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MAPPING THE IZOZOG IN BOLIVIA: TESTING AN IMPROVED MODEL FOR ETHNOCARTOGRAPHY

In mid-1995, John Robinson, director of the international program of the Wildlife Conservation Society (WCS), approached Native Lands to discuss the possibility of carrying out a community mapping project in the Chaco of Bolivia. WCS had supported the mapping in Panama, and Robinson saw the utility of a similar process with the indigenous population of the area called the Izozog. When he called, WCS was working with Izoceño leaders, through the Capitanía de Alto y Bajo Izozog (CABI),³⁵ on negotiations with the Bolivian government to set up and manage a large protected area overlapping the eastern edge of the region. Native Lands had reviewed and analyzed the Honduran and Panamanian experiences and, while our analysis was by no means complete, we felt we knew enough to take a stab at another project. We were anxious to try out our improved yet still tentative model in the field, and the Izozog looked promising.

PHYSIOGRAPHIC OVERVIEW

The Izozog is a roughly 19,000 km² tract of land flanking the Parapití River on a north–south axis, located approximately 250 kilometers and 8 hours by 4-wheel-drive vehicle to the southeast of Santa Cruz de la Sierra, the capital of the department of Santa Cruz (see Figure 18). It is inhabited by more than 7,500 Izoceño Guaraní living in 22 communities evenly divided into Lower and Upper Izozog. Five communities are located on the eastern bank of the river, which flows east out of the Andes, hooks north, and runs past all of the Izoceño settlements before sinking into a seasonally flooded swampy depression called the Bañados del Izozog. The river holds water from roughly November/December through May/June, depending on the year, and has a sandy bed that is more than a kilometer wide in some places. The region takes its name from the Guaraní word *ĩ-oso-oso*, or “water that disappears.”

Izoceño territory occupies a small corner of the Chaco, an extensive alluvial plain covering approximately one million square kilometers that spans parts of Argentina, Paraguay, and Bolivia. The vegetation of the region is semiarid thorn

³⁵ The Captaincy of Upper and Lower Izozog.

forest interspersed with patches of desert to the east; in the northern reaches of the Izozog the Bañados holds more water year-round, allowing for more-luxuriant forest growth.³⁶ The Parapití is a solitary artery of water running through the center of Izoceño territory, without a network of tributary streams; transportation follows overland trails, on foot, by horse, or in motorized vehicle along paths and *brechas*, which are seismic exploration tracks that were laid down by petroleum companies in recent years and have marked the landscape with a dense, north/south–east/west grid pattern.³⁷ The Izoceños are the only indigenous group in the region that has established permanent communities along the Parapití and developed a system of irrigation for agriculture. Principal crops include maize, manioc, beans, and rice. Animal protein comes from hunting, livestock, and seasonal fishing.

IZOCEÑO SOCIAL ORGANIZATION

The Izozog is governed by CABI, a hierarchy with a Capitán Grande at the apex. Beneath him are a Capitán for the Upper and for the Lower Izozog, respectively, and below that there is a Capitán for each of the 22 communities of the region. Most of the Izozog is ethnically Guaraní; all of it is linguistically Guaraní. The

extreme northern and southern edges are marked by communities with a relatively high density of non-Indian mestizos. While these people are classified as non-Indians, they are recognized as Izoceños and are full members of CABI's political structure. For example, the Capitán of the Izoceño community of San Silvestre is a non-Indian.

The current Capitán Grande is Bonifacio Barrientos Cuéllar (known as Boni Chico), who took over from his father Bonifacio Barrientos Iyambae (Boni Grande) in 1984. CABI is accountable to the General Assembly, which is comprised of all adult Izoceños and is the maximum authority of the Izoceño people. CABI has two areas of influence. First, it has charge over internal affairs within the region: it arbitrates conflicts, provides the unifying structure for the communities, and generally assures the functioning of Izoceño society. Second, it serves as intermediary with the outside world to assure that the rights of the Izoceño people are respected and their needs met. The “outside world” has traditionally meant the national government; but recently it has come to include a number of international organizations, including companies interested in the region's resources and foreign agencies concerned with conservation and development issues.

36 Taber, A., A. Rojas R., G. Navarro, and M. A. Arribas. 1994. “Parque Nacional Area Natural de Manejo Integrado Kaa-Iya del Gran Chaco: Propuesta Técnica y Etnica.” *Informe Inédita*; CABI, Fundación Ivi-Iyambae, WCS.

37 In the absence of rivers, the people of the area orient themselves largely by means of these *brechas*. Some tracks have all but disappeared through disuse, others serve as trails, and a few are used by vehicles, but virtually all of them have been given names in Guaraní by the local inhabitants.

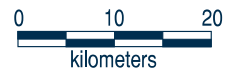
EL IZOZOG

SANTA CRUZ, BOLIVIA



PARQUE
NACIONAL
KAA-IYA

Límite del Parque Nacional Kaa-Iya



Map produced by Mary Lee Eggart, LSU Dept. of Geography & Anthropology, 2000
 Source: Mapa Comunitario del Izozog: Zonas de Subsistencia

Figure 18.

Over the years, CABI has been exceptionally successful in its dealings with outsiders. It secured legal title to the bulk of Izoceño territory as early as the 1940s. In the 1980s, it was one of the prime forces in founding the Centro Indígena del Oriente Boliviano (CIDOB), Bolivia's representative to the Coordinadora de Organizaciones Indígenas de la Cuenca Amazónica (COICA), and the Asamblea del Pueblo Guaraní (APG). And it managed in 1994 to have the Izozog designated under the newly enacted Law of Popular Participation as the first Indigenous Municipal District in the country.

KAA-IYA NATIONAL PARK AND THE NEED FOR RESOURCE PLANNING

In April 1995, the CABI established a permanent office in Santa Cruz to be able to maneuver more effectively in the political arena and take charge of its growing responsibilities. When

Robinson of WCS first approached Native Lands, the Bolivian government was on the verge of creating the Kaa-Iya del Gran Chaco National Park and Integrated Management Area, a 3.44 million hectare tract to the east of the Izozog and adjacent to the Paraguayan border.³⁸ Moreover, the government was actively planning to turn administration of the new protected area over to the Izoceños.³⁹ To prepare the way, Andrew Taber, WCS's representative in Bolivia, was working closely with CABI to develop a management plan and help structure an organization for administering the park.

Conservationists saw the protected area as a way to save the last relatively intact remnant of the Gran Chaco and its biodiversity. According to a WCS press release when the protected area was declared, Kaa-Iya Park is "...the largest terrestrial protected area in Tropical America, and is the most significant reserve in dry tropical forest anywhere, one of the world's most critically threatened habitats."⁴⁰ The

38 Kaa-Iya means "Spirit Masters of the Forest" in Guaraní.

39 In September 1995, the Kaa-Iya protected area was legally established by presidential decree, and in November 1995 an agreement was signed giving CABI administrative control over the area. The protected area includes a park of roughly 2 million hectares for strict preservation, and three segments, totaling 1.44 million hectares, for integrated management.

40 A CABI proposal for the protected area, in which WCS's hand can be detected, explains the biological importance of the region: "With twenty-one different habitat types identified it is remarkably diverse...With sixty-six species identified, and an estimated ten more present, it probably contains the highest diversity of non-flying mammals of any protected area in the Americas. Endangered and threatened species found here include: giant armadillo, giant anteater, jaguar, Chacoan night monkeys, the Chaco race of the guanaco, blind armadillos, and the Chacoan peccary. Of these, the latter three species are endemic to the Chaco and are not adequately protected in any other conservation area. Due to its large size this will be one of the few protected areas in the world to guarantee the maintenance of ecological processes." ("Spirits of the Chaco (Kaa-Iya del Gran Chaco) National Park and Integrated Management Area: Protected Area Proposal," CABI; undated six-page document).

Another view of the Chaco's importance comes from historian Bruce Farcau. In *The Chaco War: Bolivia and Paraguay, 1932–1935*, he calls the war "undeniably insane" and claims that it "was fought over one of the most worthless pieces of real estate in existence..."

Izoceños viewed the protected area as a strategy for defending their territory and natural resources from the rapidly increasing incursions of large agricultural enterprises, land speculators, and illegal hunters. These two perspectives share considerable overlap, and both have significant incentives to promote the protected area and take charge of its administration.

Yet a “management plan” is an abstract concept for people who have never consciously managed the wildlife they hunt. It is often difficult to convince them of the necessity for doing what has never been done in the past.

Robinson and Taber saw mapping as a way to guide Izoceños into that unfamiliar territory by engaging both their leadership and communities in a participatory analysis of subsistence patterns, particularly hunting. It would mobilize maximum community involvement, stretched over approximately three months, to produce a concrete result that people could see with their own eyes and hold in their own hands. It would train the Izoceños in the techniques for putting together, interpreting, and using maps, and create an invaluable base of information for any sort of future planning.

ENTER NATIVE LANDS

Native Lands was interested in working in this region for several reasons. First, both Chapin and González had visited the Izozog; they knew the CABI leaders, and there was good feeling on both sides. Second, the issue at stake — indigenous peoples managing a protected area — is one that Native



Lands has been dedicated to in Central America. And finally, we wanted to see how our ideas for improving the mapping strategy developed in Honduras and Panama would function in a different environment.

In November 1995, Chapin traveled to Santa Cruz to talk with Taber and CABI leaders about the mapping. This was an exploratory visit to explain the process, sound out interest among the Izoceños, and check on the feasibility of work in the Chaco. In informal sessions at the CABI office, Chapin summarized the experiences in Honduras and Panama, showing a variety of maps, and this sparked an animated discussion of the objectives, benefits, and implications of mapping.

GROUND PREPARATION AND ORGANIZATION OF THE TEAM

Several days later Chapin journeyed to the Izozog with a small group, including Taber and Marcelino Apurani, an

Figure 19. An aerial view of the Izozog.



Figure 20. A community meeting in the Izozog.

Izoceño leader working with CABI in Santa Cruz. Traveling in a small Suzuki Samurai that belonged to WCS, Chapin and Apurani spent the next 10 days visiting 15 of the 22 Izoceño communities and giving two- to three-hour presentations, including time for questions and comments.⁴¹ These meetings were facilitated by the relative closeness and accessibility of the communities, and the use of shortwave radios that CABI had installed only that month.

Presentations were attended by an average of 35 to 40 people, and covered the practical value of maps, the sequence of the mapping as it had unfolded in Honduras and Panama, and how maps might be used in the Izozog. Chapin gave the initial briefings in Spanish, and Apurani interpreted in Guaraní. Although most of the audience understood Spanish perfectly well, their interest — and confidence — in the message was much higher when they heard it in Guaraní from one of their own people. In the first few communities, Apurani made

a strict, word-for-word interpretation of Chapin's talk; however, he soon caught hold of the implications for the region and began enriching his interpretation to tie the strategy directly to matters in the Izozog.

At the time of this visit, there were virtually no maps of the Izozog in the communities, and none with any useful detail. In the central community of La Brecha (Guirayoasa), the CABI office had two maps tacked to a wall. One was an old government map of the southern section of the department of Santa Cruz, on which the Izozog comprised about 10 centimeters running along the river in the lower left-hand corner. Less than a third of the communities appeared, and most of the names were spelled wrong or misplaced. The other map was a schematic representation of the communities that an Izoceño had penciled by hand on a piece of lined notebook paper.

The notion that the Izoceños themselves, with outside assistance, would put together detailed maps of their territory was attractive from the start. Throughout the region people were unanimously enthusiastic, and we spent considerable time in the communities discussing how the project should be structured. By the time we left the Izozog, all of the Surveyors had been selected for the work.

On returning to Santa Cruz, Chapin worked with CABI leaders to put the

⁴¹ It was the dry season and we were able to cross the sand bed of the Parapití River to visit communities on the other side.

project proposal together. The same general sequence of three workshops interspersed with two field visits was kept, with certain modifications. The number of communities was smaller. Compared to the 174 and 82 in the project areas of Honduras and Panama, respectively, there were only 22 in Bolivia. This allowed each community to select its own Surveyor, which gave us far better coverage of the region. While Native lands took charge of overall project supervision, the administration and on-the-ground management of field activities were handled within CABI. There was no need for a non-Indian intermediary. CABI's role was more clear-cut than that of the indigenous groups in Honduras and Panama, for the Izozog is a single cohesive ethnic and political region.

Funding: Funds to cover the entire project, \$142,000, were secured in January 1996 through the Peoples & Forests component of the Biodiversity Support Program.⁴² Peoples & Forests had a strong interest in participatory mapping of indigenous territories, and we knew some money might be available. However we were pleasantly surprised when informed that full funding was available because a previously approved project had fallen through, freeing up money. This windfall allowed us to focus our attention entirely on program activities.

Logistical Support: In March, Chapin and González spent two weeks with CABI in Santa Cruz visiting government offices, putting together the project team, and making logistical arrangements for the workshops. Together with Bonifacio Barrientos, Evelio Arambiza, Susano Padilla, and others,⁴³ we went to the offices of the Ministry of Sustainable Development, the Military Geographical Institute (IGM), the Prefectura of Santa Cruz,⁴⁴ and the House of Representatives, where we met with one of the representatives. In all of these meetings we explained the mapping in detail and asked for collaboration.

CABI appointed Arambiza as Director of the mapping project. Elva Magali Solis, a non-Izoceño, was hired as Administrator for CABI — to handle the mapping project as well as other activities of the Capitanía. CABI selected three Izoceños as project Coordinators: Walter Ayala, Marcelino Apurani, and Justo Yandura, who was also the project's Guaraní linguist.⁴⁵

We went to the IGM in Santa Cruz and asked for assistance in the form of cartographers and materials (base maps, air photos), but unlike Honduras and Panama, we failed to pry anything loose. The main difficulty stemmed from the fact that IGM headquarters is in La Paz, and the

⁴² This component was later changed to Peoples, Forests, & Reefs (PeFoR).

⁴³ At the time, Arambiza was head of the Fundación Ivi-Iyambae, which is the technical wing of CABI; Padilla was the Capitán of Lower Izozog.

⁴⁴ The Prefectura is the central government office of the department of Santa Cruz.

⁴⁵ Yandura's task was to regularize the spelling of Guaraní words on the map and check on their correctness.

Santa Cruz branch has virtually no autonomy and no resources. An offer was made to send a cartographer our way, but nothing ever came of it. We were told that no competent cartographers were to be found in Santa Cruz, and indeed the “cartographers” who turned up for interviews were in reality something else, such as topographers or soil scientists. After several interviews we settled on Jorge Castellote, a Catalán from Barcelona, Spain, who had been living in Santa Cruz since the beginning of the year. His formal training was in anthropology, but he had traveled widely and picked up a good deal of cartography along the way. He brought to our interview a detailed, carefully rendered map he had been working on of the indigenous areas of Santa Cruz Department. We discussed the mapping, checked his technical skills (which were excellent), vetted him with the CABI leadership, and hired him to work with González.

We managed to secure a few government base maps in their original state from the Agencia de Cooperación Alemana (GTZ), which had been running a comprehensive social development program in the area; the set had to be completed with photocopies. Aerial photographs were practically out of the question. The IGM office in Santa Cruz had nothing, and all that could be found in the Cooperación Alemana office were some worthless marked-up prints of the region from the 1960s and 1970s. If anything more recent existed, we were unable to find it.

The final task was to find a site for the second and third workshops. We were seeking a place that would (1) house up to 50 people comfortably; (2) have adequate facilities for the cartographic work (space, electricity); (3) be isolated from Santa Cruz (to minimize distractions) yet within relatively easy reach (to facilitate access to materials, information, and people); and (4) stay within our limited budget. We were fortunate to find a place that fit the bill perfectly: Cabañas Campeche, an inn/conference center in Samaipata, a colonial town located in the mountains two hours west of Santa Cruz.

Setting the Schedule: The timetable of activities was laid out as follows:

First Workshop	May 6–12
First Fieldwork Period	May 13–26
Second Workshop	May 28–June 16
Second Fieldwork Period	June 17–July 7
Third Workshop	July 9–21

At this point, we left Bolivia, placing all of the project arrangements in CABI’s hands. Castellote hired two assistant cartographers/draftsmen, Samuel Padilla and Alfredo Callaú, and together they gathered together all of the equipment and materials they would need for the mapping. The Coordinators took charge of notifying the Surveyors and the communities that the project would begin with the first workshop on May 6. On April 28, they journeyed to the Izozog to make arrangements for food and lodging, reserve space for the work-

shop, discuss the mapping project with the Capitanes, and make contact with all of the Surveyors.⁴⁶

THE FIRST WORKSHOP

Early in May, Chapin and González returned to Bolivia and coordinated with the Izoceño leadership and Castellote to run the First Workshop in the community of Guirayoasa, in the Izozog. All of the arrangements had been made. The workshop was attended by Boni Chico (the Capitán Grande) and a small group of Izoceño leaders, who introduced the proceedings by underlining the importance of the effort;⁴⁷ Project Director Evelio Arambiza, who oversaw the entire workshop and helped with interpretation; the three Coordinators; the 22 Surveyors, all men with an average age of 32 years; three park guards; and three Indians from the Beni region of northern Bolivia who were to participate in the entire project from start to finish;⁴⁸ and Andrew Noss of WCS, who was working with the Izoceños on surveys of wildlife.

For five days, Castellote, González, and Chapin led the workshop through a series of activities, including devel-

opment of a detailed land use questionnaire,⁴⁹ discussion of how to keep field notebooks, techniques for drawing community maps, and how to conduct a population census of the region. As they got a feel for the material, the Coordinators became more involved in the presentations. The structure of the project, from first to last stage, was explained in detail. Discussions touched on what maps are, how they are assembled and interpreted, and what their uses are. The presentations also zeroed in on basic mapping concepts such as scale, what sorts of information to include and exclude, and how to gather information in the communities. There was time to practice new skills and hone them through critical analysis. All the formal proceedings were in Spanish, with interpretation into Guaraní by the Coordinators and the Arambiza.

In contrast to the workshop in Panama, which lasted a mere two and one-half days and did not deal with technical skills, the five days in the Izozog gave everyone time to chew over the different concepts and digest them. This was facilitated by considerable give and take. Some of the Surveyors said that the first few

46 *The food was prepared by the Izoceño women's organization, La Casa de la Mujer, and served in their building; lodging was secured with the local boarding school and the hospital; and the meeting hall for the workshop sessions was part of the boarding school.*

47 *They all spoke of the mapping as a powerful weapon to defend their lands. Nothing was said about the need to develop a management plan.*

48 *Juan Fabricano and David Bogado are Mojeños; and Severiano Maten is Chimán. They were brought into the project by CIDOB Director Marcial Fabricano to learn the mapping process on the ground for eventual application in their territory. After their work on the Izozog project, they wrote a detailed, coherent proposal for a similar undertaking in the Beni.*

49 *Subsistence categories were agriculture, fishing, hunting, livestock, fruit, medicinal plants, and construction materials. Note that livestock, a major activity in the Izozog, is nonexistent among the indigenous population of the Darién and insignificant in the Mosquitia (to the point where it was not placed on the maps).*

days were confusing, with the barrage of new information coming from all sides. They were unaccustomed to the “schoolroom atmosphere” and had trouble concentrating, so we shifted gears to make training more interactive. The Surveyors drew practice maps and judged them as a group; they broke into teams and applied the questionnaire in the community, then returned to figure out what had worked well and what could be done better.

After five days some Surveyors were still confused, but most had their bearings and a good sense of what kinds of information had to be gathered in the communities and how to go about getting it. This emphasis on providing Surveyors with technical skills for putting together their community maps was a significant advance from the workshops in Honduras and Panama.

FIRST FIELDWORK PERIOD

When the workshop closed, each Surveyor received materials for the first fieldwork period: sheets of paper for the maps, colored pencils, a plastic folder with the questionnaire, notebooks, and plastic tubes to carry the maps. Then they set out for their communities to spend two weeks gathering information. The cartographic team began moving its materials and equipment to the facilities in Samaipata to prepare for the second workshop.

Data gathering proved to be relatively easy because of the preparatory work

done in the communities in November 1995, and in the months before the mapping began, and because of CABI’s unqualified endorsement. It was understood by everyone to be a CABI project. Villagers throughout the region knew that they were going to do their own map and whose property it would be. As one Surveyor put it, “they were excited because finally we were going to have our own map.” In most cases, the Surveyors met with their respective Capitanes immediately after returning home, explained what had happened in the workshop, and laid out the tasks to be completed. The Capitán then called the community together so the Surveyor could tell everyone about the first workshop and explain what the project objectives were and how information had to be pulled together. At this point, people knowledgeable about the region and its resources were assigned to the Surveyor, and together they began working on the map and filling in the questionnaire. A number of teams traveled on horseback to check out some of the more distant areas.

Some women participated directly — providing particularly useful information on medicinal plants — but most informants were older men who knew the bush and had traveled widely throughout the region. All of the advisors were hunters, an activity that regularly took them far into the forest. In one community, the Capitán admitted: “Women don’t know anything about the bush; all they know is the kitchen.” Yet women generally took a strong interest in the project and

made up the majority of those present in several community meetings.

If things went smoother than in Honduras and Panama, it doesn't mean that there were no problems. The fieldwork coincided with the cotton harvest, and many of the men from several communities at the tail end of the Upper Izozog were absent. Fortunately this was not fatal since elders were there who had considerable knowledge of the region and its resources. In one case, though, the Capitán himself was off harvesting cotton. This confused matters until the Surveyor managed to find others in his community ready to help. Some Surveyors were shy and at a loss as to how to begin; a couple of them didn't understand the process well enough after the first workshop and couldn't explain what they wanted to do; one had a chunk of his carefully drawn map eaten by goats. Several communities were apathetic about the project; and one community, from Lower Izozog, had no interest in participat-

ing and didn't even send a Surveyor to the first workshop.⁵⁰

In these cases the Coordinators visited to help out. The Coordinators didn't wait for cries of distress. They journeyed from community to community, explaining the project to Surveyors who didn't have it clear in their heads, commenting on their work, helping them with their maps, and using their political status as CABI representatives to put recalcitrant community leaders in a more collaborative frame of mind (with the Capitán on board there was no difficulty gathering data).

The Surveyors themselves, by their numbers and proximity, were also able to lend one another a helping hand. This sometimes proved to be crucial. Most communities in the Izozog are situated in clusters, with a natural kinship stemming from common origins, and the territory they use for subsistence is essentially common ground.⁵¹ As we had the luxury of posting one Surveyor to each community, there

50 *The community of Aguaraiagua historically has never been a strong member of CABI and has always stressed its independence from the other communities of the Izozog. According to a CABI leader, its people have been heavily influenced by Evangelicals, and "reject the traditional culture of the Izozog." A Surveyor was provided by the nearby community of Yobi, and he worked with several "advisors" from Aguaraiagua, as well as with his own people. This situation was somewhat awkward, but in the end it focused attention on both the community's natural resources and its separatism, causing CABI to confront the problem directly. After the second workshop, Boni Chico and several Capitanes went to Aguaraiagua for several days of meetings in an attempt to bring it back into the fold.*

51 *The Surveyors made these cluster connections explicit during the second workshop so they could work together systematically during the final fieldwork period. The clusters were:*

- *Koopere Loma, Koopere Brecha, Koopere Montenegro, Koopere Guasu, and Kapeatindi*
- *Yande Yari, Kuarirenda, Aguarati, and Paraboca*
- *Koropo, Yobi, Aguaraiagua, and Rancho Viejo*
- *Tamachindi, La Brecha, Ibasiriri, and Yapiroa*
- *Isiporenda and Karapari*
- *Rancho Nuevo, San Silvestre, and Puerto Yuki*

The communities in each cluster are all close to one another and easy to reach; the Kooperes, for example, are strung out in a line with less than a kilometer separating them.

was ample opportunity for them to exchange and discuss information about resource distribution and the location and names of physical features, and to critique each others' maps. They also provided one another with invaluable moral support. The more knowledgeable Surveyors helped out those who were confused or for one reason or another were having difficulties pulling information together.

THE SECOND WORKSHOP

All the Surveyors, the Coordinators, Arambiza, and assorted Izoceño elders journeyed to Santa Cruz on the 25th of May and arrived at Samaipata, the site of the Second Workshop, the following evening. The cartographic team had come several days earlier to set up its drafting tables and assemble its equipment and materials.

Arambiza and Apurani set the tone for the workshop with an inaugural discussion of objectives for the mapping. In descending order of priority, these were (1) the defense of Izoceño territory; (2) education in the schools, and for the Izoceño population in general, about traditional knowledge, history, and linguistics; (3) the gathering of dispersed knowledge about the land and its natural resources; (4) development of a model for community mapping in other indigenous communities of Bolivia; and (5) compilation of information for the natural resource project (supported by WCS).

Over the next few days the Coordinators held group sessions with the Surveyors when they were not

involved with the Cartographers. They discussed their fieldwork in the communities, going over problems and strategies and, most importantly, sharing anecdotes and forming a strong bond through their collective experience. It was generally felt that the leadership of CABI should have visited Samaipata more frequently to participate more fully in these sessions and give moral support to the Surveyors. While participants understood that leaders were often busy with political negotiations and meetings, it was felt that a greater effort could have been made to accompany the process. Beyond this, considerable benefit could have been gained by bringing in speakers to discuss park management and wildlife issues. Although this possibility was raised during the planning stages of the project, it was not realized. Most of the time was passed between the Surveyors and the Coordinators.

At the same time, there was an atmosphere of enthusiasm and openness throughout, and everyone on the project team had the sense of being involved in a fascinating and important enterprise. Unlike Panama, there was no worry over funding, no pressures on time, no conflicts among organizations or ethnic groups or individuals about who was running what, and no confusions about project hierarchy or decision-making.

The cartographic team fit easily within this structure and functioned as a close-knit group. As soon as the Surveyors arrived in Samaipata, Castellote and González gathered

together the packets of information that had been brought in — the hand-drawn maps, the questionnaires, the notebooks, and the census forms. They reviewed these carefully, assigning each Surveyor a code to keep materials organized, and evaluated the quality of raw material available. Then the two held a meeting with the Surveyors and the Coordinators to discuss the workshop structure. Work hours were established from 8 A.M. to 6 P.M., with regular breaks for coffee and snacks and meals.

During the first interview, Castellote and González listened to each Surveyor talk about his fieldwork experience: how information had been gathered, what the dynamic was in the community, how the maps were drawn, what difficulties had been faced, and so forth. They went over each map and questionnaire point by point, having the Surveyor explain the meaning of every cartographic detail, the names and locations of brechas, cattle ranches, hills, trails, etc., examining them from every possible angle. With precise questioning of this sort it was possible to judge the reliability and coherence of the Surveyors' knowledge. The quality of the maps and the questionnaires varied, as did the Surveyors. Yet close inspection sometimes revealed more than met the eye. One Surveyor, for instance, brought in a map and questionnaire that were virtually blank; yet when questioned, he poured forth a wealth of excellent information. In a few cases, both the materials and the Surveyors were equally poor.



Figure 21. Two Surveyors work with Cartographer Nicanor González (center) during the second workshop.

As the questioning moved forward, Castellote and González began to use the common fund of knowledge from neighboring Surveyors by working with as many as four or five simultaneously, in what amounted to group sessions. This strategy, which was absent in Honduras and Panama, brought forth a richer store of information and helped resolve varying accounts. By identifying and relying on those who knew the region well, it also helped fill in data gaps from some areas studied by ineffective Surveyors. Three Surveyors — Eduardo Sánchez from San Silvestre, Gelmo Valdivieso from Aguarati, and Florencio Mendoza (Kori) from Kuarirenda — were particularly adept. They had excellent, detailed information, clearly understood the project and its objectives, and rapidly grasped the cartographic concepts being used. González and Castellote recruited them to help during the sessions with the other Surveyors, assisting them to “cartographically walk through the landscape” and uncover information. Beyond their skills as “paracartographers,” they could explain things to their colleagues in Guaraní — something neither González nor Castellote

could do — and break through the cultural barriers.

González and Castellote drew four new 1:50,000 maps based on the IGM base maps and began filling in the details, constantly comparing the IGM information with data coming in from the Surveyors. In the far north, the first map covered Yande Yari and the Bañados del Izozog, a region without communities. Moving south, the second map had three communities (Kuarirenda, Paraboca, and Aguarati). The third map, covering the most populous area of the Izozog, held 16 communities (San Silvestre, Koropo, Yuki, Yobi, Aguaraigua, Rancho Viejo, Rancho Nuevo, Tamachindi, Guirayoasa, Ibasiriri, Yapiroa, Kapeatindi, Koopere Loma, Koopere Brecha, Koopere Montenegro, and Koopere Guasu). The fourth map, at the southern end, had two communities (Karapari and Isiporenda).

The cartographers used pencils to draw in the brechas, matching them with the IGM coordinates, as well as communities, variations in the river's course, cattle ranches, and hills. When the first drafts were finished, they were passed to the two draftsmen, who made clean copies in ink. During this phase, unlike Panama where the draftsmen labored in isolation unless they wanted to clarify a detail, the Surveyors were present to oversee and verify what was being included in the depiction of the territory for which they were responsible. When these drafts were completed, González and Castellote reviewed them with the Surveyors, double-

checking the details, noting knowledge gaps to be filled in during the second fieldwork period, and adding new information that had escaped previous questioning. In the evenings, groups of Surveyors reviewed the drafts by themselves, taking special note of the spelling of place names (the cartographers had trouble with Guaraní names); then they would discuss their observations with the cartographers the following morning.

The largest gap was in the north, in the region called Yande Yari. This uninhabited zone in the Bañados del Izozog is a swampy area that is seasonally inundated. It is flush with game and contains segments of the river that retain water year-round, making it a prime subsistence area for hunters and fishermen from communities throughout the Izozog. The Surveyor initially assigned to this region was from the community of Yobi. He had been chosen because he was part of an ill-fated attempt to colonize the region the year before, and had, it was thought, more experience there than most. Unfortunately, he was 54 years old, had difficulty understanding the mapping project, and had, as it turned out, only a limited knowledge of the area. Most of his previous time in Yande Yari had apparently been spent at the base camp rather than out combing the bush.

He attempted to draw a map but became terribly confused, and in the end several Surveyors who had experience hunting in the area stepped in to help. Sánchez, Valdivieso, and Mendoza, who live in communities

near Yande Yari, spent considerable time on this part of the map in the second and third workshops, and accompanied the two draftsmen, Padilla and Callaú, on a horseback journey through the region during a field period. A later overflight brought in more information, but despite all of this work, Yande Yari remains the most imprecise piece of the map. What is shown is a relatively good “approximation” of the region.

The technical team and the Coordinators agreed to travel with the Surveyors during their time back in the communities to verify names and places, gauge distances between a variety of locations, and fix coordinates throughout the region using the Global Positioning System (GPS).⁵² Plans were also made for the aforementioned flight over Yande Yari to take some photographs.

The atmosphere surrounding the second workshop was relaxed and friendly, with considerable interaction among Surveyors, Coordinators, and members of the technical staff. The Surveyors moved in and out of the mapping room without restriction, congregated in groups to see how different areas were being mapped, and asked questions about technical matters such as scale, the representation of distances, coordinates, and the use of a field compass. A number of Surveyors spent days in a side room copying maps of the Kaa-Iya National Park and Integrated Management Area

that they had gotten, using equipment from the project. Often in the afternoons, when energy levels dipped, the Surveyors and Cartographers played cards and swapped stories. On weekends they barbecued meat together, strolled through the center of Samaipata, or played soccer. Interpersonal relations were respectful, cordial, and relaxed throughout. This allowed the process to unfold smoothly, and the data gathered were richer as a consequence.

THE SECOND FIELDWORK PERIOD

When the second workshop ended, the Surveyors returned to the field for a period of three and a half weeks. They carried along the draft maps to fill in gaps and correct errors with community members. Beyond this “technical” work, the return of the Surveyors with maps in hand was clear proof that the project was being carried out for the communities and were their property. As a result, more villagers became interested in providing information. For their part, the Surveyors were now armed with a thorough understanding of what the mapping project involved, how the maps were being put together, and what the overall objectives were. Those who had been confused at the outset and had been unable to gather much useful information were now able to carry out their tasks more competently. The Coordinators helped out where Surveyors had experienced

⁵² GPS is a navigation system that uses satellites to transmit signals to receivers, often hand-held devices, on the Earth. The receivers pinpoint a user's location on the Earth with great precision.

difficulties during the first fieldwork period, and a more uniform level of collaboration was achieved.

The technical team encouraged the Surveyors to work systematically in small teams. As previously noted, this essentially institutionalized relationships that had formed haphazardly during the first fieldwork period, when a number of the Surveyors had met on their own to discuss their maps. This was impossible in Honduras and Panama, where the lack of time (the second fieldwork period in the Darién lasted only six days), the large number of communities per Surveyor, and the sometimes formidable distances between communities precluded collaboration in the field. In Bolivia, not only were the data richer and more reliable, but the Surveyors experienced a sense of solidarity from their collective work that was absent in the earlier projects.

The two draftsmen, Padilla and Callaú, spent two weeks visiting the communities to check the exact location of strategic points with a GPS receiver and take compass readings. Working with Sánchez, Valdivieso, and Mendoza, they pinpointed communities, islands in the river, cattle farms, brechas, hills, even abandoned air strips. This made it possible to update the government maps, produced in 1976, and correct a number of errors. For example Yapiroa and Rancho Viejo had recently moved to the other side of the Parapití River.

Meanwhile Castellote and Alejandro Zarzycki, of the Cooperación

Alemana, made an overflight of Yande Yari and the area to the north and took photographs. Unfortunately, the film proved to be of scant value. The Bañados during this season is a largely uniform patch of green, with few land features visible.

THE THIRD WORKSHOP

The third workshop, which took place July 8–18 (including travel time), also met in Samaipata. Again the work went smoothly — so smoothly, in fact, that it was completed in just over a week instead of the 15 days that had been programmed. During the fieldwork period the idea had surfaced of inviting a group of elders from the Izozog to the final workshop, and when the time came, 11 of them showed up. The Cartographers had pretty much finished their work when the elders arrived. Together with the Surveyors and Justo Yandura, who doubled as Coordinator and CABI linguist, the elders spent two days poring over the maps, checking the location of points, and proofreading the linguistic information. During this time, the cartographers usually were absent, allowing the group to take over the maps, make whatever linguistic changes they felt necessary, and comment on the location of physical features. Two factors were at play. First, since all the Izoceños were speaking in Guaraní, the cartographers did not want their presence to break the flow of conversation. Second, the unimpeded creative work conferred a greater sense of ownership of the maps. This in turn grew into a lengthy history lesson that continued

on in group sessions that several times lasted into the small hours of the morning. It brought the young men and the elders together in substantive discussion for the first time that anyone could remember, and was judged to be a tremendous success by all. The sessions with elders were taped and later transcribed for future use in the schools.⁵³

When the Third Workshop drew to a close, the Surveyors returned to their communities. The cartographic team gathered up all the maps and materials and transferred them to the CABI office in Santa Cruz, where they discussed what types of maps should be printed, in what format, and using what symbolism. It was decided that there would be a single 1:250,000 overview of the entire region showing principal physical features and land use patterns; and four 1:75,000 maps of zones within the regional map showing physical features and land use in greater detail. A variety of symbols (such as fish, animals, plants) were selected to depict land use.

In August, Castellote, Padilla, and Callaú spent two weeks in the Izozog checking additional locations. They started in the south and worked their way along the Parapiti River to the north, finally going into the Yande Yari region on horseback with Sánchez, Valdivieso, and Mendoza. On returning to Santa Cruz, they incorporated this additional information into the maps.

CABI had wanted to have the IGM print the maps since the official seal of the Institute would give the maps both technical and political validity. This, however, did not happen. The IGM was difficult to deal with; diplomatic channels with the military were tough-going, the bureaucracy involved was labyrinthine, and on top of all this the IGM demanded \$12,000 for the job — an exorbitant fee. Instead, CABI had the maps printed through a private company for \$3,200. To provide some semblance of official recognition, “Visto Bueno de La Prefectura del Departamento, Santa Cruz” is written in the lower right-hand corner of the regional map (see bound map following page 152).⁵⁴

⁵³ Much of this was later used as raw material for a book about the history of the region: Arakae: Historia de las Comunidades Izoceñas. Santa Cruz: Capitanía de Alto y Bajo Izozog (CABI), 1999.

⁵⁴ “With the Approval of the Governorship of the Department of Santa Cruz.”