1996; Stocks and Beauvais 2000; Stocks, Jarquín, and Beauvais 2000). Briefly, as a "natural reserve," Bosawas was created by presidential decree in November of 1991 by President Violeta Chamorro in an effort to stave off an imminent move by the Ministry of the Economy to give out commercial logging and mining concessions in the forested lands in the north-central part of Nicaragua. This area was a staging ground for the Contra War of the 1980s.

While one might think that a national president might have more control over her ministries, in the case of Nicaragua, President Chamorro was pursuing a balancing act between the Sandinistas and the flood of self-exiled Nicaraguan

entrepreneurs who swept into Nicaragua on the heels of the 1990 election. The Sandinistas had just been voted out of office but were still a very powerful and unified political force. The entrepreneurs were flocking in from Miami, New Orleans, Houston, and Los Angeles, where they had been building capital while waiting for the Sandinista government to collapse under pressure from the United States. Many of these entrepreneurs were seeking forest and mining concessions in the Bosawas area.

In the rush to get some measure of protection for the area by decreeing it a "natural reserve" (the protection category does not permit extractive concessions), the occupation of the proposed reserve by indigenous Mayangna and Miskitu Indians was only recognized indirectly. The reserve decree mentions that one of its purposes was to protect the natural resources on which they depend, but nothing was said about their rights. During the war, these indigenous people had either fled to Honduras or had been forcibly relocated by the Sandinista government in Nicaragua. In 1991, after nearly a decade of suffering, they were permitted to reenter their homelands, which they did in great numbers. With the Bosawas decree, they now found themselves in a declared natural resource reserve that was not demarcated, had little government presence, and was under a very active agricultural and pastoral invasion. The would-be colonists were former Contra guerillas and their supporters, as well as Sandinista army veterans and their own allies who had been settled in postwar agreements on the frontiers of the new reserve. Not only were the indigenous owners not given powers to repel invaders of their homeland, they were at first subject to arbitrary restrictions on their subsistence activities.

As there was no regulatory legislation in Nicaragua for a natural reserve, the first interpretation of the area by the Institute for Natural Resources (now the Ministerio del Ambiente y los Recursos Naturales [Ministry of Environment and Natural Resources, MARENA]) was that it was the intangible "core zone" of a biosphere reserve (see Dogsé and Von Droste 1990 and Poole 1989 for the typical zoning of biosphere reserves), an area with strict conservation objectives. Under the hastily invented biosphere model for Bosawas's future, there was immediate planning for the "buffer zone" to surround the declared core zone. The buffer zone eventually chosen when Bosawas became an international biosphere reserve was a long-settled agricultural area, while the core zone was inhabited by what turned out to be over 12,000 indigenous people. Within four years of its creation, the reserve absorbed over 1,400 migrant Mestizo families and a flood of illegal loggers. The government was unable or politically unwilling to protect it. Many indigenous residents, in turn, retreated to the northern part of the reserve, away from the invaded areas, and left a string of residual, somewhat depopulated, communities along the Bocay and Coco Rivers surrounded by Mestizo colonists, their former lands now classified as a "conflict zone." The Mestizo colonists, in turn, were protected by the residual armed movements in the area, both Sandinista and Contra.

Who are these Indians? Indigenous Identity

Both Mayangna and Miskitu have undergone profound transformations in their indigenous identity during the past 500 years. Current Mayangna identity is distilled from many related dialect (and possibly related language) groups who occupied most of the landmass of Nicaragua east and north of the lakes in pre-Hispanic times. For example, the group known historically as the Chontales was Mayangna, judging from the small word list published by E.G. Squier (1989: 458). Some of these groups, such as the Matagalpa indigenous group (probably the Chontales a hundred years later), are still in their original area. They self-identify as indigenous but lack an indigenous language. They have been mostly assimilated by Spanish occupation of western Nicaragua, and nonindigenous peasants occupy most of their lands. The Matagalpa and Sutiava control over land was so weak that, during the 1980s, the Sandinista government settled peasant cooperatives on lands adjudicated to the indigenous communities in 1914. Other Mayangna in the central part of the country retreated north in the 18th and 19th centuries and had been dispossessed of 90 percent of their homeland by the 20th century. Bosawas represents their last redoubt against colonial domination. They have resisted incorporation into the emerging capitalist economy actively for several hundred years. Mark Carey (2000) has recently argued that the forest of Bosawas exists because of them—it is considered “remote” because they have defended it. This version contrasts sharply with conventional conservation discourse which concludes that some people continue to survive only because their homeland is remote (e.g., Redford 1991). Today, there are four Mayangna subgroups in Nicaragua with somewhat separate identities forged from the seven groups identified by Conzemius in 1931. How this situation came about would be an identity study in itself, but about 75 percent of the 9,000 living Mayangna in Nicaragua depend on the resources within the protected area of Bosawas for their survival.

The “ethnicity” of the Miskitu is more problematic and their relations with Bosawas more recent. About 6,000 Miskitu live within the reserve and another 10,000 derive partial subsistence from its natural resources. Their own history involves amalgamation with African slaves, British pirates, bureaucrats, and loggers, Jamaican railroad and plantation workers, American banana company employees, Spanish colonial and postindependence populations, missionaries, and more. In short, their history has forged a unique identity, somewhat distinguished according to community, region, and ecosystem. Miskitu identity, however, does not appear to have the level of regional or dialectical distinctness of the various Mayangna groups.

For their part, many Mayangna consider the Miskitu to be very different from themselves, both physically and culturally. Many Mayangna bitterly remember hostile relations between the ethnic groups in the past. In Eastern Nicaragua, the 9,000 Mayangna are very much a minority compared to the more than 100,000 Miskitu and, while most Mayangna

speak Miskitu, less than 5 percent of the Miskitu in Bosawas speak Mayangna (TNC 1997a,b,c,d,e,f, 1999).

The Mayangna attitude toward the Miskitu derives from the 19th century Miskitu expansion into the middle Coco (Wangki) River above the great rapids (the area occupied by the territory Kipla Sait Tasbaika) toward the gold-bearing gravel bars of the upper Coco. In the course of the expansion, the Mayangna retreated from the main course of the Coco River to its tributaries. How far upriver the Miskitu were originally located before their 19th century expansion above the great rapids of the Coco is a matter for archaeology to reveal, but my guess is that the large Miskitu communities in the territory of Li Lamni Tasbaika Kum might have a considerable, if sporadic, history of occupation that predates the formation of modern Miskitu identity and possibly predates the occupation of the coastal niche on which Miskitu popular identity is now centered (Nietschmann 1973).

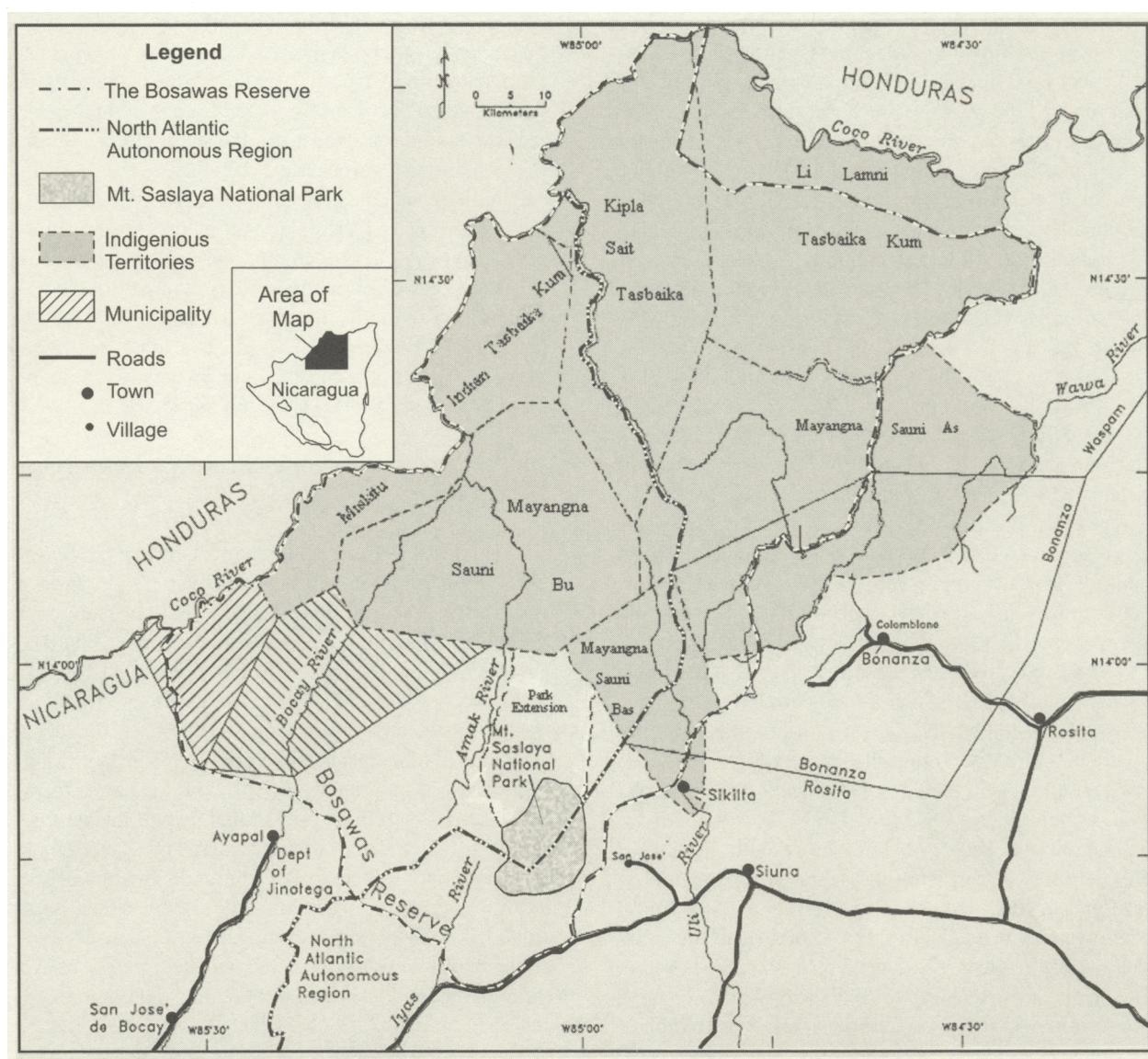
The Nature Conservancy Project's Land Tenure Focus

The issue of land rights that was provoked by the declaration of the reserve festered between 1991 and 1993. It was clearly a matter that needed attention if the conservation objectives of the reserve were to be met. Finally, under a cooperative agreement with USAID and MARENA, The Nature Conservancy (TNC) began a project that focused on the land issue in Bosawas. One of its first acts was to sponsor a meeting in Managua in November 1993, during which many of the various indigenous groups claiming lands in Bosawas discussed an extremely provisional map of the claims.³ Very little was concluded except that there appeared to be several multicomunity “territorial” claims in Bosawas (using the terminology of the ILO Convention 169, which Nicaragua signed), which essentially mapped onto the reserve's largest watersheds. It was also clear that the process of working through the land issues would be long and complex for four reasons:

1. Bosawas's unique geographical positioning (partly in the RAAN and partly in Jinotega; see Figure 2);
2. The lawless occupation of much of the southern portion of the reserve by ex-Contras and ex-Sandinistas;
3. The relative powerlessness of MARENA (the statutory administrative authority) to control on the ground what goes on in Bosawas; and
4. Power struggles within the indigenous world over the question of autonomy for the East Coast and who would govern.

Nevertheless, most indigenous land and resource claims are characterized by similar complexities. The important thing is to have a process multifaceted enough to deal with the complexities as they arise. The section that follows briefly describes the entire process, including all the parallel activities

Figure 2. The Bosawa Reserve and Indigenous Territories, Nicaragua



that accompanied the mapping and work with indigenous organizations. A section that discusses mapping and identity politics in more detail follows it.

The Process in a Nutshell

From the beginning, our project viewed mapping territorial boundaries, place names, and land-uses as merely one element in a long process of institutional development that would eventually result in better management of the reserve through vindicating the rights of its major stakeholders, whose interests lay in protecting the natural resources. As The Nature Conservancy (TNC) technical advisor and the designer of the project, I began to document⁴ the indigenous territorial claims in March of 1994 at the invitation of the leaders of

the Mayangna communities of the Waspuk River, a territory later to be christened Mayangna Sauni As (First Mayangna Territory). To do this, I used a participatory methodology in which local communities of each territory named researchers to be trained in the application of a socioeconomic survey, in historical cartography, in navigation with Brunton compasses and GPS units, and in data analysis. In the first iteration of this process in Mayangna Sauni As, I did all the training myself, using translators when necessary, partly because other help was not easily available for long periods in such a remote area, and partly because I preferred not being responsible for the behavior of non-Mayangna in a delicate situation. From my world, only my 10-year-old son was with me. The most capable people developed in this process were used as trainers in subsequent iterations. By 1998, the workshops were all

conducted by indigenous trainers and entirely in indigenous languages, while my role was that of planning, support, and (with the assistance of a small team of U.S. students) help with data crunching. Although the location of critical reference points was completed using GPS technology, the actual maps were drawn in ink in the field before any GIS technology was employed because I thought it important to involve people in the territories in all steps of the process. The in situ pen and ink technology is publicly visible and locally understood, while the GIS technology remains in the capital city and is understood by few.

Eventually, the indigenous communities identified six territories based on common history, ethnicity, geography, and land use. The territories were approached sequentially, and we learned from the first process of mapping, zoning,⁵ and self-study how better to organize for subsequent processes. By 1999, all six indigenous territories in Bosawas were mapped and zoned, and there were ethnohistorical and socioeconomic studies for each territory conducted by the people themselves. These materials were published, as well as a preliminary study of the Mestizo colonist populations (TNC 1997a,b,c,d,e,f, 1999).

The zoning had an unexpected result. Each of the territorial units, independently of each other, not only identified lands they wanted to preserve in a natural state ("green" or conservation areas), but the majority of them were contiguous lands in the very center of the original declared reserve. After much discussion, in 1997 this area was called the Waula Conservation Area, and a confederation of indigenous territories known as the Waula Federation was formed to advise on their management (see Bolton 1999 and Miller 1999 for a description of the discussion process). This organization has acquired legal status and acts as the united indigenous voice for the reserve.

As a parallel process, begun shortly after the first maps emerged, we began to work with each territory to elect officials and to become legally constituted "civil societies" that can act as both territorial governments and resource managers. These emerging organizations, once formed, have received support from a number of NGOs in Nicaragua for their frequent trips out of the reserve to negotiate with the government on a number of issues. As a direct result of this institutional development, the National Bosawas Commission's membership was legally modified to include a representative from each territory.

Each of the six territorial mapping processes was immediately followed by physical demarcation along the frontiers most sensitive to colonist invasion and the beginning of the defense of the territories, through the training of indigenous forest rangers and their deployment on periodic patrols. In 1995 and 1996, provisional management plans based on the use zones were developed in local meetings, facilitated by indigenous facilitators named by the territorial organizations, to discuss rules for each of the identified zones on the territorial maps. Territorial meetings followed these local meetings and the results were then fed back through a second round

of local meetings for the approval of each community. This process attempted to stimulate people to move from informal norms for behavior to formal rules. The sanctions, however, remain mainly those of social disapproval, in accordance with the cultures involved, that tend to vex those who like rules with more teeth.

Subsequently the indigenous people have worked on issues of management, particularly with regard to their participation in the International Biosphere Reserve's management plan and the management of the Waula Conservation Zone. More recently, after an initial pilot study (Merriam 1999), one territory has begun to collect data on the impacts of hunting with a wildlife ecologist funded by the St. Louis Zoo, and another has invited faculty at the National Autonomous University in León (UNAN-León) to assist in investigating botanical issues of interest to them. Both projects support the principles that indigenous natural resource management priorities are important subjects for scientific study, that studies should benefit local populations, and that scientists should respect indigenous sovereignty within their territorial limits by routing requests for research permission both through the national protected areas system and through the indigenous associations in the territory where the research is to take place. The principal producers and consumers of the science are the indigenous people themselves. This practice takes the top-down tendency for protected-area science and stands it on its head.

The details of the training methodology for establishing the management plans; the indigenous forest ranger training and deployment; the development of territorially based representative democratic institutions; the "harmonization" process of seeking consensus on the land claims—first horizontally between communities, then vertically with municipal, regional, and national government—are covered in two recently published papers (Stocks and Beauvais 2000; Stocks, Jarquín, and Beauvais 2000). Establishment of a large conservation area shared by the six territories, the Waula Conservation Zone, is the subject of two master's theses (Bolton 1999; Miller 1999). For purposes of this paper, I would like to describe the mapping process itself, speculate on what effect mapping has had on the politics of identity in eastern Nicaragua, and show how mapping relates to the total process. For those who wonder what the outcome has been in terms of land and resource rights, refer to the conclusion of this paper.

The Mapping Process

From the excellent 1:50,000 topographic maps made by the Russians during the Contra War and now published by the National Institute for Territorial Studies (INETER), I traced draft base maps for the training sessions to cover what I assume (from the workshops or other prior information) will be the claim area. The national maps are extremely deficient in cultural information for the entire Bosawas Reserve. Of the few names on the map, many are either wrong or the result of

a poor transliteration of the indigenous languages. I choose to draft simplified base maps because the topographic maps contain too much confusing color-coded information for general use. My approach to hills on the simplified map is to mark high points and to encircle a group of hills with a contour that distinguishes them from the ground surface around them. I draw base maps quickly in pencil in a few days and include rivers, streams, locations of high points, and whatever cultural information is available from the national map.

Upon completion of the draft base map, I put it aside⁶ and meetings are held with representatives from each community in the claim, as well as representatives from all territories or communities that border the claim. The main task in this “nearest neighbor” method is to get people from neighboring territories to agree on specific points of reference that have in the past been traditionally agreed-upon boundary markers.⁷

In Bosawas this process was sometimes protracted and involved a number of iterations, as leaders would go home and then return for a second round of meetings. In several cases, this procedure has resulted in agreements that allow neighbors to share certain kinds of activities in a territory—gold panning, for example—while preserving the idea that the territorial boundary is unambiguous. The maps drawn in these workshops identify the agreed-upon reference points by name. I usually have few clues to the precise geographic location of these names at this time because they are typically not on the national topographic maps and because the cognitive map is neither geometrically precise nor inclusive. The last step of the initial meeting process is for the communities in the claim to name researchers to conduct further mapping and socioeconomic studies, including a census, and to agree on categories of land use that could be logically used in zoning.

With the people named as indigenous researchers, I conducted three parallel training processes for three different kinds of researchers. The first, the historical cartography group, began by tracing the details of their home areas from the 1:50,000 base map to learn conventional technical mapping protocols (grids, latitude, longitude, etc.). They then attempted to locate, from their own knowledge, some of the names on the cognitive map on their own base maps so they could begin to understand the difference between the two types of maps and internalize the problem of making them compatible. This group was sent out to collect detailed cognitive maps of each stream system⁸ and to transfer them to their own geometrically correct base maps with repeated iterations. They were also trained to write down stories connected with place names using as much as possible of the original expressions of informants.

Second, each territorial group of historical cartography researchers was backed up by a navigational team trained to read the national topographic maps and do on-the-ground navigation using GPS units and Brunton compasses with tripods. This group could plot GPS points and routes on a map and, using compasses and GPS units, execute the routes on the ground from map coordinates. The technical team in each territory performed such tasks as traveling upstream along

creeks and rivers with local hunters and farmers taking GPS readings at each tributary and recording the names to back up the oral history data of the historical cartography group. They later formed the territorial core group for demarcation and have been extremely useful to their territories in other tasks as well.

As the historical cartographers gradually built up their knowledge of place names, they wrote them on the draft maps they had copied from the original base map. The names on the draft maps were then transferred to the final inked version of the territorial map. The drafting area for the maps was typically located in the primary community of the territory, and the maps were drawn in a place open to the public, usually a veranda. Many people came by to look at them as they developed, and they became a cultural production in which many participated. People adapted very quickly to reading them, and older people often made on-the-spot corrections to the place names. Everyone approvingly noted how the oldsters had something to teach the youngsters and the foreigner.

The third kind of training produced researchers who conducted house-to-house censuses and applied a questionnaire about social and economic organization. When I began, the only Nicaraguan model was the one used by the Agrarian Reform to adjudicate land to small farmers, and there was no national law regarding indigenous land legalization. The information accessed by the Agrarian Reform protocol was inadequate for indigenous land legalization, so I adopted the position that we would not collect less information than that required by Agrarian Reform, but we would collect a host of additional information that most Latin American nations have required of indigenous people when discussing collective land legalization. The methods of training and applying these studies have been discussed elsewhere (Stocks and Beauvais 2000; Stocks, Jarquin, and Beauvais 2000). Here, I merely wish to point out that the information collected and now published in “territorial books” (TNC 1997a,b,c,d,e,f, 1999) is an ideological product that has given a statistical form to the territorial groupings and identities.

Discussion

The process of constituting indigenous territorial identities in Bosawas through the instrumentalities of mapping and associated supportive activities has a number of ideological entailments. Some of the most important are discussed below.

Maps as Cultural Reservoirs

One important effect of the work in Bosawas has been the creation of new levels of cultural consciousness through the mapping process. The Bosawas territorial maps contain approximately 6,000 place names, 200 sites of cultural and historical importance, and the identification of specific zones of ecological and subsistence importance. This information is not in the mind of any one individual—it is the cultural

production of many peoples' knowledge of an entire region. As such, each territorial map becomes of high interest to people who learn the names of an area they didn't previously know well, a container for an identity. The maps are considered by the indigenous peoples in the territories to be *their* productions, validating *their* identities, and *their* land claims. The collection of this information has also tended to reinforce the validity of the lines dividing territories, as we have found that detailed cultural information about place names tends to thin out as the territorial boundaries are approached and, from the perspective of a given territorial group, the place name information is almost nonexistent as the neighboring territory is mapped. Nevertheless, there has been a substantial agreement between territories on names right at the boundaries. This information seems to have been shared by many, if not all, people within a territory, unlike the detailed naming of smaller watersheds, information often held only by families along that small watershed.

Maps Freeze History

The history of the peoples of eastern Nicaragua, including Bosawas, has been fluid and dynamic, with population movements and displacements into the 20th century. One effect of creating territorial maps and the supportive process that has assisted indigenous "civil societies" to come into the framework of law as territorial managers, is that history is somewhat frozen both by the maps and by the embodiment of territorial organization. In all probability, the Bosawas maps roughly represent old "rubber territories" that were claimed in the late 19th century through the chain of patronage and dependency by latex contractors and their indigenous workers on the different rivers of the region. Enough accounts emerged from older people as we worked through the boundaries of the territories to support this interpretation. To be sure, the boundaries also have tended to coincide with ethnic fault lines, but to some degree the current geographical location of the ethnic subgroup is a function of labor migration.

Some of the territorial boundaries that include both Mayangna and Miskitu people freeze a moment in history when Mayangna people who had located far upstream on the Coco River tributaries during the worst of the 19th century hostilities with the Miskitu, chose to move nearer to the corridor of commercial movement and educational opportunity along the Miskitu-held Coco River, without directly living among the Miskitu. This is the case with Santo Tomas de Umbra on the Umbra River, Arandak and Wail Lahka on the Lakus River, and Amak on the Bocay River. In the first two of these cases, the mainly Miskitu territories that include one or two Mayangna communities are constituted as biethnic territories because the Miskitu majority used resources along the course of the Umbra and Lakus Rivers. However, the relations are often uneasy, and the Mayangna would much prefer to have an area within the territory that is exclusively theirs. For the moment, their interests are represented in the leadership of the civil societies representing the territories.

The constitution of the two indigenous territories outside the RAAN in Jinotega has vexed politicians both within Jinotega and the RAAN. As most of the indigenous people in Jinotega were kept in Nicaragua during the Contra War—although they were removed to the high mountain areas of Jinotega where they suffered extensively—they feel a certain social and political separation from the groups that fled to Honduras and became Contra supporters. It has also become slightly embarrassing to indigenous politicians who negotiated the boundaries of the RAAN with the Sandinista government to now find territorial claims from groups claiming indigenous identity who share the indigenous languages of the RAAN, but who are not included politically in RAAN. There is a movement afoot to annex these territories from Jinotega, a movement that is resisted by the Jinotega indigenous territorial leaders because they distrust the RAAN government's ability to support development.

Conclusions

The Bosawas process has been concerned with mapping as merely one feature of an integrated plan to support indigenous land tenure concerns as a means to biodiversity conservation. The aims of the conservation community and the aims of the indigenous people correspond on this point. The experience of the past eight years tells us that working with basic jurisdictional issues is frustrating, but critical. It is critical in two ways:

1. The frank and open adoption of the indigenous land agenda has engaged the conservation community directly with indigenous people in an extremely productive way. They listen to each other because they can help each other to realize their most basic goals without agreeing on everything. Indigenous people have gained a powerful set of allies while the conservation community has (so far) been able to support the protection of over 500,000 hectares of forested lands.
2. The forest, at least in the Nicaraguan context, can only be defended by people who have a vested interest, who would be defending it whether or not there were money in it. The constitution of an indigenous identity connected with specific territory and with a growing sense of power and a predisposition toward activism has been extremely notable in Bosawas. It has been relatively successful up to this point.

My experience in Bosawas also points to the absolute necessity of designing an overall process that combines the mapping process with horizontal and vertical "political harmonization." The process must include a number of institutional supports that can move forward with formalizing land and resource rights, and it must weave indigenous institutions into the institutional fabric of resource management at local, regional, and national levels. Without these additional supports, the mapping exercise may produce a few publications, but it is unlikely to have much effect on the realities mappers hope to affect by their activities. To sum up the Bosawas

process, I think of it thus far as having five principal sub-processes, each with its own aims and results:

1. The mapping, documentation, zoning, and normalizing process involves a maximum number of people and aims to provide unambiguously delimited territories with rich cultural data represented both in maps and in the studies. The widespread participation tends to make the process a part of community knowledge, rather than outsider knowledge. The results of these studies become part of the technical basis for the management plans.
2. The technical protection and management process includes the training of navigational teams capable of leading the physical demarcation of the land claims and the training and fielding of forest rangers. The aim is to protect territorial boundaries and ensure that the land-use norms gradually become part of the formal culture. The results of a successful protection process are territories without competing claimants and with well-managed natural resources that provide a variety of options for sustainable development. The execution of the management plan depends on a successful process.
3. The political harmonization process aims to create a social consensus that supports the maps and the management. The result of a successful process is to elevate the land claims, maps, and management activities and proposals to the highest political levels, with increased probability of eventual legalization and acceptance by national authorities of the co-management of the biosphere reserve by territory.
4. The process of institutional development aims to bring into being a political system at the territorial level capable of resource management and of representing the territories legally. The objectives of political harmonization and technical protection and management cannot be achieved without strong representative organizations.
5. The scientific assistance process takes additional concrete steps to improved management. This process is one that can only be initiated when the first four processes are advanced and the territorial organizations have the luxury of formulating resource management questions. The participatory scientific process is just beginning in Bosawas and links the territories with a variety of institutions and scientists that can help develop a community knowledge base regarding the scientific status of natural resources and the impacts of human communities on them.

Have we been mapping dreams or simply dreaming? It is too soon to tell. The process, as I report it here, is ongoing. For a few years, the territories, as social, political, and economic entities, received funding from the U.S.-based Alistar Foundation, which supported the defense of the territories and engaged in sustainable development activities. After Hurricane Mitch in October 1998, the Alistar foundation spent a couple of years rebuilding the economic infrastructure of the northern part of the reserve. They also receive support from several other national and international NGOs. The Nicaraguan government has recognized the territorial maps as "official," and the territories and their use zones are on the map of the Bosawas International Biosphere Reserve. The

indigenous territories and their zoning and regulations are part of the Bosawas management plan.

The territories have not received title to their lands and resources and will not until a new indigenous land law has been applied. The work in Bosawas has inspired many in the RAAN to demand "territorial demarcation." As a result of the World Bank/Global Environmental Facility (GEF) project on the Atlantic Biological Corridor, the bank, taking into consideration the example of Bosawas, insisted that Nicaragua draft a law on indigenous lands before funds would be released for the corridor project. The draft law was negotiated and passed early in 2003, but has not yet been applied to Bosawas, although there are signs that it soon may be. In the meantime, the people in Bosawas continue to defend their boundaries without much concrete support from authorities and, at present, with little funding. There are possibilities for other sources of support for the territorial and supraterritorial identities. Universities and NGOs have begun to evidence more interest. The formation of the Waula Conservation Zone and its managing group, the indigenous Waula Federation, has merged territorial identities into a single indigenous voice for Bosawas regarding certain management, and even some political, issues. It has every possibility of receiving support as an indigenous conservation initiative. Nevertheless, I am reluctant to declare even a limited victory on a permanent basis for indigenous peoples in the Bosawas. Progress is visible and even dramatic on some fronts, but the one lesson repeatedly learned by anyone who tries to grapple with the complexities surrounding indigenous land, resource tenure, and empowerment, is humility.

Notes

¹The word "Bosawas" is commonly used in place of the acronym "BOSAWAS," which is formed from the first letters of the place names that comprise the Bosawas International Biosphere Reserve: Bocay River, Saslaya National Park, and Waspuk River. The Bosawas International Biosphere Reserve is commonly referred to as "Bosawas" or "Bosawas Reserve."

²The evocation of geographically situated ancestors as an element in the construction of a geographically located personal, family, ethnic, or national identity is common in capitalist societies as well. For example, the Mormon occupation of the Great Basin is celebrated in rich annual ritual performances that situate the ancestors on the ground and stress both the kinship ties and the ethnic identity.

³These initial maps were erroneous, both in the areas and locations claimed by various territories and in the number of claims. They were done hastily by a Nicaraguan NGO unaccustomed to such work and were plotted initially on topographic maps that had few, if any, place names to identify the reference points adduced by indigenous informants. Additionally, the people who didn't attend the 1993 workshop were assumed by the initial mapping NGO not to have a claim.

⁴The documentation includes maps with all known toponyms (historical cultural cartography), ethnohistory, census, socioeconomic study, and basic use zones. The ethnohistory goes hand in hand with the historical cartography as several outside researchers have found, (e.g., Rankin 1995 with the Wichi of Argentina).

⁵The first territory chose the following zoning categories: 1) agriculture; 2) frequent hunting and gathering; 3) infrequent hunting and gathering; 4) plant and animal reproduction (conservation); and 5) historically and culturally significant areas. The other territories, completely independently, coincided with zones 1, 2, 4, 5, and 6, while giving them occasionally varying names.

⁶As a methodological detail, I never introduce "technical" maps until well after "cognitive" maps have been developed. The distances and relationships schematized on a technical map only tend to confuse people until they have worked through the problem of compatibility themselves in an experiential way. This seems not to be true with aerial or satellite photography, to which people tend to relate rather quickly.

⁷The "nearest neighbor" method was not followed in two cases in the initial stages of documentation because the nearest neighbors were, at that time, hostile to the whole process and had not attended the 1993 workshop. As they began to understand what we were doing, they warmed to the idea and eventually invited the team to assist them in self-documentation.

⁸In my experience, tropical forest peoples typically relate perfectly to the hydraulic system in their domains and tend to locate hills and mountains with regard to where particular streams are "born." The main problems in getting detailed cognitive maps of a given stream system to agree with the national topographic projections is that the indigenous version is always more complex and contains streams that the topographic maps do not bother with. Nevertheless, these can generally be located by using the contours for logical course.

References Cited

- Arentz, Franz
1996 Forestry and Politics in Sarawak: The Experience of the Penan. *In* Resources, Nations, and Indigenous Peoples: Case Studies from Australasia, Melanesia, and the South Pacific. Richard Howitt, John Connell, and Philip Hirsch, eds. Pp. 202-210. New York: Oxford University Press.
- Bolton, Todd M.
1999 Facilitating Indigenous Management of a Conservation Area in Nicaragua: A Participatory Action Research Application. Master's thesis, Department of Anthropology, Idaho State University.
- Bryant, Raymond
1996 Asserting Sovereignty Through Natural Resource Use: Karen Forest Management on the Thai-Burmese Border. *In* Resources, Nations, and Indigenous Peoples: Case Studies from Australasia, Melanesia, and the South Pacific. Richard Howitt, John Connell, and Philip Hirsch, eds. Pp. 32-41. New York: Oxford University Press.
- Brody, Hugh
1988 Maps and Dreams: Indians and the British Columbia Frontier. Prospect Heights, Ill.: Waveland Press. (First published in 1981.)
- Carey, Mark
2000 Creating Remoteness: Geographical Obstacles and Indigenous Resistance in Nicaragua's Bosawas Nature Reserve. Paper presented at the American Society for Environmental History conference, Tacoma, Washington, March 16-19.
- Centro de Planificación Territorial Indígena (CPTI)
1996 Territorios Indígenas en Bolivia. Santa Cruz: Confederación de los Pueblos Indígenas de Bolivia. (Map)
- Chapin, Mac
1992 The Coexistence of Indigenous Peoples and the Natural Environment in Central America. National Geographic Society 8(2); Map supplement.
- Chirif, Alberto, P. Garcia, and R. C. Smith
1991 El Indígena Y Su Territorio Son Uno Solo: Estrategias para la Defensa de los Pueblos y Territorios Indígenas en la Cuenca Amazónica. Lima, Peru: Oxfam America/COICA.
- Christie, Patrick
1999 In a Country Without Forests No Life is Good: Participatory Action Research in the Neo-Liberal Context of Nicaragua. Ph.D. dissertation, University of Michigan.
- Craib, Raymond B.
2000 Cartography and Power in the Conquest and Creation of New Spain. *Latin American Research Review* 35:7-35.
- Conzemius, Eduard
1931 Ethnographical Survey of the Miskito and Sumu Indians of Honduras and Nicaragua. Smithsonian Institution, Bureau of American Ethnology, Bulletin 106. Washington, D.C.: U.S. Government Printing Office.
- Dogsé, Peter, and Bernd Von Droste
1990 Debt-for-Nature Exchanges and Biosphere Reserves: Experiences and Potential. MAP Digest 6. Paris: UNESCO.
- Herlihy, Peter, and Andrew Leake
1997 Participatory Research Mapping of Indigenous Lands in the Honduran Mosquitia. *In* Demographic Diversity and Change in the Central American Isthmus. Anne R. Pebley and Luis Rosero-Bixby, eds. Pp. 707-736. Santa Monica, Calif.: Rand Books.
- Merriam, Jennifer C.
1999 Community Wildlife Management by Mayangna Indians in the Bosawas Reserve, Nicaragua. Master's thesis, Departments of Anthropology and Biology, Idaho State University.
- Miller, Todd E.
1999 Supporting Indigenous Peoples' Collective Action: An Alternative Approach to Protected Area Planning in Nicaragua. Master's thesis, Latin American Studies and Community and Regional Planning, University of New Mexico.
- Moorehead, Alan
1960 The White Nile. New York: Harper.
- Nietschmann, Bernard
1973 Between Land and Water: The Subsistence Ecology of the Níkito Indians, Eastern Nicaragua. New York: Seminar Press.
- Orlove, Benjamin S.
1991 Mapping Reeds and Reading Maps: The Politics of Representation in Lake Titicaca. *American Ethnologist* 18:3-38.
- Poole, Peter
1989 Developing a Partnership of Indigenous Peoples, Conservationists, and Land Use Planners in Latin America. Washington, D.C.: Working Papers on Environment of the World Bank Latin America and the Caribbean Technical Department.

- 1995 Indigenous Peoples, Mapping and Biodiversity Conservation: An Analysis of Current Activities and Opportunities for Applying Geomatics Technologies. BSP Peoples and Forests Program Discussion Paper 1995. Washington, D.C.: Biodiversity Support Program.
- Redford, Kent
1991 The Ecologically Noble Savage. *Cultural Survival Quarterly* 15(4):46-68.
- Sjaastad, Espen, and Daniel W. Bromley
1997 Indigenous Land Rights in Sub-Saharan Africa: Appropriation, Security, and Investment Demand. *World Development* 25:549-562.
- Squier, E.G.
1989 Nicaragua: Sus Gentes y Paisajes. Luciano Cuadra, translator. Managua: Nueva Nicaragua. (Originally published in 1852 as *Nicaragua: Its People, Scenery, Monuments, and the Proposed Inter-oceanic Canal*. New York: Appleton and Company.)
- Stocks, Anthony
1983 Los Nativos Invisibles: Notas sobre la historia y realidad actual de los Cocamilla del Río Huallaga, Peru. Lima: Centro Amazónico de Antropología y Aplicación Práctica.
1996 The Bosawas Natural Resource Reserve and the Mayangna of Nicaragua. In *Traditional Peoples and Biodiversity Conservation in Large Tropical Landscapes*. Kent H. Redford and Jane A. Mansour, eds. Pp.1-31. America Verde Series of The Nature Conservancy. Covina, Calif.: Island Press.
1999 Iniciativas Forestales Indígenas en el Trópico Boliviano: Realidades y opciones. The BOLFOR Documento Técnico 78. Santa Cruz, Bolivia: Bolivian Forestry Project.
- Stocks, Anthony, Lilliam Jarquín, and Joel Beauvais
2000 El Activismo Ecológico Indígena en Nicaragua: Demarcación y legalización de tierras indígenas en Bosawas. *Wani* 25:6-21.
- Stone, Michael
1998 Map or Be Mapped. *Whole Earth* 94:54-55.
- Tabor, Joseph, and Charles Hutchinson
1994 Using Indigenous Knowledge, Remote Sensing and GIS for Sustainable Development. *Indigenous Knowledge and Development Monitor* 2(1):2-6.
- The Nature Conservancy (TNC)
1997a Mayangna sauni as: Tradición oral de la historia y estudio socioeconómico de las comunidades Mayangna de la cuenca del Waspuk. Managua, Nicaragua: Impresiones Modernas.
1997b Mayangna Sauni Bu: Documentación del reclamo histórico de las comunidades Mayangna de la cuenca del Río Bocay. Managua, Nicaragua: Impresiones Modernas.
1997c Sikilta: Historia y situación actual de los Mayangna Balna del Uliwas. Managua, Nicaragua: Impresiones Modernas.
1997d Kipla Sait Tasbaika: Tradición oral y estudio socioeconómico de las comunidades indígenas del sector raudales. Managua, Nicaragua: Impresiones Modernas.
1997e Miskitu Indian Tasbaika Kum: Historia y situación actual de las comunidades Miskitu del Alto Coco. Managua, Nicaragua: Impresiones Modernas.
1997f Población Mestiza en el Sur-oeste de la Reserva Bosawas: Estudio socioeconómico. Managua, Nicaragua: The Nature Conservancy. Manuscript copy. Author's files.
1999 Li Lamni Tasbaika Kum: Tradición oral, censo y estudio socioeconómico de las comunidades Miskitu y Sumu de la cuenca media del Río Coco. Managua, Nicaragua: BON Impresiones.
- Stocks, Anthony, and Joel Beauvais
2000 Indigenous Ecological Activism in Nicaragua: The Case of Bosawas. *Proceedings of the Rocky Mountain Chapter of the Latin American Studies Association*, 1998. John F. Schwaller, ed. Pp. 35-50. Las Cruces, N.M.: Rocky Mountain Council on Latin American Studies.