



Working toward an

INTEGRAL MONITORING

for Cordillera Azul National Park
and its buffer zone

Tatiana Pequeño S.



To the residents of Cordillera Azul National Park's buffer zone that with great effort reinforce everyday a clear and sincere commitment with the conservation of our natural heritage.

FOREWORDS

The motivation for designing strong ecological monitoring programs in the service of conservation may never have been higher than it is today. Yet too many monitoring programs continue to run aground before they even start. Often the monitoring is so complex that it takes away much-needed resources—money, staff, time—from the execution of the program to be monitored. And too often analysis of the monitoring data is much too slow for the information to feed back into timely decision making and course-correction, which defeats the purpose for monitoring.

Conceptual confusion is a major impediment. Research, inventory, and monitoring are often thought of interchangeably. Yet there is an enormous difference between knowing what is being protected (inventory), understanding the ecological processes and cause-effect links (research), and being able to track progress toward conservation goals (monitoring).

In the tropics, we also face a scope and scale of monitoring that can feel overwhelming. Some protected areas are very large and complex. Biological richness is stunningly high. And our knowledge of ecological processes is often meager. Meanwhile, human pressures on the landscape are heavy, and funds and staff are scarce.

Conceptual confusion and real-world stresses lead to a wide range of unproductive reactions. These include an indiscriminate hunger for data, substitution of research and inventory for monitoring, scattershot approaches, the search for proxies, and the tendency to skip goal setting in favor of "high-tech" methods.

Our goal with the "Index for Conservation Compatibility" (ICC) is to provide a quick, visual, and relatively simple tool that measures success or failure of defined management goals. The system is based on georeferenced information gathered in the field and synthesized immediately in the form of maps. We developed the ICC as a collaboration among CIMA, The Field Museum, and the U.S. Agency for International Development.

As Tatiana Pequeño explains elegantly in this booklet, the ICC is a composite measure of cultural assets, quality of human life, and threats to cultural and biological diversity. Importantly, it encompasses both operational (on the ground) and institutional measures. The index has six levels, each denoting an incremental state of conservation success and providing a recipe for reaching the next level. Holding the ICC together is a system of information management that allows us to scale across geography and across levels of organization. The CIMA team continues to test, adjust, and improve the ICC model in Cordillera Azul National Park, in central Peru. The ICC model is simple, straightforward, and should be readily applicable and useful worldwide.

Debra Moskovits



This document has been published thanks to:



The experiences shown on this document were able thanks to:



Systematization and Texts:
Tatiana Pequeño S.

General Edition:
Kjeld Nielsen M.

Technical Support:
Debra K. Moskovits
Jorge Luis Martínez R.
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Design and Diagramming:
Mario Panduro R.

Translation:
Oscar Melendez R.

INDEX

INTRODUCTION	8
CHAPTER I: CIMA AND THE CORDILLERA AZUL NATIONAL PARK	14
I.1 CIMA AT CORDILLERA AZUL	14
I.2. PROTECTION OF CORDILLERA AZUL NATIONAL PARK	14
CHAPTER II: MONITORING SYSTEM IN CORDILLERA AZUL	20
II.1 MONITORING AND CONSERVATION IN CORDILLERA AZUL	20
II.2 BIOLOGICAL DIVERSITY AND ENVIRONMENTAL MONITORING	22
II.3 THREATS AND OPPORTUNITIES MONITORING	34
II.4 MONITORING OF ACTIVITIES	42
CHAPTER III: INDEX OF CONSERVATION COMPATIBILITY (ICC): AND	46
INTEGRAL TOOL	49
III.1 EVOLUTION OF THE ICC METHODOLOGY	51
III.2 ICC CALCULATION	69
III.3 ADVANTAGES OF USING ICC	71
CHAPTER IV: LESSONS LEARNED	76
References	78
CHRONICAL: Monitoring at Cordillera Azul	76

INTRODUCTION

A part of the biological diversity of Peru is preserved in each of our Natural Protected Areas (NPA). Such as unique ecosystems, communities, endemic or threatened species, genetic banks, etc. For this reason, the NPA represent, undoubtedly, the most important strategy for in situ conservation of biodiversity.

However, effective conservation of biologic diversity requires much more than knowing its components (flora and fauna). It is important to understand the dynamics of such ecosystems, in other words, how and why they change over time and space and if such changes are caused naturally or by human activities.

The main function of the National System of Natural Protected Areas (Sistema Nacional de Áreas Naturales Protegidas por el Estado - SINANPE) is to preserve biodiversity in our country by protecting natural resources from its non compatible with conservation uses. Therefore, the changes occurring inside these areas are expected to be due to natural causes.

“Effective conservation of biologic diversity requires much more than knowing its components (flora and fauna); it is important to understand the dynamics of such ecosystems”

“The information and monitoring system is considered by The National Strategy for Natural Protected Areas (Master Plan, 1999) as an essential element for identifying needs, enriching the planning, decision making and the management evaluation of SINANPE with real and objective data”

However, many NPA have to face strong threats due to the intense human activity developed in the buffer zone or even inside the NPA.

The information and monitoring system is considered by The National Strategy for Natural Protected Areas (Master Plan, 1999) as an essential element for identifying needs. It is also important for enriching the planning, decision making and the management evaluation of SINANPE with real and objective data. Such strategic document reveals the need to establish monitoring programs that keep negative impacts to the minimum; specifying the existence and quality of the conservation objects through inventories and comparing such inventories with the initial condition in the NPA as well as with its nearby areas.

There is a difference among 'knowing what we got in a NPA', 'get to understand how a group of ecosystems that a NPA is conserving- change and work', and 'get to know the system in order to improve its management'. In other words, it is important to make a difference among 'making an inventory', 'carrying out a follow-up' and 'carrying out a monitoring'

Therefore, the challenge of an effective monitoring is not only about focusing on compiling knowledge, but also about knowing how to use it and apply it to improve the management, to be communicated and spread then.

Monitoring in Cordillera Azul

The objective of CIMA (Centro de Conservación, Investigación y Manejo de Áreas Naturales) is to support the National Institute of Natural Resources (Instituto Nacional de Recursos Naturales - INRENA) to manage the Cordillera Azul National Park (Parque Nacional Cordillera Azul-PNCAZ) and reduce the threats to its conservation objects. A monitoring system has been created to verify how these objectives are being accomplished. Such system is based on: (1) the evaluation of the conservation conditions of the park's values, (2) an accurate follow-up of the park's threats and (3) the activities introduced in the park and its buffer zone to reduce threats.

CIMA have worked in favor of PNCAZ's conservation since 2002, with a strategy based on protection activities with Parkguards and communal vigilance, environmental education, zoning and promoting sustainable practices to local residents. Nevertheless, despite the big effort and dedication, the results obtained in these activities - which were presented separately - did not show effectively the

achievements reached. Moreover, such results did not help to develop global goals in which results and advances could be measured toward the park's conservation. As a result of this, The United States Agency for International Development (USAID), the main financing source of this program, requested the development of a monitoring plan in November 2003 so as to evaluate the progress toward the fulfillment of the objectives.

Index for Conservation Compatibility (Índice de Compatibilidad con la Conservación - ICC) as a useful and innovative tool

There was an urgent need of a monitoring system for the management that shows results in an integrated way. As a result of this, CIMA reorganized the way of presenting the progress about its activities, with the help of USAID staff and technical support of The Field Museum of Chicago, during 2004.

Since then, all the activities developed in the Cordillera Azul National Park and its buffer zone would be focused on supporting the park's conservation. In this way, the specific objectives of the NPA's

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management would be fulfilled, as a real progress toward the conservation is evidenced. This progress is verified when there is an increase in the conservation compatibility levels, which are reinforced by the set of activities developed in the Conservation Program of the National Park Cordillera Azul.

Based on this new approach, the fulfillment of the goals for each of the performed individual activities was simply known as "intermediate results". This denomination was given in order to measure detailed and independent progress of every activity developed, based on more integrated conservation results and, as a consequence, indicators were simplified. Thus, it was possible to obtain a quantifiable and specific measurement that in turn will include all the strategies, components and activities in one perspective.

This useful tool for result presentation became then an extremely useful planning, monitoring and report instrument, with the peculiarity of being

able to be expressed in maps (specifically in hectares) for the different conservation compatibility levels. Such tool was called Index for Conservation Compatibility (Índice de Compatibilidad con la Conservación- ICC).

Content organization

The purpose of this publication is to present the monitoring systems that CIMA has been carrying out in the Cordillera Azul National Park, but it especially tries to describe and promote a new monitoring methodology of management using the Index for Conservation Compatibility (ICC).

Over the last years, such methodology has allowed us to perform the effective monitoring of the park's management, because it is simple, dynamic and basically visual. This is shown in the maps included in this document, which represent the management progress toward the conservation of the park and sustainable use of the resources in the buffer zone.

The first chapter shows the context in which CIMA has been working on its commitment to help the conservation of the Cordillera Azul National Park, from the beginning of its management, including the participatory Master Plan formulation, to the execution of such plan.

The second chapter briefly presents the monitoring systems that CIMA has been using. Such as the biological and environmental, threats and opportunities, and park's management monitoring. The information is managed by CIMA thanks to a wide georeferenced database on the park and its buffer zone, but above all, it is very dynamic and constantly updated.

“ This useful tool for result presentation became then an extremely useful planning, monitoring and report instrument, with the peculiarity of being able to be expressed in maps ”

The third chapter explains briefly the ICC methodology, showing its evolution and how its application served for three consecutive years to reorient, when necessary, the activities in PNCAZ and its buffer zone.

Finally, the fourth chapter is about the lessons learned while using and adapting the ICC methodology. The identification of mistakes and hits allowed us to restructure and perfect the use of the ICC and are now used as basic criteria that will lead future applications of this tool.

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CHAPTER I

CIMA AND CORDILLERA AZUL NATIONAL PARK

I.1 CIMA AT CORDILLERA AZUL

The Center of Conservation, Research and Management of Natural Areas (Centro de Conservación, Investigación y Manejo de Áreas Naturales- CIMA) was founded in 2002 with the purpose of helping to conserve our natural world, supporting the NPA's management, scientific investigation and the promotion of ecologically compatible alternatives for using natural resources. CIMA has participated, since then, in biological evaluations and inventories in different areas considered as a priority for conservation in the National Strategy for Natural Protected Areas.

Moreover, CIMA has focused most of its efforts on Cordillera Azul's Program, contributing decidedly to the implementation and management of PNCAZ, supporting INRENA and for the sake of the park's neighboring communities. All this is done from its four Head Offices in Lima, Contamana, Tocache and Tarapoto.

All the activities included in CIMA's and INRENA's Annual Operative Plan (Plan

Operativo Anual - POA) regarding PNCAZ are related to the objectives and strategies developed in the Park's Master Plan.

I.2. PROTECTION OF CORDILLERA AZUL NATIONAL PARK

The vision of CIMA regarding PNCAZ is to ensure its protection and the conservation condition of its natural resources, thanks to the support of the neighboring communities. Management success depends then on the support of the stakeholders involved in the park's conservation and also on sustainable use of the resources in the buffer zone. It is considered of course local customs, the use of natural resources and the assets of neighboring communities to the park.



In 2002, CIMA and INRENA signed a Cooperation Agreement setting the conservation strategies and actions in the Cordillera Azul National Park, so as to consolidate a joint work and try the biggest impacts in the long term. In this context, protection activities, investigation and management support that are part of Cordillera Azul's Program of CIMA to support the Chief (Jefatura) of the protected area have been designed and implemented.



Cordillera Azul National Park

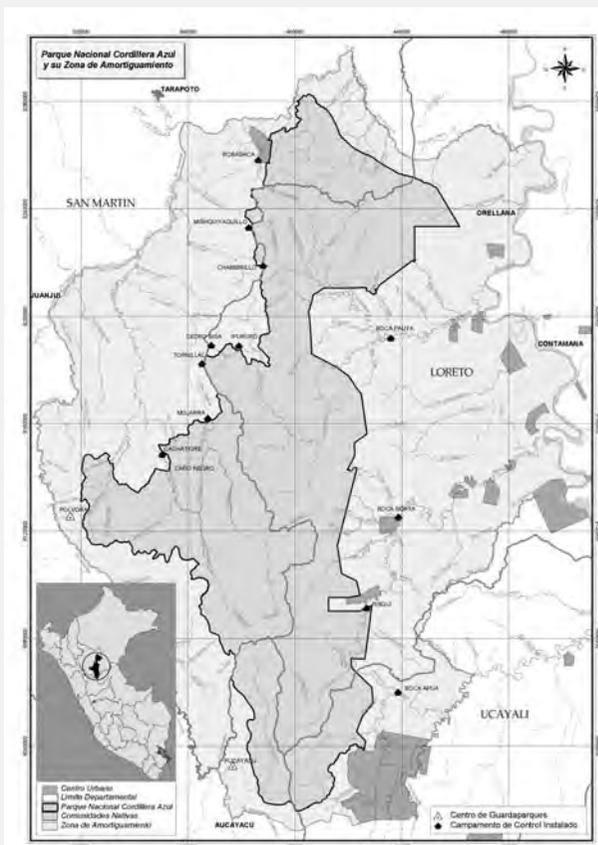
The Cordillera Azul National Park is the biggest area of continues and intact foothills and mountain cloud forest in Peru, our third biggest national park and the only natural protected area shared by four regions. This great mountain chain where Cordillera Azul is located makes it an important and vital core for the Tropical Andes conservation which is considered worldwide as the most biodiverse and threatened region.

Creation Objectives:

- ✍️ Protect unique species, biological communities and geological formations, typical from mountain forest and foot-hill forest of Cordillera Azul.
- ✍️ Protect intact headwaters and basins.
- ✍️ Support the development of an integrated and equilibrated use of natural resources on nearby areas.

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Date of creation	May 21st, 2001
Location	between Huallaga and Ucayali rivers, covering part of Huánuco, Loreto, San Martín and Ucayali
Extension	1 353 190 ha
Buffer zone's extensión	2 301 117 ha



The elaboration of the PNCAZ First Master Plan - the most important document for the management for any protected area - was the opening big effort CIMA made to support the Chief Office of Cordillera Azul. Its participative aspect was, undoubtedly, its typical characteristic.

Such aspect may be seen on Asset and Uses Mapping (Mapeo de Usos y Fortalezas - MUF) as base-line so that more than 50 local communities could participate on formulating strategies provided on the document. Such strategies served as basis for the components for Cordillera Azul's Program of CIMA.

Strategic Objective: the best management of the Cordillera Azul National Park and its buffer zone, using an integrated system of conservation and land-use planning so as to improve local population's quality of life.

- ✍️ Specific objectives on the institutional aspect (public and private): an integrated and environmentally healthy land-use planning, promoting economically sustainable development.
- ✍️ Specific objectives on the operational aspect (local): protection and complete management of the park for natural resources' conservation, in order to achieve long - term sustainable benefits for the local population.

So far, CIMA has been developing lots of activities in favor of PNCAZ's conservation that exactly reflect the work strategies established in its Master Plan. Among the main actions developed by CIMA we could consider:

A. Protection and surveillance: this includes the selection, training and equipping of parkguards, in 18 control points, in strategic places in the park, with

an effective patrolling system and with the support of neighboring communities, participating as Communal Parkguards.

B. Land Stabilization: based on zoning and land-use planning activities, in order to know the territory's real potential and to mitigate threats produced by disorganized migration and inappropriate land-use. The buffer zone's information has been an important input for native communities with the need of titling and amplifying their lands.

C. Environmental education and promotion: CIMA and the Field Museum have developed a pioneering strategy of Environmental Education which involved more than 40 schools, 230 teachers and 7900 students. Such strategy is also included in the Formal Education System of Peru. The promotion activities are carried out in Communal Training Centers and school orchards to have better agricultural practices. Technical support is also offered for managing cacao (*Theobroma* sp.), mauritia stands called "aguajales" (*Mauritia flexuosa*) and other no-timber trees as "piazaba" palms (*Aphandra natalia*).



Besides socio-economic and environmental aspects, CIMA considers two important aspects for the park's management:

- (1) Institutional aspect.- It is referred to its relations with other institutions that perform activities of public interest and supportive functions for PNCAZ's conservation objectives and for an improved use of natural resources.
- (2) Operational aspect.- It is referred to activities directly performed by the field equipment of CIMA and associates, parkguards, communal facilitators and others to implement activities in PNCAZ and its buffer zone.

“ This system allows expressing the goals, as a picture (past, present or future) or as a sequence along the program; it allows the progress to be observed toward the park's conservation compatibility and a better quality of life for the neighboring communities ”

D. Management Support: groups all the activities that allow (1) the implementation of actions already mentioned, like administrative activities (which facilitate financial and human resources, logistics, etc.), information and monitoring (verifying the effectiveness and accomplishment of the activities). And that (2) reinforce or support this management, like communication (by creating public opinion in favor of the park) and investigation (studies that support the sustainable use and management of resources).

The implementation of such activities can be considered as successful, since they have been accomplishing, one by one, the indicators mentioned in the Master Plan; and the activities suggested in the Annual Operative Plans (POA) are developed effectively and efficiently. Nevertheless, such advances, would not independently allow evaluating effectively the efforts made toward the park's conservation.

During the first year of implementation of the Cordillera Azul's Program (October, 2003 - December, 2004), the activities to be developed, to achieve the objectives,

were identified and grouped according to the following strategic results:

- ✍ Ensure park's protection: park's values preserved with support and for the support of the local communities.
- ✍ Lead the best park's management based on communal assets: local people contributing with their knowledge, involved and participating in the park's management and conservation.
- ✍ Create ecologically compatible opportunities in the buffer zone: the resident's quality of life improves through ecologically compatible economic options with the park's and environment's conservation
- ✍ Be a model for establishing public policies for conservation: improved policies and fiscal support for PNCAZ's conservation.
- ✍ Support the administration and coordination to facilitate the management: improved the administration model and park's management.

However, these strategic results did not allow integrated goals to be developed in which the progress toward park's conservation could be measured. So In November 2003, teams from USAID, the Field Museum and CIMA started to design an integrated model of monitoring that simplifies the indicators provided on PNCAZ's Master Plan, and allows measuring the progress based on integral results.

The indicators were reorganized so that these strategies, components and their activities were related to a unique vision. These new indicators are expressed in hectares (ha), showing the diverse

conservation compatibility levels and allow showing in maps the progress in PNCAZ's conservation compatibility search so as to be easily identified. This tool was called Index of Conservation Compatibility ICC.

In this way, the ICC methodology has turned, since the end of 2003, into a very useful element in the planning and monitoring of the activities for the park's team¹. This system allows expressing the goals, as a picture (past, present or future) or as a sequence along the program. Moreover, it allows the progress to be observed toward the park's conservation compatibility and a better quality of life for the neighboring communities.



¹ Since the beginning, the implementation participative strategy of Cordillera Azul's Program has coined the phrase: "We all together are the park". Therefore, when we refer to the "park's team" it is included not only CIMA's staff and INRENA's parkguards, but also the buffer zone's residents and their local, district and regional authorities. Also the government and non-government entities that work in PNCAZ's buffer zone for its conservation.

CHAPTER II

MONITORING SYSTEMS IN CORDILLERA AZUL



Monitoring is the follow-up and regular measurement of certain parameters in order to know the changes in a system over time. However, it is focused not only on the repeated evaluation of the system's variables and parameters, but also on the analysis of progress toward a desirable specific condition. For this, it is used as reference, a qualitative and quantitative base-line.

II.1 MONITORING AND CONSERVATION IN CORDILLERA AZUL

As it was stated before, CIMA's strategic objective, regarding PNCAZ, is to reduce threats to the conservation objects. These conditions shall be verified as long as the monitoring system design groups the main involved variables. Therefore, PNCAZ's

monitoring is based on the strict follow-up of the three main variables that define PNCAZ's conservation condition:

A. Park's threats: both, current and potential and considering their impacts. These threats are caused by human activities in the buffer zone. For example, deforestation, vast single crops (monocultures) and the use of toxics substances on rivers which cause a greater impact. And eventually, illegal activities inside PNCAZ, such as wood extraction and uncontrolled hunting.

B. Activities of threats' management and mitigation: are performed inside PNCAZ and its buffer zone so as to reduce the main causes of threats, generally caused by the inappropriate use of land and natural resources.

 Objectives of monitoring in natural protected areas

The conservation of a part of biodiversity through NPA is one of the main objectives of SINANPE. Monitoring is then an important tool to detect natural and human-caused changes on such biodiversity. In this way, monitoring should:

- ✍ Give permanent information about threats or pressures that generates the use of natural resources in the NPA and its buffer zone, and how they impact on the ecosystem.
- ✍ Produce relevant information to guide and improve NPA's management.
- ✍ Facilitate the follow-up of management and response capacity of the NPA's management.
- ✍ Serve to have a future scope of the desired situation so as to reinforce the mechanisms to adapt the NPA's management.

 Conservation objects in a Natural Protected Area (NPA) are usually:

1. Ecologic Systems that home many species and natural communities with high rates of biological diversity.
2. Species and groups of particular species with conservation requirements, not duly represented inside the ecologic systems previously selected.

C. Park's conservation objects: are elements protected by the park and the main reason of its creation. Some of them are evaluated indirectly; for example, with satellite images that show the forest's conservation state. Such information is verified by parkguards who carry out patrolling activities and specific scientific tests.

The level of contribution of activities performed by CIMA according to their impact and how much they contribute reducing park's threats is verified to guarantee the integrity of PNCAZ and its conservation objects.

Therefore, this way of protecting PNCAZ's conservation objects is indirect but effective. Because it is assumed that a good land- management promotion made by NPA's neighboring communities (based on successful experience in other areas) is the most positive way of conserving the park's biodiversity. This represents less time, money and staff to ensure an effective and efficient protection of PNCAZ's conservation objects. In this way, monitoring allows and helps to improve decisions and perfect PNCAZ's management.

“ The most important thing is that monitoring provides information for decision-making that helps to adapt Natural Protected Areas's management so that it can be efficient by improving and adapting management strategies ”

Information flow

It is important that information flow is organized according to the needs of PNCAZ's management and used both, in the process of designing management and planning strategies and in the decision-making process in order to adapt management activities to NPA and its buffer zone.

All stakeholders involved in this information flow chain must take responsibilities so that this system could be operative and effective. Stakeholders that record information as well as the people in charge of compiling, analyzing and translating the information so that it can be useful and accessible to different users, according to their interests (see Figure 1).

This information is regularly collected, mainly from team reports implemented by the program (CIMA Head Office and INRENA's parkguards). However, it can also be collected by involving other program's users such as facilitators, farmers, fishermen, teachers among others to evaluate the whole process. In other words, an information recording process that includes different focus-groups.

II.2 BIOLOGICAL DIVERSITY AND ENVIRONMENTAL MONITORING

Monitoring of biological diversity is a management tool that helps to obtain information in the long term. By systematizing and analyzing, it helps to notice and know the changes and tendencies of natural processes and the conservation state of ecosystems and their components. It also helps to understand the situation of other factors that may influence over a natural protected area such as economic, productive, political, cultural and social aspects, etc. Nevertheless, the most important thing is that monitoring provides information for decision-making that helps to adapt NPA's management so that it can be efficient by improving and adapting management strategies.

We must consider that the National System of Natural Protected Areas (Sistema Nacional de Áreas Naturales Protegidas por el Estado - SINANPE) identifies different NPA categories. This means that there are different of using resources and therefore the creation objectives may vary from strict protection (National Parks) to the management of some resources of economic importance (National Reserves). Based on this, monitoring will not only measure changes provoked by natural causes, but also most of the time will be focused on measuring the effects and impacts of human activities in the NPA, its resources, conservation object and even its buffer zone.



CIMA's monitoring system is mainly supporting the follow-up and adaptation of management activities and mitigation of threats

regarding the park, focusing on certain critical zones.

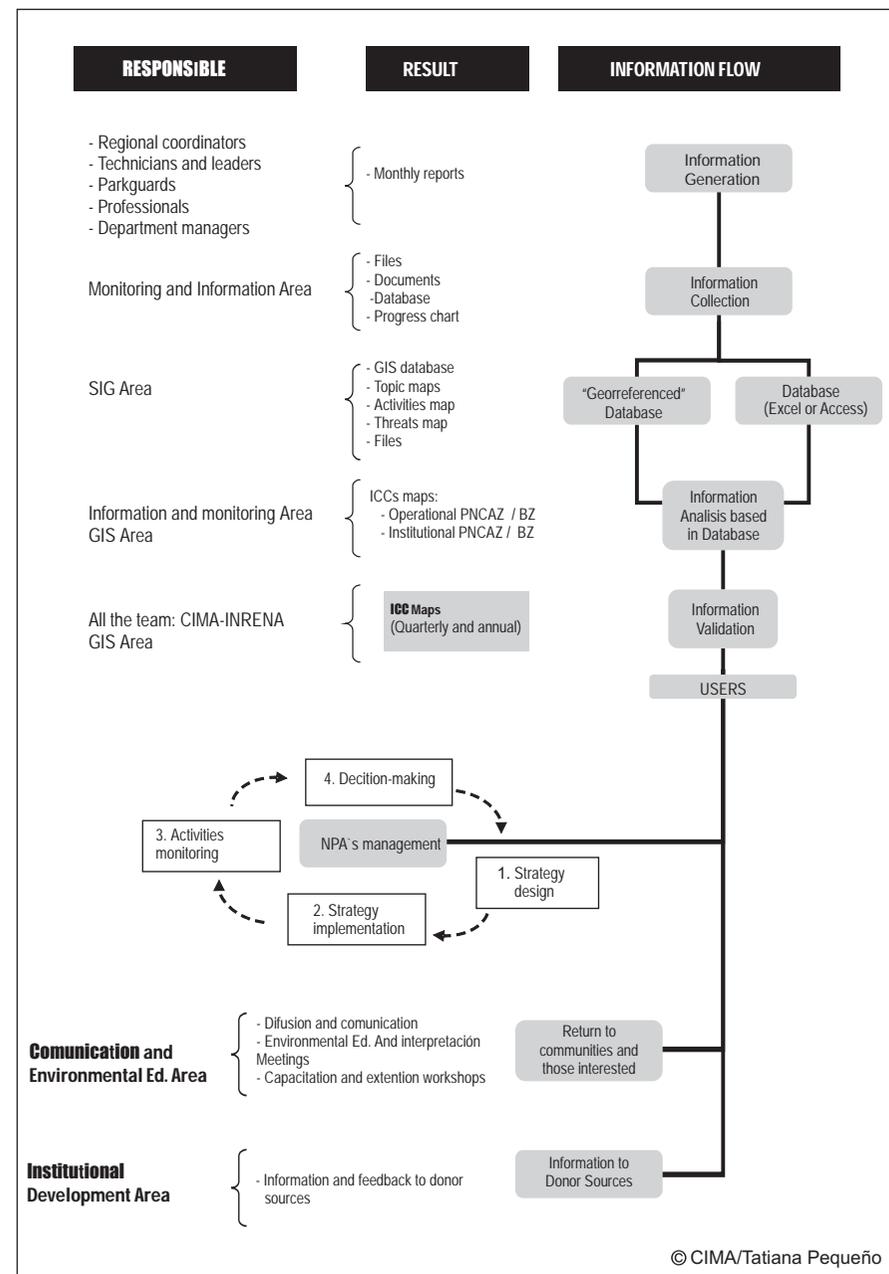


Figure 1. Information flow diagram of Cordillera Azul National Park Program

NPA's conservation objects are the specific components of its biological diversity and are identified through explorations and field investigations. Moreover, they are considered as reference to design and focus on conservation strategies of such area.

Monitoring of conservation objects is an important part of the protected areas' management because it allows knowing if the activities performed and management of natural resources effectively preserves biodiversity and if they contribute to social development in a sustainable and compatible way with NPA's conservation. To sum up, monitoring of conservation objects reveals the NPA's condition and how it is affected by human activities.

How to monitor biological diversity?

A protocol is the group of rules used as guidelines for recording information. It involves and specifies standardized methods to perform a research that - as in monitoring - needs to be copied spatially and temporarily. Although there is not now a Biological Monitoring Plan for PNCAZ, technicians from CIMA, voluntary students and researchers and mainly parkguards trained for this², have supported the carrying out of periodical census of fauna and the installation of Botanic Plots for monitoring in the long term.



The main reason to carry out biological monitoring is for ensuring the fulfillment of the conservation and NPA's management goals, according to their Master Plan and other management documents.

2 PNCAZ's staff and field technicians have been trained on biological monitoring techniques thanks to courses organized and led by CIMA in cooperation with researchers from The Field Museum of Chicago, Museo de Historia Natural - Universidad Nacional Mayor de San Marcos (MUSM), Universidad Agraria - La Molina (UNALM), Universidad Nacional de Amazonia Peruana (UNAP), Universidad Peruana Cayetano Heredia (UPCH), Universidad Nacional Pedro Ruiz Gallo, Universidad Nacional San Agustín, among others.

When parkguards carry out monitoring, this must be a routine procedure similar but not the same as their patrolling activities. Since specific methodologies and time will be needed for its execution. There is lots of information about specific methodologies for monitoring depending on the activities' and institutions' objectives and parameters required to be monitored. On Chart 1, some of the most common methods suggested according to the element to be monitored are presented.

When to monitor?

To plan the monitoring of the park's conservation objects (species, habitats, etc) and biological diversity, it is necessary to consider environmental and climatic characteristics. These are temperature, precipitation, atmospheric humidity, cloudiness among others; these variables belong to each life zone and respond to seasonal changes.



Criteria to be considered in a monitoring:

- Sampling frequency
- Time of carrying out
- Data sheet format
- Information collection method
- Intensity and number of repetitions
- Season of the year
- Minimum area or distance to be sampled
- Information collection precautions

In PNCAZ, temperature and precipitation variables are recorded daily by parkguards on each control post since 2004, so that continuous information about environment's natural variation can be obtained. This is very important since the

Chart 1. Organisms of interest for monitoring and the most common sampling methods

	Monitoring Objects	Monitoring Methods	Advantages	Disadvantages
Biological Communities	Forests with populations of log species. Spongy ground and Elfin Forest Aluvia Plateau and hills Highland swamps Streams and rivers	Use of updated satellite images to verify conservation condition	Follow-up of the forests' structural integrity can be performed using updated satellite images	Images cannot represent species' composition Special tools are needed to verify water's quality
Plant Species	Log species Non-log species of commercial importance	Permanent Botanic and Forestal Plots on critical areas	Commercial species are easily recognized by parkguards and local residents Changes of composition in populations and communities can be detected	Training on standardized methodologies and data collection for parkguards is needed For non-log species a specialist in botanic is needed
Fishes	Headwater's fish Commercial fish species	Direct sampling with Fishing nets Fishing Record	Capture, collection and preservation methodologies are relatively easy Great diversity, potential for new species	Special tools are needed for small fish A specialist in ichthyology is needed
Amphibians and Reptiles	Highland Amphibians Chitridiomicosis (fungi) effects on amphibians Important Reptiles for human consumption	Censuses (visual and auditory) and collection Perform sampling	Amphibians are good habitat's quality indicators New potential species	Hard to recognized by non-trained staff. A specialist in reptiles and amphibians (Herpetologist) is needed
Birds	Birds of clouded forest and spongy ground forest Commercial and hunting birds Endemic birds	Censuses (visual and auditory) and collection Hunting record (hunters and parkguards data)	Bird species are good habitat's quality indicators Great diversity Hunting species are easily recognized by parkguards and local residents	Small birds are hard to recognize. A specialist in birds (Ornithologist) is needed It is hard to make continuous research on restricted-access places
Mammals	Hunting mammals Mammals species CITES	Censuses and tracks registration Hunting record (hunters and parkguards data)	Mammals are easily recognized by parkguards and local residents	Censuses' methods require the evaluation of vast areas so that they can be adequate
Basin's headwater	Water collected by the river basins Water quality	Physical and chemical parameters Organisms indicators (benthic macroinvertebrates)	The effects produced in any sector of the river basin will cause impact mainly in lower sectors	Results depend on the hydrologic cycle and may be confusing if the Season is not considered (dry or rainy)

“ When the purpose is about knowing the effects of any human activity in the NPA, temporary units will have to be differentiated, so that changing natural causes will not be confused with the ones related to human influence ”

temporary (and spatial) element states the ecosystems' and organisms' dynamics that live in it.

Figure 2 shows the monthly averages of maximum and minimum temperature measured daily by parkguards of Control Post Mojarra -with mountain forests habitat- between January 2004 and September 2005.

Temporary analysis units should be chosen so that it makes difference about the influence of time over the collected data in different phases of the monitoring cycle such cycle may be annually or half-yearly.

Seasonal cycles of rain and drought are very important for PNCAZ and its buffer zone as well as for all the Tropical Rain Forest and Mountain Forest of Peru. Food and migration cycles of many species are very linked to these cycles, then, it is convenient to record them to separate their effect over the other environmental parameters being studied.

Therefore, when the purpose is about knowing the effects of any human activity in the NPA, temporary units will have to be differentiated, so that changing natural causes (seasonal) will not be confused with the ones related to human influence. For example, water contamination effects in a stream are completely different during a dry season where dumped toxic substances are concentrated, meanwhile, in a rainy season the dilution factor is

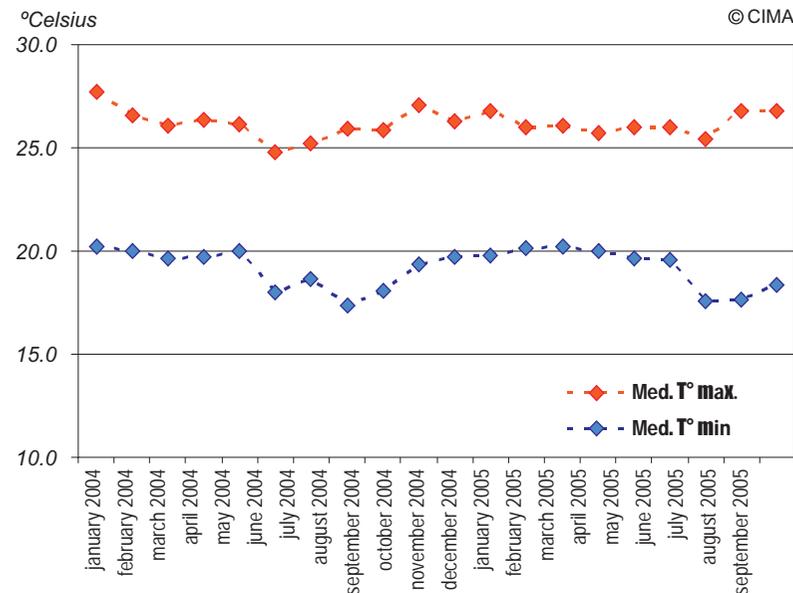


Figure 2. Daily temperature variation reported by parkguards from Control Post Mojarra, in a Mountain Forest habitat

bigger, with almost no effects, and therefore the results of this two situations will be different.

ecotone (transition zones between two habitats) may be considered as area limits to be monitored, where changes in flora's composition and structure are observed.

Where to monitor?

Nature rarely shows clear patterns or exact limits about ecosystems distribution and their natural communities. Therefore, political divisions cannot be considered as reference but topographic characteristics. For example, a river, basin shedding or an

Any ecosystem, community or population demarcation to be monitored will be relatively arbitrary and artificial but necessary since it represents a tool for nature's diversity representation in an organized and systematic way.

Once monitoring units have been specified (ecotone, community, population, etc), it is necessary to choose the ones that need

“ To monitor ecosystems and communities, political divisions cannot be considered as reference but topographic characteristics ”



Critical zones for monitoring are those where changes in the ecosystem, community, or population of flora and fauna are the most evident. Identifying such changes and their causes will help to improve NPA's management.



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“ Is necessary to monitor the resource use zone because it will allow knowing if there are potential threats or if the resources are being managed in a sustainable way ”

special attention for NPA's management in which evaluation efforts will be focused.

Regarding PNCAZ, it is necessary to monitor the resource use zone because it will allow knowing if there are potential threats or if the resources are being managed in a sustainable way. The monitoring program will perform the follow-up focusing on the identified critical areas so as to detect changes and implement some corrective or preventive regulations in the NPA.

The criteria that define a critical area for monitoring depend on:

- ✎ The area's creation objectives: that are specific for each NPA and are provided in the management documents such as the Master Plan.
- ✎ Kind of ecosystem and its stability: the fragility and time that an ecosystem takes to recovery is crucial for the identification of a critical area (Geologically Fragile Zone, slow-grow plants or reproduction for any threatened specie of fauna).
- ✎ Category of area's management and its zoning: it must be remembered that zoning of the NPA may be modified if negatives changes are noticed in the biodiversity of the evaluated zone.

✎ Use threats and pressure of the area: independently from its category, human categories inside NPA or in its buffer zone generate alterations and changes of environment on its natural dynamics.

In proper conditions, monitoring will be carry out on these zones, comparing them with non-impacted zones by the use. In this way it is possible to recognize when the changes are natural and when they are caused by human activities.

Monitoring of biological and environmental diversity in Cordillera Azul

Biological and environmental monitoring allow proving if the activities of Cordillera Azul's Program are fulfilling the expected goals, this means, if they have the desired positive impacts. For example, if land-use and natural resources' management improves, local populations will start receiving benefits and when they realize that these activities are sustainable in the long term, they will become conservation allies.

If monitoring is critical for effective conservation of diversity and PNCAZ's values during the first years of this NPA's management, the evaluation of the impacts has been then restricted to perform a follow-up of general and large-scale aspects. These are based on the impacts caused by the strongest threats that have to do with the protection aspects to the park such as logger's entering or deforestation caused by agriculture.

During 2005, however, the evaluations were focused on aspects related to future management of resources in the BZ and the impacts caused by these human activities. For example, the establishment

of a base-line for monitoring hunting wild fauna or basins.

The activities' evaluation and their impacts on certain elements of the ecosystem show to what extent the results of Cordillera Azul's Program are accomplished. Moreover, it reveals the program's effect on local communities by estimating the changes in knowledge, attitudes, behavior, abilities, communitarian rules and ways of using land and resources.

An integral plan of monitoring will not only be about monitoring biological diversity or the area's conservation objects (in this case called monitoring objects), but also it will have to group the impacts' measurement that human activities cause



Some general questions that help to define the orientation and objectives of our biological and environmental monitoring are:

- ✎ What changes are produced in the wild flora and fauna of the NPA by using resources directly (fishing, hunting, logging, farming, shepherding)?
- ✎ What changes can be observed in the populations of threatened species that NPA protects (number of species, age proportion and sex proportion)?
- ✎ What are the biodiversity's components that visitors affect or may affect and how do they affect them?
- ✎ How do population of species (flora and fauna) react to natural changes and the ones originated by men?
- ✎ How does the admission or invasion of exotic species affect NPA's biodiversity?
- ✎ How do flora and fauna populations recover naturally after suffering a natural (landslides, floods) or human (fishing with , logging) pressure or impact?



to PNCAZ's conservation values and its buffer zone and the actions taken to mitigate these impacts (Figure 3).

On the following pages, two examples developed in the park are shown, in which monitoring plans of biological diversity and environment can be observed and how these are related to the activities performed to reduce threats and mitigate impacts (Chart 2-a and 2-b).

Chart 2-a. The relation among the three monitoring elements is shown. On this example, the threat is focused on the park's hunting fauna, putting into risk the sustainability of hunting and big mammals and birds population.

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1. Monitoring Objects	Big mammals and hunting birds				
	Attribute ³	Indicator ⁴	Threshold	Method	Source
	Presence of species	Species commonly hunted	Very good Good Regular Bad	Fauna's record during parkguards' patrolling	Parkguards' monthly reports
Populations' density	Number of records of hunting species	Depends on each specie	Census of fauna	Researchers' reports and thesis	
2. Threats	Activity: use of wild fauna				
	Source of Threat		Impact		
	Hunting of endangered species, forbidden by law or with a very low reproduction rate		Reduction of hunting animals' population.		
Surpassing the hunting quota		Local extinction of monkeys, tapirs, curassows and other vulnerable species.			
Bad- hunting techniques: use of tramperas					
3. Mitigation Activities	Activities developed jointly by CIMA and INRENA				
	1. A participative management plan is created and implemented in order to be use on use zones inside the park and its buffer zone.				
	2. Information about the use of fauna and flora is given to local residents: times permitted (number of times or kg of meat), forbidden or endangered species, forbidden hunting (tramperas ⁵) and fishing (barbasco, explosives, etc.) techniques.				
	3. Control and surveillance activities are performed by parkguards who do not allow entering PNCAZ with illegal tools or substances. They have the authority to confiscate hunted fauna that exceed the times permitted or considered as endangered or forbidden.				
4. Closed seasons are established together with the communities and the hunting areas are revealed. Hunting camps inside the park, are closed according to the established areas.					
5. The periodical updating of how hunters use fauna is carried out. Supportive research is carry out for management activities such as surveys of use with hunters and census.					
Expected Results		Goals			
Reduce hunting amounts based on sustainable hunting.		Establish hunting quota based on communities and species.			
Eliminate hunting of forbidden species.		Reduce infringements committed by hunters.			
Reduce the hunting area according to zoning.		Specify hunting areas established by the zoning and land-use plan.			
Eliminate illegal hunting methods.					

3 Attribute: important characteristics of monitored objects (species, ecological process, interactions, etc), that will have be in good condition to ensure their work and conservation over time. In this way, attributes will be topics that may be evaluated.

4 Indicator: qualitative or quantitative expression through which criteria are evaluated. In order to know if the indicator shows that the conservation condition of the monitoring object is "very good", "good", "regular" or "poor", some categories that allow classifying each indicators' value need to be established. In other cases, an indicator is referred to as a specie or element that is vulnerable to a change on its environment and allows verifying the occurred variations regarding an original condition.

5 Trampera: Hunting technique based on handmade traps with fire guns that are activated by any movement. They are harmful because they affect wild and domestic animals, even people.

Chart 2-b. In this example, headwaters' integrity is in danger due to deforestation and bad use of resources.

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1. Monitoring Objects	Basins' headwaters, streams and rivers				
	Attribute	Indicator	Threshold	Method	Source
	Flow level	Physical, chemical and biological parameters	Flow and turbidity.	Flow measurement	Specialists' report
Water level	National and international standards for DBO, CO2, Ammonium, Nitrates, Phosphates, Coliforms.		Samples' collection and field or in-laboratory analysis	Trained parkguards, technicians or local associates	
Amount of hydrobiological resources	Macroinvertebrates indicators				
2. Threats	Activity: agriculture				
	Source of Threat		Impact		
	Progress of agriculture and deforestation toward the ridges in PNCAZ's limits		Loss of water retention capacity caused by forest' area reduction		
Water deviation for crops' irrigation and use of cities		Flows' decrease			
Use of toxic substances: domestic waste, agricultural chemicals, pesticides, barbasco, other contaminants		Contamination of basins			
		Loss of diversity and resources from rivers and streams			
3. Mitigation Activities	Activities developed jointly by CIMA and INRENA				
	1. Information recording of water quality and basin's conservation conditions.				
	2. Training for parkguards, technicians and residents who are interested in a better care of their basins and monitoring of water quality.				
	3. Return of information to communities about monitoring of basins, streams and rivers as well as referential data about water quality regarding the buffer zone.				
4. Promotion of activities to maintenance the forest landscape in the basin and recovery of plants on the most critical zones.					
5. Work with Instituto Pedagógico de Picota on the subprogram of Basin's Protection from the Environmental Education Program.					
6. Training and technical support to Instituto Pedagógico for establishing viveros and "demostrative integral farms" (chacras integrales demostrativas).					
7. Support and reinforcement to local institutions such as Conservation Committees for forests and Committee of drinking water.					
Expected Results		Goals			
Protection to basins' headwaters of PNCAZ as one of the most important conservation objects for the region.		Maintenance of protection levels of basins, streams and rivers from PNCAZ.			
Maintenance of the updated database that allows knowing and analysing the benefits of protecting basins' headwaters.		Knowledge and circulation of richness, biological diversity and ecological processes of basins, streams and rivers from PNCAZ focused on benefits of basins' conservation.			
Maintenance and recovery of landscape and the forests cover that support the integrated management of the basin.		Maintenance of the boscosa area and decrease of the deforestation rate.			
Creation of local capacity to recover habitats on the zone, improve the management of its basins, and implement programs for monitoring water quality.		Evaluation of basins' management by the communities with reinforced local technical support.			

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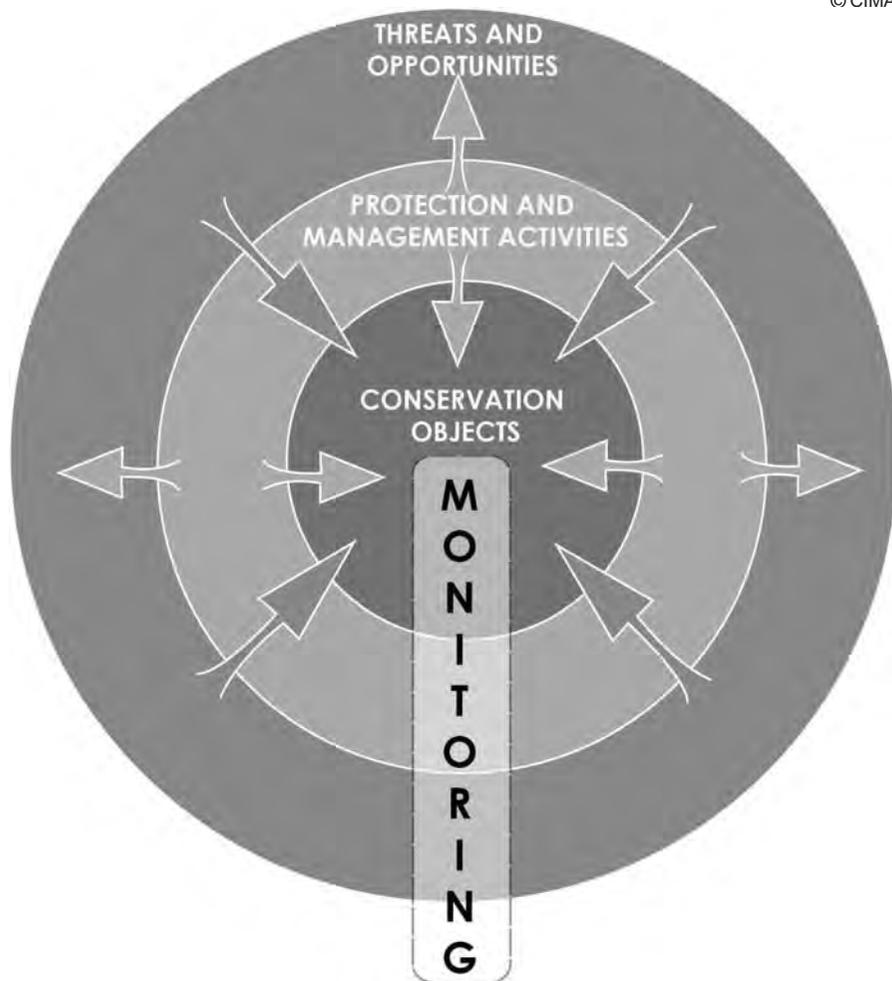


Figure 3. Monitoring includes the park's conservation objects, threats that may affect its survival and the actions to reduce and mitigate such threats. CIMA's and INRENA's work is focused on the implementation of these actions.

Research priorities and monitoring in Cordillera Azul

Due to the fact that it is almost impossible to perform a follow-up to all the species and ecosystems it would require lots of effort, time and economic resources it is necessary to choose among those whose changes may be easily noticed or those who are subject to some kind of use pressure.

For example, considering the management activities of fauna performed with local residents, it would be interesting to estimate if the population of white lipped and collary peccaries and other hunting species grows, keeps stable or decreases inside the "special use zone" and the "recovery zone" of PNCAZ⁶. The recorded information from time to time will allow adjusting the management actions of fauna and regulations to the use of resources, such as:

-  Hunting quota
-  Closed season periods
-  Use area
-  Rotation periods between hunting camps or areas

Monitoring will not be limited to biological elements. It may also involve the follow-up of factors that affect them such as: the number of hunters in the "special use zone", kg of meat for self-consumption, number of visitors, and number of motorized vehicles that pass by the access routes. In this context, although the management activities are performed with the participation of local hunters, such activities need technical and scientific information support.

“ Due to the fact that it is almost impossible to perform a follow-up to all the species and ecosystems - it would require lots of effort, time and economic resources - it is necessary to choose among those whose changes may be easily noticed or those who are subject to some kind of use pressure ”

In this way, the chosen elements for monitoring are based on the need to detect natural changes or those caused by human activities (generally, the use of resources) inside the NPA. This allows "optimizing" the monitoring, in other words, make it more useful and efficient and as well as focus it on "indicators" of change species or elements.



In order to focus on the most important monitoring elements or indicators, it is necessary to define clearly the monitoring objects:

- What diversity elements are required to be monitored?
- What questions need to be answered?
- How to help in the NPA's management?

Neither the perspective of what is desired to protect nor the creation objectives of the NPA shall be forgotten. In other words, the analysis of the recorded data will help to identify the priorities for the NPA's management.

⁶ According to Cordillera Azul National Park's zoning, subsistence hunting is permitted only in (1) Recovery Zone where it is expected to reduce the hunting's impact. And (2) Special Use Zone, where native communities Shipibo-Conibo and Cashibo-Cacataibo perform traditional hunting.

“ In ideal conditions, in order to start a monitoring program of biodiversity, indicators need to be identified. So, it is required to have a base-line study ”

In ideal conditions, in order to start a monitoring program of biodiversity, indicators need to be identified. So, it is required to have a base-line study in which the majority of elements must be included so as to choose some of them.

They are called then “monitoring objects” as it is not always possible to have enough information about flora, fauna or the ecosystem and therefore it is not known if all are good indicators. These could match with the conservation objects identified for the NPA.



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II.3 THREATS AND OPPORTUNITIES MONITORING

In Cordillera Azul National Park's buffer zone, 229 populated areas from which 57 (25%) belong to the Ucayali River Basin and 172 (75%) to Huallaga River Basin. These neighboring communities to the park perform numerous activities that have more or less positive and negative impacts. Moreover, they have different scale and reach, all this regarding the conservation of flora, fauna and landscape values of this natural protected area. The integrity of their ground and aquatic ecosystems are affected the majority of times.



The investigation priorities for Cordillera Azul National Park are indicated on the Master Plan, among which stand out:

1. Biological inventories in singular habitats not sampled before, having as reference the habitat's map of the Master Plan;
2. Research that estimate the impact of using resources and the one contributing the management of the area;
3. Research to know the effects biological, environmental, etc - of the conservation regulations implemented on the PNCAZ and its buffer zone.

It is very important to evaluate the state, extension and reasons of negative impacts on the conservation objects and especially of human activities as main source of these pressures. Recognition and mapping of threats to PNCAZ, has been one of the first actions taken since the creation of the park. Since 2004, monitoring of threats and opportunities is monthly carried out by the field team and regional coordinators.

Evaluation and ranking of pressure sources⁷ and their impacts have been important for Cordillera Azul National Park's management planning, in order to define strategies and objectives as well as focus on actions. This allows directing the efforts so as to face effectively the threats and mitigate their impacts.

Critical areas

Buffer zone's areas, where threats are concentrated, are considered as critical. In such areas, CIMA's implemented activities are also concentrated for reduction and mitigation of threats. Moreover, it is on critical areas where changes need the attention of the area's management.



Main threats to the park and its buffer zone:

- ✍ Progress of agricultural and livestock boundary in the western side of PNCAZ, especially on Huallaga valley and promotion of agricultural practices, generally, non compatible with the conservation.
- ✍ Temporary incursions of loggers inside the park as well as the indiscriminate forestry extraction in lots of forest areas nearby the buffer zone.
- ✍ High migration rate, with non planned human settlements that develop around the road and other access routes!



In the rapid biological inventory performed shortly before Cordillera Azul National Park's creation, over 30 new species of animals and plants were discovered.

Moreover, local species include Scarlet-banded Barbet (*Capito wallacei*), a bird that lives near the park. This shows that there are still things to discover and understand from these ecosystems.

On the other hand, many native communities from piro, shipibo, cacataibo and quechua-lamista ethnic groups live in the buffer zone and the park's rough relief protects a group of native cacataibos who live isolated voluntarily. There is even more to learn from these cultures or from their relation with the nature.

“ These neighboring communities to the park perform numerous activities that have more or less positive and negative impacts. Moreover, they have different scale and reach, all this regarding the conservation of flora, fauna and landscape values of this natural protected area ”

The monitoring program of threats carries out the recognition and follow-up of threats caused by human activities in order to detect these changes and implement some preventive or corrective regulations, and mitigating actions.

Natural changes are the most difficult to manage, since they generally have causes that cannot be controlled or prevented such as big landslides that occur in

⁷ Pressure sources. - causes or reason that provoke the greatest destruction, degradation or functional damage to the conservation objects of PNCAZ and its BZ, in other words, the origin of such pressures.

Map 2. Critical Areas



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Cordillera Azul and may affect rivers. For example, when landslides occur in the Cushabatay, the river drags a lot mud damaging native communities and settlers on the basin. Nevertheless, the ecosystems and their species are generally adapted to these changes, recovering naturally, in particular, in areas of vast extension.

“ It is important to considered an evaluation by critical areas where changes need the major attention of the area's management ”

“ Natural changes are the most difficult to manage, since they generally have causes that cannot be controlled or prevented such as big landslides that occur in Cordillera Azul and may affect rivers ”

Determination of Cordillera Azul National Park's critical areas

Critical areas are considered as such because they need special attention for the park's management and this is where the main actions must be focused. The criteria to identify critical areas were established based on the use pressures that each area has and the ones that represent a threat to the park's values, independently from the NPA's zoning. Although much of this areas are overlapped with the park's Recovery Zone.

It is mainly on the critical areas of PNCAZ and its buffer zone where CIMA has been developing and promoting sustainable use of the resources since 2003.

The first year, activities were focused on recording information with the Uses and Assets Mappings (Mapeo de usos y fortalezas-MUF)⁸, and information workshops and environmental education.

In the following years, a strong work of amplification, communication and environmental education activities indicated on the conservation agreements

or Acuerdos Azules⁹, were carried out. Monitoring of activities allowed determining if these actions are effective and how they should be implemented and reoriented.

Identification and mapping of critical areas were carried out thanks to:

- ✎ Uses and Assets Mapping (Mapeo de usos y fortalezas - MUF), performed in 2004 in 53 populated areas neighboring to the park, in the buffer zone.
- ✎ Information given by parkguards.

“ It is mainly on the critical areas of the Cordillera Azul National Park and its buffer zone where CIMA has been developing and promoting sustainable use of the resources since 2003 ”



⁸ MUF (Mapeo de Usos y Fortalezas) or Uses and Assets Mapping is a tool developed by the Field Museum of Chicago and implemented by CIMA to exchange information regarding PNCAZ and neighboring populations.

⁹ Acuerdos Azules (Blue Agreements) are conservation agreements between communities and the park.



The Uses and Assets Mapping (Mapeo de Usos y Fortalezas - MUF) is a tool that through an open local participation, allow knowing the dynamics of natural resources use and population's assets as well as their worldview, customs, compatible activities with conservation, local expectations in order to develop efficient conservation strategies.

In this context, MUF was fundamental to establish a diagnosis and base-line to design a participation strategy of Cordillera Azul's program. Up to date, more than 80 communities have participated in such activity.

Scientific information collected from quick biological inventories carried out inside the park.

Information provided by GIS (Geographical Information System) of CIMA, geological studies, analysis of satellite images among other.

Flights over this vast area (the park).

Ideally, monitoring will be performed in these zones, always comparing sectors, with impacts caused by its use, with intact ones. In this way, it will be determined when changes are natural and when they are caused by human activity.

Alerts about threats and opportunities

Threats' and opportunities' follow-up regarding the park's conservation, is focused on critical areas identified and defined previously and that have even served as diagnosis for the Cordillera Azul National Park's Master Plan.

However, such information is permanently updated thanks to monthly reports from the field techniques and regional coordinators from CIMA, parkguards from INRENA and the local population.

This early "warnings" or "alerts" are represented on maps, indicating the intensity, land extension of the event and the team in charge of designing strategy and actions, either to mitigate a threat or to take advantage if it is a positive event.



Criteria for critical areas' identification:

Critical areas were defined by determining the intense resource use zone, such as:

- Access routes to the park.
- Places of agricultural and livestock extensive activities.
- Fishing and hunting fields, including routes and camps.
- Extraction zone of non-log forestry resources, such as the palm tree "piazaba" (*Aphandra natalia*)
- Location of neighboring populated areas, considering the size of such population, increasing rates among others.

Such fields were overlapped to the zones where natural values were identified to the park and which are necessary to preserve, such as:

- Fragile ecosystems.
- Geodynamic fragility zone
- Basin's headwaters.
- Habitats that home endemic species or singular natural communities
- Lands where cacataibo natives are located

“ The sources of threats are generally more numerous and come from the park's buffer zone most of the time ”

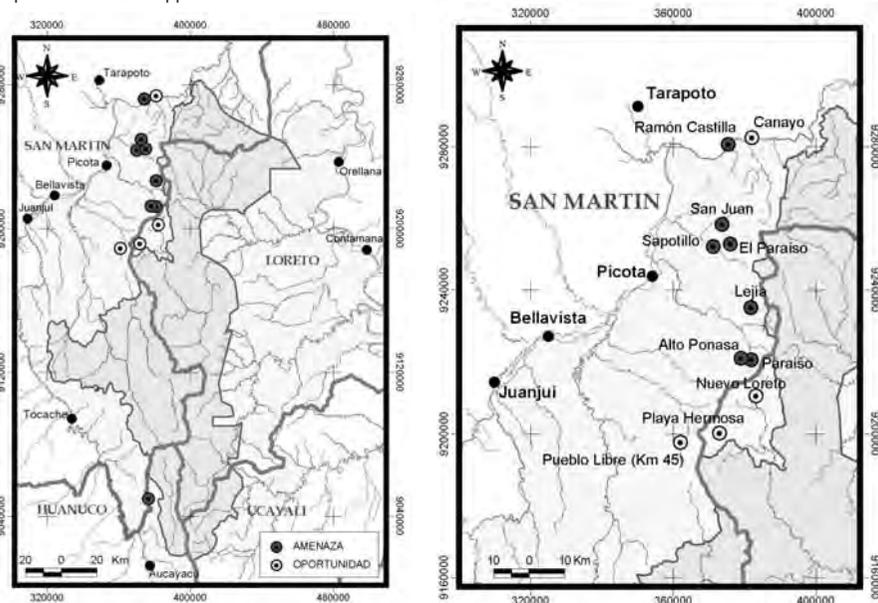
Map 3 shows that the source of threats is generally more numerous and come from the park's buffer zone¹⁰ most of the time. In Chart 3-a and Chart 3-b, two events are shown and represent grave threats occurred inside the park. The corresponding and appropriate actions for each situation, including the results are shown as well.



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¹⁰ The Cordillera Azul National Park (PNCAZ) was established in 2001 with a buffer zone of 2 061 260 ha. In 2004, with the Master Plan's approval (R.J. N° 245-2004-INRENA), the new buffer zone proposed on this document - is also approved and its total extension was 2 301 117 ha its limits vary in the eastern side - Ucayali's basin - .

Map 3. Threats and opportunities located in the PNCAZ and its buffer zone



Kind	Intensity	Community	Abstract of Threat / Opportunity
Opportunity	High	Canayo	The Forest Management Committee is created
Threat	Medium	Canayo	Two illegal logging carries are detected
Threat	High	Ramón Castilla	Illegal timber extraction in the buffer zone
Threat	High	Paraiso (Cumalio)	Constant immigration flux
Threat	Medium	Alto Ponasa	Logging Concessioners built new roadways without Environmental Impact Assessments nor Prefeasibility Studies
Threat	Low	Lejia	Illegal hunters
Threat	Medium	Sapotillo	Illegal timber extraction in Sapotillo, from Paltaco sector, in the PNCAZ's Buffer zone
Threat	High	San Juan	Illegal timber extraction in primary forest from San Juan sector. Illegal lands traffic at several sectors on Alto Umazapa
Threat	Medium	Sapotillo	Deforestation on primary forest with the intention of incorporate this lands for Agropecuerial production.
Threat	Medium	San Juan	Deforestation on primary forest with the intention of incorporate this lands for Agropecuerial production.
Threat	Medium	El Paraiso (Tres Unidos)	Deforestation on primary forest with the intention of incorporate this lands for Agropecuerial production.
Opportunity	Medium	Nuevo Loreto	The Communities have organizations for protect their head waters and basin's affluent rivers
Opportunity	Medium	Pueblo Libre (Km. 45)	The Communities have organizations for protect their head waters and basin's affluent rivers
Opportunity	High	Playa Hermosa	Protection of headwaters to ensure the water available
Threat	High	Gosen	Migration eventos on the Aspuzana Valley sector, in direction to the Gosen communities near the Park

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Chart 3-a. Example of grave danger to the park: loggers

Threat 1	Wood extraction inside PNCAZ
Location	Pauya and Soroche River, north-eastern sector of PNCAZ
Action	Implement a removal strategy for illegal loggers in Pauya and del Soroche zone with support and presence of parkguards: 1. Recognition of illegal wood-extraction zones in el Soroche, by communicating communities and flying over the zone (August, 2004), participation of INRENA, CIMA and Parkswatch. 2. Location and contact of loggers in Soroche stream (November, 2004). 3. Inspection visit to log camps and subscription of three removal commitment acts (November 14,15 and 17th, 2004). Both activities were executed by the parkguards and representatives of the communities.
Responsibles	Protection team of CIMA and PNCAZ's parkguards.
Result	Stop of wood operations inside the park in Pauya (April and May, 2004) and Soroche (November and December 2004) was verified, ensuring the protection of this forests through the installation of Control Post Boca Pauya to avoid future incursions.

Chart 3-b. Example of grave threat to the park: invasion

Threat 2	Group of 45 residents from Nuevo Amazonas invade PNCAZ to create farming plots
Location	Nuevo Amazonas, Shamboyacu District, north-western sector of PNCAZ
Action	Implement an immediate removal strategy for invaders: 1. The park's Head Office and CIMA's team coordinated a meeting with political and communal authorities from Nuevo Amazonas and Shamboyacu and with illegal invaders. 2. At the same time, INRENA made an official pronouncement so that the residents (invaders) may leave the park. 3. After the meeting, invaders left the area pacifically, asking more information about NPA's limits.
Responsibles	Protection team from CIMA and PNCAZ's parkguards.
Result	Leaving of invaders was verified. Moreover, CIMA and parkguards reinforced this strategy by informing neighboring populations to Nuevo Amazonas about the park's limits so as to avoid future incidents.

“ Monitoring is performed by using first hand information, obtained regularly from CIMA's field team, from the parkguards and from local people ”

II.4 MONITORING OF ACTIVITIES

CIMA carries out monitoring of activities that PNCAZ's team (CIMA, INRENA, local associates and local population), develops in the park and its buffer zone, as part of Cordillera Azul's Program.

Monitoring is performed by using first hand information, obtained regularly from field team of parkguards and local population.

In this way, regional coordinators and the head of PNCAZ verify if the planned activities are being carried out according to POA (Annual Operative Plan) and what are the factors involved in such process.

Importance of monitoring: Why monitoring the activities?

A. Verify the programmed activities' performance. Monitoring of activities in support of the park's management allows verifying:

- ✍ If the activities are carried out according to the operative plan.
- ✍ If the activities are well-integrated and have the expected impact, in other words, if they contribute together to fulfill the objectives.

When the performance of programmed activities is verified, it is known what works, considering both, those strategies working on the program and those that not reach the desired impact. This allows obtaining, systematizing and organizing a group of learnt lessons and excellent activities that may help to reinforce other programs inside SINANPE and other natural areas.

B. Show and evaluate results. Organizations that implement activities, program administrators and donors need monitoring for:

- ✍ Showing complete results
- ✍ Understanding how their programs work
- ✍ Evaluate how programs and other events interact as well as other institutions in their communities.

This results in integral reinforcement of the program and its management.

C. Compare and identify priorities. Having specific and relevant data corresponding to different places and time, it is possible to:

- ✍ Contrast the obtained impacts in different sectors where works are done or they are planned to be done.
- ✍ Fix priorities for strategic planning.
- ✍ Evaluate training and supervision needs.

“ When the performance of programmed activities is verified, it is known what works to get the expected results and goals ”

✍ Feedback the program from participant's contributions.

D. Return of information to the target public. Technical staff supports the information and must give it to different stakeholders or levels, adapting it to the most suitable language. Such information may have different purposes:

- ✍ Keep communities informed
- ✍ Focus objectively on resource's assignment.
- ✍ Improve information for fund's collection
- ✍ Enrich arguments in favor of program's effectiveness.

E. Know and promote. Results: this process is carried out through adequate methods of communication and promotion so as to allow the actors to understand:

- ✍ What the program is doing.
- ✍ Progress toward the fulfillment of the objectives.
- ✍ If there are critical needs or situations that delay or impede the progress of the program.

Moreover, the return of results helps the community to:

- ✍ Understand better the current and potential benefits of the program, focusing on post-benefits of the NPA's conservation.
- ✍ Know the program's achievements.
- ✍ Develop a belonging sense through participation, improving coordination and reinforcing communities' local organizations.

F. Reinforce management and administration systems. Monitoring and evaluation results of activities must be also used for revealing to decision-makers (organizations, officers of local government, communal authorities), financing agencies, current and potential as well as the other key members, how they can help to ensure social, financial and political support of the program.

G. Reinforce inter-institutional links. It is important to establish and reinforce relations among organizations that have the same conservation objective of the NPA and its BZ. All interested and volunteers, who have worked in favor of the program's success, can be also granted a public recognition in order to attract more volunteers and donors.

H. Promote project's continuity and experiences' repetition. Positive and well presented results of the management's monitoring may help financing agencies and responsible authorities to decide in favor of continuity and support of the project. The responsible financing agencies and authorities are interested in the monitoring and evaluation results, mainly because they need to make strategic decisions of how to use the resources and proof that spending produces quality results. Such results may also help to make decisions regarding the identification and support to reproduce and/or expand the specific strategies in other locations, based on successful experiences in test areas.

I. Correct mistakes and redesign strategies. In this way, results from monitoring can show needs that have not been satisfied or those components that may impede or delay the program's success and may also be used to support certain changes in local regulations, national policies or in laws.

Searching conservation compatibility in Cordillera Azul

As it was shown on the first chapter, CIMA has got a great strategic objective regarding PNCAZ: "a better management of PNCAZ and its buffer zone using an integrated system of conservation and planning of land use to improve quality of life in the local population". To fulfill such objective, local forms of life, use of natural resources and assets of neighboring communities to the park, has been considered.

In this way, CIMA focuses not only on supporting actions to protect the park and its conservation objects, but also it carries out an intense work in the neighboring communities in order to reduce threats to the park and promote a better management of its resources: soil, water, flora and fauna.



The Index of Conservation Compatibility (Indice de Compatibilidad con la Conservación - ICC) is a practical monitoring and reporting tool of landscapes, expressed in hectares according to the increase of the conservation compatibility levels. Operational and institutional aspects are also considered in the park and its buffer zone.

The Vision of the park and its buffer zone can be seen on the following achievements (Chart 4). With this, a series of actions are pretended to be efficiently carried out, that will ensure PNCAZ's conservation with the support of its own neighbors in the long term.

ICC allows expressing the goals as a portrait of the moment (present, past or future) facilitating an idea of the sequence about the program's evolution. It also allows observing the progress in the search of reaching the objectives toward compatibility with the conservation of the park and a better quality of life for neighboring communities.

Chart 4

Achievements in Cordillera Azul's program		Geographically: integral perspective of the protected area	
		Cordillera Azul National Park (PNCAZ)	Buffer Zone (BZ)
Aspects	Institutional	Obtain a fiduciary fund that ensures the park's conservation	Make strategic alliances to promote economic activities ecologically compatible
	Operational	Keep park's protection by parkguards and communal support	Perform activities compatible with conservation of the park that produce direct benefits to the communities

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The analysis of the results' and achievement' information of Cordillera Azul's Program will show, in a graph, how much the activities developed, contribute in the NPA's conservation using a new methodology called Index of Conservation Compatibility or Índice de Compatibilidad con la Conservación - ICC.

It also shows five levels of progressive evolution toward the ensured conservation of the park, from its creation to its end. Such levels suggest that, from level 1 to 5, the park's management should be improving certain objectives summarized as follows:

Level ICC 0

Non awareness of the situation. Base-line is needed (Map 4).

Level ICC 1

Threats to the park's conservation objects are known.

Level ICC 2

Assets are known. Based on them strategies are generated.

Level ICC 3

Activities focused on mitigation of threats and improvement of the use of lands and resources, are developed.

Level ICC 4

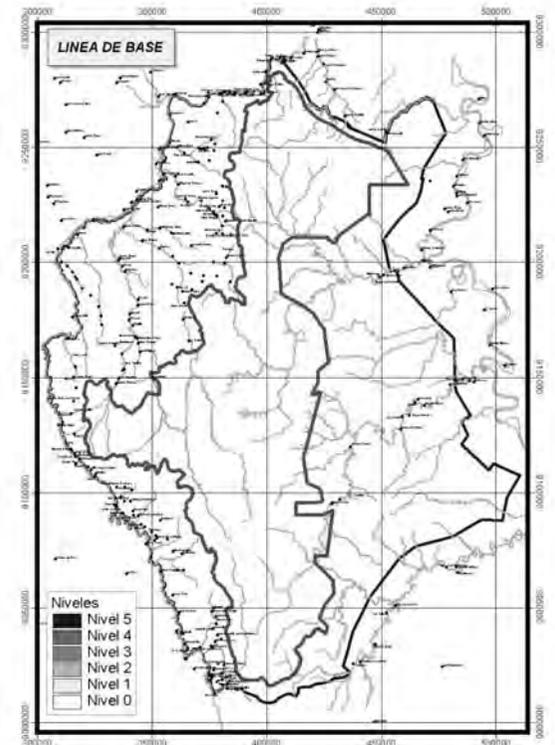
Park's benefits are recognized and successful management experiences are copied.

Level ICC 5

Park's conservation is ensured thanks to a fund for expenses regarding sustainable use of land and resources and to other institutions' activities that benefit the park.

“ The ICC allows expressing the goals as a portrait of the moment (present, past or future) facilitating an idea of the sequence about the program's evolution ”

Map 4. Cordillera Azul National Park and its Buffer Zone in 2001 when their situation was unknown



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CHAPTER III

INDEX OF CONSERVATION COMPATIBILITY (ICC): AN INTEGRAL TOOL



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The Index for Conservation Compatibility (Indice de Compatibilidad con la Conservación - ICC) is a new monitoring methodology in which the advances are geographically shown in the integrated goals. In this way, it is evident that the area (hectare) is going up in levels using an ecologically friendly management (Figure 3). This happens as more compatible activities - with the conservation of biodiversity, environment quality and

resources from the area - are carried out, becoming then a more valuable area due to the fact that it is sustainable and productive in the long term.

“ The advances are geographically shown in The integrated goals ”

“ ICC is a new form of progress verification, using connected goals that may be evaluated based on an integrated model and using quantifiable measurements ”

In this way, ICC is a new form of progress verification, using connected goals that may be evaluated based on an integrated model and using specific and quantifiable measurements. It also includes and connects all the strategies and components in one perspective.

As in the economic and market systems, conservation, through the development of ecologically compatible activities,

represent a perfect investment regarding environmental and natural resources health because it is sustainable and allows to obtain benefits in the long term. Ecologically compatible use of land ensures long-term benefits (interest) from natural resources (capital) for the NPA's neighboring communities. Moreover, the incompatible use of land, resulting from short-term development proposals, happens to be a great environmental and natural resources damage (devaluation). In this way, a poor planning may result in an immediate profit, but it will damage the capital's sustainability by reducing severely complete benefits from the lands for current and future generations.

Due to the fact that all the program's activities have a direct or indirect impact in the land, all results can be expressed as an

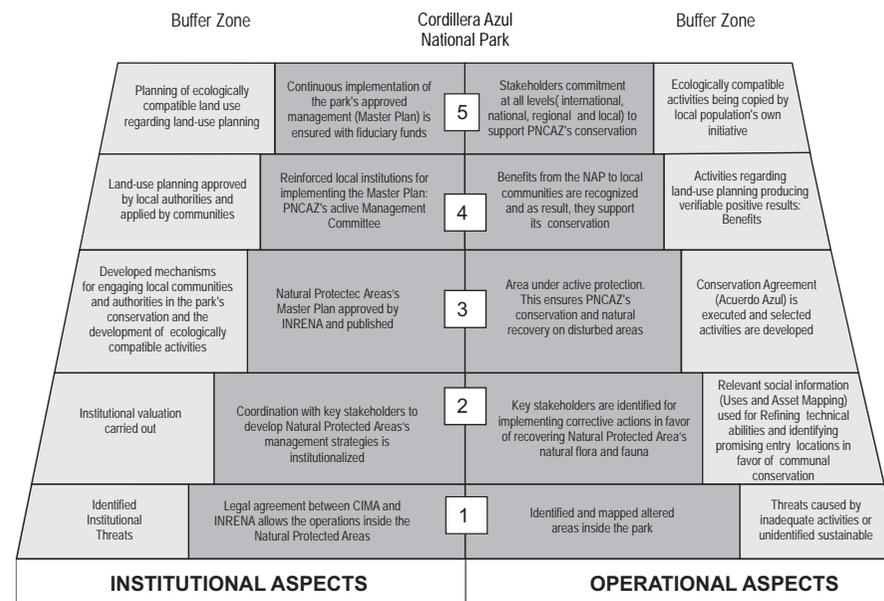


Figure 3. Progress pyramid representing each ICC level based on the previous level

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area (ha) depending on the level of conservation compatibility.

Reaching the highest level in the Index of Conservation Compatibility (ICC-5) means getting sustainable results institutionally and operationally - in the great landscape of the protected area (inside and outside the

“ A poor planning may result in an immediate profit, but it will damage the capital's sustainability by reducing severely complete benefits from the lands for current and future generations ”

park).

This would mean that in the buffer zone, it is used as a pattern, technology and management ecological principals in the landscape. Such principles are approved by the highest governmental authorities and are adopted by residents as a more sensitive and less expensive for the sake of the region's economy.

Even any development project initiative would be based on ecological principles and practically guided according to the land-use planning previously guaranteed by the communities and their authorities (Meso and Macro levels of land use-zoning).

“ Reaching the highest ICC level (ICC-5) means getting sustainable results ”

Meanwhile inside the park, reaching the highest ICC level would mean that the institutions that work on it are willing to keep using and financing the adaptive management to respond new challenges, threats and opportunities to this NPA and neighboring human communities.

This would be also supported by a fiduciary fund with organized groups committed to continue with the park's protection and local people's benefits.

III.1 EVOLUTION OF THE ICC METHODOLOGY

It is important to remark that since the invention of such methodology, at the end of 2003 up to now, ICC has evolved gradually (Chart 5), as activities were implemented and reports were done. In this way, some information flow aspects were improved and the report of activities that lead each area to go up through the ICC levels was completely enriched.

As a result, we have now some basic conclusions:

A. Progress of activities in the operational and institutional aspect should be done in a parallel way but not necessary at the

Chart 5: Changes on the ICC applications

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Characteristics of ICC application	Before (2003-2004)	Now
Impacts is considered the same for all activities	YES	NO
Impact's geographical reach is specifically where the activity is developed	YES	Includes bigger areas according to its influence
There is institutional and operational aspect for each activity	NO	YES
The same activities are performed in all communities	YES	According to their needs
All activities are implemented in the same way in each community	YES	According to each community's conditions
Index of Conservation Compatibility (ICC) is:	Used for verifying the activities execution	A methodology for monitoring and planning

“ The progress of activities in the Operational and Institutional aspect should be done in a parallel way but not necessary at the same time. So that “going up an ICC level” in some of the aspects may be supported by its counterpart ”

same time. So that “going up an ICC level” in some of the aspects may be supported by its counterpart (Chart 6). For example:

✍ In the buffer zone, environmental education programs development (operational aspect) is completely supported by the signing of the agreements with each UGEL¹¹ (institutional aspect) where the program is developed.

✍ In the park, patrolling and supportive activities to the management (operational aspect) are developed based on the established strategies in the Master Plan and supported by the park's Management Committee¹² (institutional aspect).

B. Impacts made by the activities, implemented by CIMA and INRENA, do not always have the same magnitude, extension or intensity on the park's conservation. Therefore, activities related to ICC level 3 (level that groups protection, extension and compatible use activities) have been classified according to their

strong or medium impact in the conservation of the park and local environment. Or if they produce an indirect impact (supportive activities). Some examples:

- ✍ Bigger impact: land-use planning
- ✍ Medium impact: fauna management
- ✍ Support: Conservation corners

C. The fields of each developed activity are written down on the ICC map, assigning them an influence area or specific impact. According to their reach, they can be:

- ✍ Specific field: school orchards
- ✍ Community field: environmental education
- ✍ Basin field: Basins management

D. The need for implemented activities is not always the same in all sectors, even in critical areas. For example:

- ✍ Huallaga Slope presents bigger threats, being more urgent the activities related to land stabilization and progress reduction of the frontera agraria and migration.
- ✍ Ucayali Slope, needs supportive activities for titling and amplifying of native communities, management of resources such as the river turtles called “taricayas” (*Podocnemis unifilis*) y the palm stands or “aguajales” (*Mauritia flexuosa*).

11 UGEL (Unidad de Gestión Educativa Local or Local Educational Management Unit). CIMA has signed agreements with UGELs from Tarapoto, Contamana and Tocache departments and works together with them to implement the Environmental Education Program.

12 Management Committee: Every natural protected area should have the support of a Management Committee approved by INRENA and formed by representatives of the public and private sector with interest on the area. In this way, a better management and sustainable use can be accomplished and the fulfillment of its objectives may be supported. (Resolución Jefatural N° 045 2001 INRENA).

III.2 ICC CALCULATION

In order to calculate the ICC reached in the park and its buffer zone, it is necessary to know the effect or impact field that developed activities have in area units.

The impact analysis of the activities is probably the most delicate part since it is needed a lot of objectiveness from the technical teams and managers of each area to specify when such activity has accomplished the projected objectives. In this way, all the activities performed in an area will determine a jump to a higher ICC level. However, to stop the activity or the presence of a threat may also reduce the ICC level reached. This evaluation is carried out independently for institutional and operational aspects.

The location of sustainable activities and their influence field will be considered as areas that reached a higher level of conservation compatibility, reaching immediately the highest ICC level. This will be easily represented in a map, as long as there is a Geographical Information System (GIS) with information related to the management area. The color changes in the map represent the advances and setbacks in the ICC over years, as a

“ The impact analysis of the activities is probably the most delicate part since it is needed a lot of objectiveness from the technical teams and managers of each area to specify when such activity has accomplished the projected objectives ”



consequence of the work done in the park and its buffer zone as well as the projected goal which is pretended to be fulfill at the end.

The information that is used frequently is related to:

- ✍ Communities' location and limits
- ✍ Limits of hydrographic basins and its divortium aquarium.
- ✍ Political limits: Departments, districts, provinces
- ✍ Resource use field: areas of hunting,

Chart 6. Main activities according to ICC level they contribute (from level 1 to level 5), during the first five years of management of Cordillera Azul

National Park and its buffer zone

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ICC		Cordillera Azul National Park	Buffer Zone
Level 5	Operational	<ul style="list-style-type: none"> ▣ Park protected by parkguards, with strong support to communities. 	<ul style="list-style-type: none"> ▣ Compatible activities with the park's conservation producing direct benefits to communities.
	Institutional	<ul style="list-style-type: none"> ▣ Development and institutionalization of participation policies and strategic alliances with NGO, Government Agency, and funding organizations. ▣ Start process for obtaining fiduciary funds that ensures the implementation of the Master Plan for the park's protection. 	<ul style="list-style-type: none"> ▣ Development of strategic alliances with other NGO, Government Agency, and funding organizations so as to perform ecologically compatible economic activities according to the land-use planning and to protect PNCAZ.
Level 4	Operational	<ul style="list-style-type: none"> ▣ Neighboring communities to the park have information about benefits of conserving the park (environmental service, wild fauna, etc). Such communities recognize them and feel engaged with its conservation. 	<ul style="list-style-type: none"> ▣ Effective land-use planning in communities. ▣ Communities copy by their own initiative compatible activities with the park's conservation. ▣ Neighboring populations got conservationist awareness thanks to the Environmental Education Programs in schools (park and benefits).
	Institutional	<ul style="list-style-type: none"> ▣ Management Committee is formed and currently working for PNCAZ' conservation. ▣ Support to SINANPE, regarding monitoring. 	<ul style="list-style-type: none"> ▣ Final approved document about land-use planning by local, regional and provincial authorities.
Level 3	Operational	<ul style="list-style-type: none"> ▣ Effective and efficient patrolling that involves: <ol style="list-style-type: none"> 1. Selected, equipped and trained parkguards. 2. Infrastructure (Control Posts, patrolling routes and limit signs) 3. Patrolling plan and intervention protocols for infringements. ▣ Supportive Activities <ol style="list-style-type: none"> 1. Spreading and conversations for creating public opinion favorable to the park. 2. Promotion of research in the park, according to the investigation priorities in the Master Plan, that supports the use of resources (forestry management: fauna and flora). 	<p>Activities developed to reduce threats (depending on the sector):</p> <ul style="list-style-type: none"> ▣ Big impact activities: <ol style="list-style-type: none"> 1. Land-use planning (ecological and economic zoning) to mitigate soil's erosion and prevent chaotic migration: creation of document (community field) 2. Environmental education programs developed, implemented and included in the System of Formal Education (community field) 3. Communal Training Centers, school orchards, works with local partners (CEDISA, Choba-choba), cacao, management of palm stand "aguajales" (exact field, depends on the real extension of the farm, plot or managed land) , manejo de aguajales (ambito muy puntual, depende de la extensión real de la huerta, chacra o terreno manejado) ▣ Medium impact activities: <ol style="list-style-type: none"> 1. Implementation of participative Plan of Fauna Management Plan (community field) 2. Follow-up of Forestry Concession Management Plan (concession field) ▣ Supportive Activities: <ol style="list-style-type: none"> 1. Implementation of Conservation Corners with permanent updated information by the park's staff (exact field, around the corner and central area of the community) 2. Promotion for studying sustainable use of resources (forestry management: fauna and flora) and basins management.
	Institutional	<ul style="list-style-type: none"> ▣ Master Plan approved, edited and published. ▣ Bi-annual meetings with the park's Management Committee. 	<ul style="list-style-type: none"> ▣ Signing of Agreements regarding Level 3 activities: <ol style="list-style-type: none"> 1. Acuerdos Azules with communities. 2. Agreements with UGELs for environmental education. 3. Agreements with IIAP (Academic Institution) and GORESAM (San Martin Regional Government), supporting land-use planning. ▣ Establishment of strategies and guidelines for accessing to their benefits and communal control of resources and community's areas. ▣ Strengthening of organization from indigenous communities in order to select, implement and evaluate ecologically compatible activities. ecológicamente compatibles.
Level 2	Operational	<ul style="list-style-type: none"> ▣ Assets regarding the Park: <ul style="list-style-type: none"> - Identification, contact and inspection of illegal loggers with INRENA. - Training on legal matters for dealers and residents. - Trips, with local residents and authorities, for identifying places for control posts. - Implementation of communication strategies regarding PNCAZ. 	<ul style="list-style-type: none"> ▣ Assets of the park's neighbors: <ol style="list-style-type: none"> 1. Uses and Asset Mapping of communities. Processing, sue and updating of social and economic information every 3 years. 2. Identification and contact of Forest concessionaries (loggers) to solve demarcation and supervision of their management plans (group work with INRENA) 3. Preparation of the Annual Operative Plan including the Management Committee.
	Institutional	<ul style="list-style-type: none"> ▣ Monitoring, revision and adaptation of participative mechanisms as conservation agreements with communities (Acuerdos Azules or Conservation Commitments). 	<ul style="list-style-type: none"> ▣ Assets of the park's neighbors: <ol style="list-style-type: none"> 1. Identification of institutional assets for conservation agreements and training. 2. Efficient Information System for compiling, updating and systematizing information so as to return it to the "park's team" in order to support the management.
Level 1	Operational	<ul style="list-style-type: none"> ▣ Identification of threats in the park (loggers, indiscriminate hunting, etc.) 	<ul style="list-style-type: none"> ▣ Identification of threats to the park's conservation (high rates o deforestation and disordered migration). ▣ Organization and updating of threats' database.
	Institutional	<ul style="list-style-type: none"> ▣ Keep agreements with INRENA updated. 	<ul style="list-style-type: none"> ▣ Identification of institutional threats such as development projects incompatible with the conservation. ▣ Strengthening of the information system: updated satellite images, hardware and software (GIS).

“ The color changes in the map represent the advances and setbacks in the ICC over years, as a consequence of the work done in the park and its buffer zone ”

fishing, extraction of log and non log resources as well as minerals, etc.

Altitudinal, physiographic and vegetation ranges

Geographical position (coordinates) of activities developed by CIMA and INRENA.

The next step is to identify in the map, the number of hectares that should be located at each ICC level. In terms of conservation, hectares that were located in the higher levels are better managed actually and have more effective management, so they

contribute more to the park’s conservation. Due to the fact that a same area is included in institutional and operational results, only half of such area is considered for each ICC value.

Finally, besides knowing where it has been worked and where it is necessary to, this calculation serves to show quantitative progresses based on the number of hectares that went up a level or the percentage such hectares represent (Figure 4).

Stairing up the ICC

When the park was declared and the project started, reference points, that allow maximizing the actions to ensure the conservation in the long term and sustainable use of resources in the buffer zone, were not clear yet. The starting point was the date of PNCA’s creation, previous moment to the base-line with an ICC level 0 (Map 4, page 45).

Number of hectares of Cordillera Azul National Park and number of hectares of its buffer zone are located in the chart according to the Index of Conservation Compatibility (ICC) reached, having as basis the implemented activities (see Chart 6).

$$\frac{\frac{1}{2} \text{ Operational Results (PNCAZ and BZ area)} + \frac{1}{2} \text{ Institutional Results (PNCAZ and BZ area)}}{\text{Integral Management of the area (PNCAZ and BZ area)}}$$

Conservation values of the area depend on the planning of activities based on the way of management and use of the resources (soil, fauna, flora, etc), always looking for conservation compatibility, reflected on the ICC level they reach.

Measurement in hectares of institutional and operational results is divided in two so as not to count the same area twice.

ICC is annually recalculated as a accumulated score expressed in hectares.

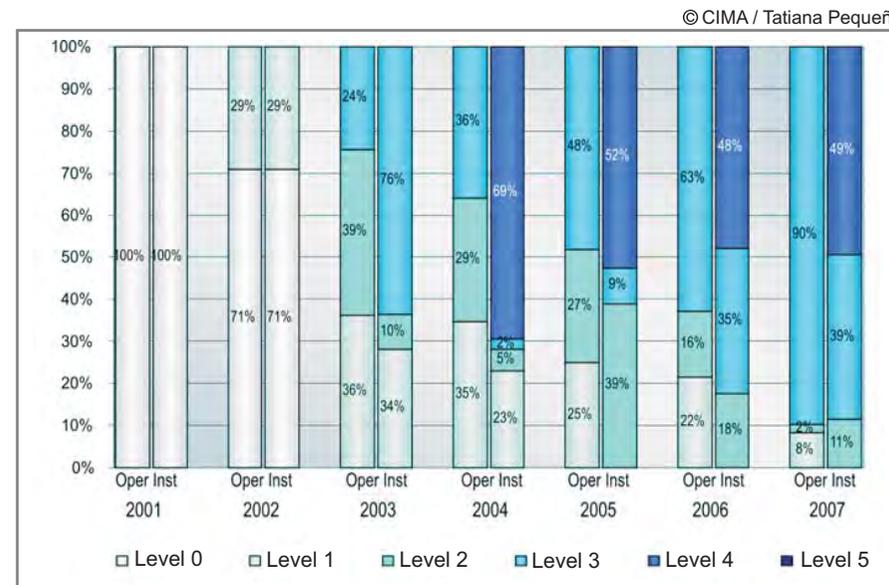


Figure 4. Percentage of the area going up ICC levels, operationally (Oper) and Institutionally (Inst) in the Cordillera Azul National Park and its buffer zone: Period from 2001 (previous to the park’s creation) to 2007 (projected).

For this reason, the first step was to investigate the activities that already existed in the region and make the first contact with local organizations and institutions. This allowed proving that even though the projects generated results, the initiatives did not focus directly on mitigating threats to the local ecosystem (or on the non-existent National Park at this moment) nor on performing work based on local communities’ assets.

Back then, there was not even an analysis of threats to be completed so as to reach ICC level 1. Moreover, there were neither assets surveys nor defined maps that represent use, customs and characteristics of the local population so as to reach level 2.

“ The first step was to investigate the activities that already existed in the region and make the first contact with local organizations and institutions. This allowed proving that even though the projects generated results, the initiatives did not focus directly on mitigating threats to the local ecosystem ”

Each ICC level has a global indicator and when it is fulfilled, the corresponding ICC level has been reached. Moreover, there are more specific program indicators that match - most of the time - with the ones indicated on the park's Master Plan (Chart 7-a and 7-b), but they are organized in a different way based on the ICC levels required to be reached and they do not follow the order of the park's programs.

It is important to indicate that in the lower ICC levels (ICC 1 and ICC 2), it is easier to go up to the higher levels. However, to reach level 3 a number of activities are required to be performed and need to be accepted by all communities in order to keep such level, since it is necessary to get good results. It is also possible to go down levels since the lack of positive results or new threats may result in a loss of ICC value.

Going up from ICC-3 to ICC-4 is hard and requires big efforts because it demands a deep inner perspective of conservation practices and compatible use institutionally and operationally. For this reason, reaching ICC-4 means a greater and lasting success that requires a multiplier effect of positive results. Moreover, the project's compatible initiatives independently generated should ensure the program's long duration and the region's stability.

Reaching ICC-5 means getting sustainable results indefinitely in the great landscape field of the protected area. This kind of success will probably not be reached during the first years of effort. Nevertheless, it is fundamental to continue working to reach ICC-5 and obtain a long-term impact.



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Chart 7-a. ICC values for Cordillera Azul National Park and their indicators.

Institutional Aspects				Operational Aspects		
Level ICC	ICC Indicator	Program's Indicator	Level ICC	ICC Indicator	Program's Indicator	
5	Established system ensuring continuous implementation of the approved management of the park	Long-term Financing and commitments ensured in the institutional aspect	- Enough fiduciary funds for the park's protection	Stakeholders committed at all levels local, regional, national and international to support the Park	Fiduciary fund and supportive groups established to cover park's basic needs	- Number of communities where the park's protection is supported
4	Strengthen local institutions to implement the park's management	Institution(s) that implement reaching defined goals	- PNCAZ's Management Committee (MC) formed, approved and that works supporting the implementation of the Master Plan - Number of meetings where Master Plan's progress is revealed. - Number and names of institutions or representatives part of MC. - Participation of Management Committee	Park's benefits to local communities are recognized by residents and as a result, Park's protection is implemented	Local residents value the park as neighbors	- Number of patrolling activities with local residents - Number of communities where parkguards patrolling is supported - Number of communities where the park's benefits are identified - Number of volunteer parkguards
3	Approved management plan for 5 years for the park (Master Plan)	Master Plan approved by INRENA	- Master Plan approved, published and updated every 5 years	Area under active protection	Equipped and trained parkguards to enforce regulations	- Number of equipped and capacitated Parkguards - Number of Control Posts - Number of patrolling hectares - Number of personnel capacitating events
2	Continuous communication with key stakeholders about the park's management is institutionalized	The Annual Operative Plan (AOP) includes participative activities	- Number of communities that participated in the elaboration of perspectives and revision of strategies of the Master Plan	Corrective action taken to allow natural recovery of the park's flora and fauna	Specific threats removed (based on the threats maps)	- Number of hectares in the park with illegal activities - Number of registered infringements
1	Agreement between CIMA and INRENA allow operations inside the Cordillera Azul National Park	Agreement signed	- Report and analysis system of threats established and currently working - Map of threats updated monthly and revealed	Identified and mapped altered areas inside the park	Upgradable map indicating areas altered by human and zones of high probability of threat (critical areas)	- Report and analysis system of threats established and currently working - Map of threats updated monthly and revealed

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Chart 7-b. ICC values for Cordillera Azul National Park and their indicators

Institutional Aspects			Operational Aspects			
Level ICC	ICC Indicator	Program's Indicator	Level ICC	ICC Indicator	Program's Indicator	
5	Ecologically compatible plan of land use adopted as pattern through landscape	Regulatory mechanism in the area to implement meso-zoning	- Number of institutions developing sustainable activities regarding land-use planning	Ecologically compatible practices copied through the great landscape	Interchanges are performed between communities	- Number of families/hectares with sustainable uses - Number of communities accepting and requesting to work on "development projects" - Compatible with the conservation of the park, in realm of the land-use planning approved
4	Acuerdos Azules institutionalized	Regulations in the area to implement micro-zoning	- Land-use planning documents presented to local governments. - Number of land-use planning documents approved.	Activities under Conservation Agreement (Acuerdo Azul) producing results and can be measured	There are two or more ecologically compatible programs in the community that reduce the breach in terms of expenses needs of residents	- Number of communities/hectares with sustainable uses based on land-use planning - Number of families that get benefits by doing ecologically compatible activities: diversified farms, palm stands management, clean water, etc.
3	Mechanisms developed to commit communities with the park in ecologically compatible activities compatibles	There is a functional tool to wok with communities (Acuerdo Azul or Conservation Agreement)	- Number of conservation agreements with residents. - Agreements with UGEL. - Number of agreements with authorities, institutions, etc.	Conservation agreement (Acuerdo Azul) signed and selected activities	Trained facilitators and technical experts implement and adapt the work to fulfill goals	- Number and kind of activities developed to reduce threats in each critical area - Number of communities where activities are developed
2	institutional valuation complete	Stakeholders' updated (active) database	- Database of communities and communal organizations updated by the Uses and Assets Mapping - Database of institutions working in the BZ monthly updated	Relevant social information assembled to define technical abilities and identify promising entry locations for efforts of communal conservation	Communal assets database updated (active)	- Number of populated areas that have an Uses and Assets mapping
1	Threats identified in the institutional aspect	Threats' analysis established and currently working in the manager institution	- Report and analysis system of threats established and currently working - Map of threats updated monthly and revealed	Threats identified in the management field	Threats database updated (active)	- Report and analysis system of threats established and currently working - Map of threats updated monthly and revealed

From the community to the great landscape

One of the distinctive characteristic of ICC is its spatial versatility since it allows monitoring the landscape in different geographical scales. Next, ICC application is detailed by analyzing from a context focused in a community to the landscape of the park and its buffer zone.

Muchukllacta de Chipaota

A good example of how neighboring communities to Cordillera Azul National Park have been progressing toward more compatible uses with the park's conservation is the Muchuk Llacta de Chipaota community, in the district of Chazuta. The progress chronology is shown below:

Chart 8

Icc Level	Operational and Institutional progress in the native community of Muchukllacta de Chipaota
Level 1 (2002)	In 2001, the park is established and the threats are know thanks to a socioeconomic diagnosis. In 2002, informative and limits workshops are carried out with the neighboring community to the park. Information is registered in GIS database.
Level 2 (2003)	In 2003, the Uses and Asset Mapping is carried out by recording information about the way of life of local residents and their assets (knowledge, vision of the World, social and communal organization, environmental awareness). Moreover, it is analyzed workshops of perspective of the park's conservation regarding their community. Such information is important to adapt the strategies that are indicated in the Master Plan of the park and the activities that will eventually develop in the buffer zone.
Level 3 (2004-2006)	<p>Parkguards patrolling, from Control Post Robashca (PC 11) with the support of the local residents which grant the area the ICC level 3 (2003).</p> <p>In 2004, communities committed to work in favor of the park's conservation and the field teams offer to help them, technically and scientifically, in order to reach a better management of their resources. Such commitments are called Acuerdos Azules or Conservation Agreements, and are considered the institutional framework for numerous activities such as:</p> <ul style="list-style-type: none">  Progressive execution of all phases for the community's land zoning  Installation of "Conservation Corners", used as information exchange point  Research about the regeneration of the palm tree Piazaba (<i>Aphandra natalia</i>), whose fiber is used to male brooms, so as to give information for improving its management (2003-2005)  Record of information about overpopulation and hunting of wild fauna used by the local population (2004-2005)  Exploration of the tourist road that goes Chazuta to Mundo Perdido (Lost World) Lagoon, passing by the native community of Muchukllacta de Chipaota  Implementation of Environmental education programs in the rural realm, in the district Chazuta, to which the community Santa Rosa de Muchukllacta belongs(2006);
Level 4 (2006-2007)	At the end of 2006, the zoning proposal is obtained for the native community of Muchukllacta de Chipaota that is validated and defended by their own community and authorities. In the first term of 2007, the land-use planning proposal will be submitted for its approval. This document will be the basis that allow adapting and leading the use of lands and resources in the community's area.

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“ One of the distinctive characteristic of Index for Conservation Compatibility is its spatial versatility since it allows monitoring the landscape in different geographical scales ”

a better management of the resources by ensuring their sustainability and the park's conservation.

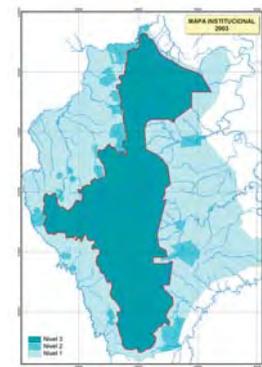
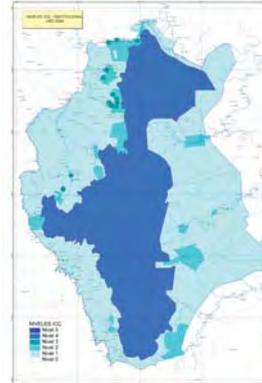
Great landscape: Cordillera Azul National Park and its buffer zone

On the other hand, on a much bigger scale referred to as "great landscape" . it is presented chronologically the progress toward Cordillera Azul National Park's conservation according to the activities developed from 2002 to 2007.

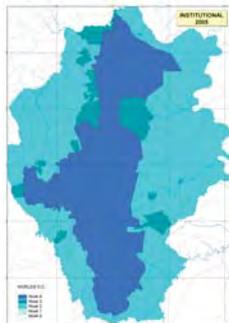
This is the progress sequence performed not only in the mentioned community, but also in the sector Pólvora-Piquiyacu and Shamboyacu. This work is an example of what it is being copied in other neighboring communities to the park. It also focuses on



Cuadro 9

<p>Map 2002 (Base Line)</p>		<p>INSTITUTIONAL</p> <p>IN THE PARK:</p> <ol style="list-style-type: none"> Progress: database about threats to the park (loggers, farms, , excessive exploitation of hunting and fishing) and traditional use is hold. <p>IN THE BUFFER ZONE:</p> <ol style="list-style-type: none"> Progress: database about resource use (hunting, fishing, forestry extraction) and threats (migration, deforestation) (Level 1). <p>NOTE: Knowing the threats has been a key output for determining critical areas and prioritize mitigation and control activities.</p>	<p>OPERATIONAL</p> <p>IN THE PARK:</p> <ol style="list-style-type: none"> Progress: Information recording about the threats to the park and the subsistence traditional use (Level 2). <p>IN THE BUFFER ZONE:</p> <ol style="list-style-type: none"> Progress: Information recording about resource use and threats to the park (Level 2).
<p>Map 2003 (Year 1)</p>		<p>INSTITUTIONAL</p> <p>IN THE PARK:</p> <ol style="list-style-type: none"> Progress: Strategies from the Master Plan of PNCAZ in a participative way (Level 3) are developed, considering local assets. Progress: INRENA-CIMA agreement. <p>IN THE BUFFER ZONE:</p> <ol style="list-style-type: none"> Progress: MUF information is collected in 53 neighboring communities to the park (Level 2). Progress: strategies from the Master Plan are presented to communities so as to be validated. 	<p>OPERATIONAL</p> <p>IN THE PARK:</p> <ol style="list-style-type: none"> Progress: effective patrolling by parkguards covering 433 308 ha of PNCAZ (Level 3). <p>IN THE BUFFER ZONE:</p> <ol style="list-style-type: none"> Progress: 53 neighboring communities to the park with Uses and Asset Mapping and systematized information (Level 2). Progress: Information system and database are kept updated.
<p>Map 2004 (Year 2)</p>		<p>INSTITUTIONAL</p> <p>IN THE PARK:</p> <ol style="list-style-type: none"> Progress: Master Plan is approved by INRENA, R. J. 245-2004 (Level 3). Progress: PNCAZ's Management Committee is officially established (Level 4). <p>IN THE BUFFER ZONE:</p> <ol style="list-style-type: none"> Progress: Acuerdos Azules or Conservation agreement are established with neighboring communities to PNCAZ to start works in communities (Level 3) in pilot communities. <p>NOTA: since the approval of the Master Plan an extended buffer zone is hold (with a total area of 2 301 117 ha).</p>	<p>OPERATIONAL</p> <p>IN THE PARK:</p> <ol style="list-style-type: none"> Progress: effective patrolling by parkguards covering 637 885 ha of PNCAZ (Level 3). Progress: illegal loggers leave the park in the northern sector of PNCAZ (Level 3). <p>IN THE BUFFER ZONE:</p> <ol style="list-style-type: none"> Progress: beginning of zoning activities with 4 test communities (Level 3) Progress: taricayas' management is started in Cushabatay (Level 3). Progress: touristic roads explored: Chazuta and Cushabatay-Cinco puntas. Progress: promote and lead diversification activities of farms with local associates (CEDISA, Choba-choba and Pradera)

Map 2005 (Year 3)



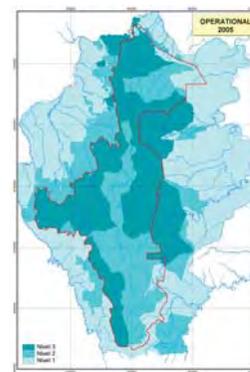
INSTITUTIONAL

IN THE PARK:

1. Progress: Management Committee meeting bi-annually (Level 4).
2. Progress: Master Plan edited (Level 3).

IN THE BUFFER ZONE:

3. Progress: agreement with UGEL from Tarapoto, Contamana and Tocache for environmental education (Level 3).
4. Progress: strengthening of communal organizations (Level 3).
5. Progress: zoning activities continue (Level 3).
6. Progress: new area of municipal conservation (ACM) nearby to the park in the northern sector (Level 3).
7. Progress: PNCAZ's amplification file presented to INRENA (Level 3)
8. Progress: CIMA has vast information and knowledge about the park's neighbors (Level 2).



OPERATIONAL

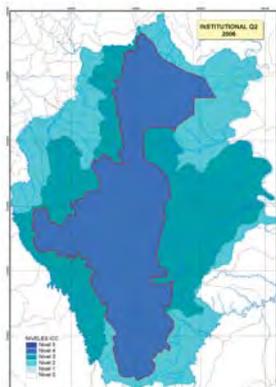
IN THE PARK:

1. Progress: effective patrolling by parkguards covering 844 888 ha of PNCAZ (Level 3).
2. volunteers in shipibo communities (Level 3).
3. Progress: removal of loggers in the stream Soroche (level 3) and beginning in Pisqui.

IN THE BUFFER ZONE:

4. Progress: fauna management is reinforced by census to evaluate hunting sustainability. Research to improve taricayas' management (Level3).
5. Progress: PNCAZ's amplification file presented to INRENA, facilitates patrolling activities (Level 3).
6. Progress: parkguards recruitment.
7. Progress: new control posts Noaya y Pisqui, in Pisqui basin and patrolling activities.

Map 2006 (Year 4)



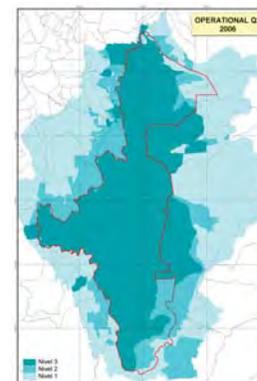
INSTITUTIONAL

IN THE PARK:

1. Progress: publishing and distribution of PNCAZ's Master Plan (Level 4).
2. Progress: agreements are signed with owners (adapting) and settlers (relocation) with livestock and farms inside the park.
3. Progress: park is recognized by the Public Registry in 3 out of the 4 regions that it belongs (R. San Martín, R. Ucayali and R. Huánuco).

IN THE BUFFER ZONE:

4. Progress: agreement with IIAP and GORESAM to support land-use planning (Level 3).
5. Progress: agreements with UGEL from Tarapoto, Contamana and Tocache are kept for environmental education (Level 3).



OPERATIONAL

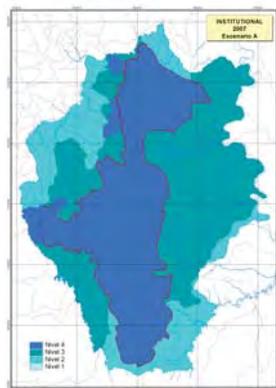
IN THE PARK:

1. Progress: effective patrolling by parkguards covering 884 764 ha of PNCAZ (Level 3).
2. Progress: volunteer parkguards from shipibo native communities (Level 3).
3. Progress: Progressive leaving activity of loggers from Pisqui (Level 3).

IN THE BUFFER ZONE:

4. Progress: Censuses continues to reinforce activities of fauna management and research on taricayas (Level 3).
5. Progress: cacao management communities from Cushabatay (Level 3).
6. Progress: Environmental Education program starts in the rural field, under the agreements with local UGEL.(Level 3).

Projected: Map 2007 (Year 5)



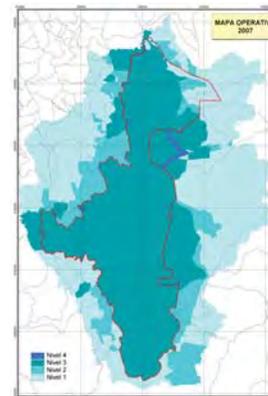
INSTITUTIONAL

IN THE PARK:

1. Progress: park recognized by the Public Registry in 4 regions(including Loreto).
2. Progress: park holds protection, education, Financing monitoring and investigation strategies among others that are recognized by INRENA.

IN THE BUFFER ZONE:

3. Progress: Land-use Planning proposal (POT) approved by local authorities and communal representatives (Level 4).



OPERATIONAL

IN THE PARK:

1. Progress: almost all the park's perimeter is with signs and effective patrolling activities are performed in all important areas in the protection strategy (Level 3).
2. Progress: communal patrolling and volunteers are implemented and reinforced (Level 3).
3. Progress: no loggers in park.
4. Progress: removal and relocation of landowners in PNCAZ, so as to recover farms and secondary forest.

*Infraestructure for Protection is projected at the norther sector of the Park.

IN THE BUFFER ZONE:

5. Progress: end of zoning and POT beginning of the implementation (Level 3).
6. Progress: activities with Logger Concessionaries.



PNCAZ Chief, CIMA's Operation Director and Apu (communal authority) from Muchuklacta de Chipaota, Chazuta District.

How to generate, maximize and sustain the positive impact?

As we mentioned before, ICC allows focusing orderly the results and impacts that are desired to be reached, and for this, the strategy consists of:

A. Lead efforts toward the expected result, which will lead the fulfillment of the park's strategic objective. Beyond the big differences and variety of situations that exist in the park and its buffer zone, the decisions and actions taken are always focused on the threat's reduction by an

“ Beyond the big differences and variety of situations that there in the Cordillera Azul National Park and its Buffer Zone, decisions and actions taken are focused on the threats' reduction ”

ordered use of land and management of its resources with the participation of neighboring communities in sustainable

activities generating benefits. **B.** Define activities by sectors, considering the peculiarities of neighboring residents to the park. During the planning, once the ICC level that is needed to reach in each zone has been defined, some activities are programmed for each populated area, based on the maps of threats planned to be reduced. Moreover, communities' interests and assets are followed so that they can be adopted as fast as possible generating an ideal scenery that allows transforming the dynamics of use of land in the region

C. Work in parallel the operational and institutional aspects, because most of the time - operational results are the most evident for neighboring communities and their authorities. Nevertheless, institutional aspects are simultaneously worked to get strong commitments in the different levels of the government (local, provincial and regional authorities) and of other organizations, ensuring the results to be durable and have a secure and constant support.

D. Focus the commitment inside and outside the park, not only support the parkguards' job, but also carry out an intense work in the buffer zone to gain energetic and committing support from the neighbors. Although the park clearly generates environmental benefits to its neighbors protecting river basins and providing animals and plants for consumption and as medicine it will have to be developed activities capable of providing other sustainable benefits to local residents and eventually help to close the input gap¹³/output gap and create awareness of the park's values.

E. Maximize the effort's impacts, through the work performed with a group of communities in the critical areas of

vulnerability for the park and not with isolated communities. Moreover, through grouping the success obtained so that the conditions for multiplying the efforts are established spontaneously through the region and communities that have not been worked with and that these communities copy successful conservation compatibility activities.

III.3 ADVANTAGES OF USING ICC

The main advantage of ICC is that it represents a methodology that combines the following characteristics in one tool:

A. Integrator: ICC presents numerous activities based on a report and monitoring goal, clear and concrete (see chart 3) inside the context of responsibilities acquired in the long term by Cordillera Azul's Program and for the residents of Hualлага and Ucayali valleys.

“ Index of Conservation Compatibility maps may be directly used as tools for progress presentation and for planning not only to donors and the team, but also to other institutions and organizations such as the government and local authorities, Management Committee and neighboring communities ”

¹³ Input gap, is the amount of money needed by local people to cover their basic requirements, but not satisfied by the traditional productive activities (agriculture, hunting, fishing, etc.)



B. Graphic and visual: because ICC maps can be directly used as a tool in the presentation of advances and in planning. This is shown not only to the donors and team, but also to other institutions and organizations such as local governments and authorities, Management Committee, neighboring communities. Since it is expressed spatially (see ICC maps, chart 4) is easy to understand it and can be

assimilated by any kind of people.

C. Allows an easy follow-up: thanks to which different moments in the management of an area, can be simply compared.

D. Support for projection and planning: allows to plan strategies so as to reach results faster and identify precisely the activities that are needed based on the conservation levels that are pretended to be reached in each sector and where they need to be developed.

E. Articulating: since ICC not only integrates the activities that an institution implements (CIMA and INRENA), but also they add activities developed by other institutions, as long as the follow a conservationist logic.

F. Accepts new and varied information: since ICC is worked on a geographic system, it allows overlapping other events to the activities, such as threats, opportunities, physical features, uses, assets, biological and cultural values and any other kind of information that may be georeferenced.

CHAPTER IV

LEARNED LESSONS



Some of the problems found during the implementation of this new way of monitoring were solved as progress was made. In this way, it was learnt how to use this tool.

Next, the main difficulties that had to be faced and how they were overcome are presented.

1. Activities do not have the same importance

As it was mentioned before, ICC is a graphical and practical way of presenting advances toward the conservation based on the activities performed in the park and its buffer zone. And these activities must



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be designed based on the threats that need to be mitigated. In spite of this, it took several months to prove that all activities do not lead to the area's conservation at the same speed.

For example, the effect will not be the same for PNCAZ's conservation (1) when an effective patrolling carried out by parkguards, local residents and volunteers and (2) when boundary signs are located in the "Conservation Corners", even if these have been located by local residents. Another example is the big impact obtained by zoning activities and land-use planning which are used to influence directly over land use distribution so it can be sustainable and productive. Almost any other activity, developed in the PNCAZ's buffer zone, has such an impact and extension as this one, which allows the population to identify its development potentials and expansion possibilities, protection, etc.

In this way, activities of environmental education, technical support, research in the park or in its buffer zone, promotion

and communication are considered as supportive activities when the progress on ICC levels are evaluated. However, it is known that all of them are very important activities as support to other actions carried out directly for the park's conservation.

This must be clear in the moment of planning, since mistaken projects on the progress of proposed activities will be present. These generally tend to overestimate the ICC level reached if the real effect of activities is not considered in the park's conservation.

2. Activities do not have the same effects

as well as there are differences between the impacts depending on the activity performed, it also happens that depending of the conditions diversity human or natural factors that exist in the park and its buffer zone, such activity may have diverse effects. Many times, great work is needed to get visible achievements in a sector, meanwhile in the other by carrying out such activity - the proposed goals may be reached with little effort.

Huallaga zone (west), has particularly the biggest threats to the park. There is the jungle's marginal road, which has favored the high rates of migration in the region, with 172 populated areas in the western sector of the buffer zone or the park. In this region, the work intensity of CIMA's field team and parkguards has been arduous and the achievements are now seen after 4 years of efforts. The work in the eastern region has also been intense, but the results have been shown more easily, since less human pressures are present, population density is not high and there are less populated areas.

In other situations, there are simply residents' interests which are different from CIMA's proposals. This happens, for example, when two neighboring communities are compared, but since they have different interests they will act differently. In this way, CIMA proposed to carry out zoning activities of native communities Shipibo from Pisqui—Manco Cápac, Charasmaná, La Cumbre and Nuevo Edén— as support to get this requirement in the search for amplifying and titling of their native lands. However, native community Nuevo Eden refused to continue the zoning activities in the area, requesting to be titled before, which is not possible without the previous land-use planning. Another similar case happened with the management of river turtles known as *taricayas* or chariots (*Podocnemis unifilis*) in which the community Fernando Belaunde Terry from Cushabatay enthusiastically participated, meanwhile another community did not want to participate because it was the time for corn harvest.

This examples serve to show that work with local residents must be patient and filed teams need a lot of perseverance to get to know and work with them, understanding their interests, ways of life, assets and difficulties. For this, it is important not only to have a reliable socioeconomic diagnosis full of data, but also to know uses, customs, future projections, way of dealing dairy challenges of local residents. This achieved by cohabitating and with the participation of the residents in the information collection.

On the other hand, the heterogeneous geography of the place is very decisive because it may difficult or help in the mission of conserving PNCAZ. The inaccessible and craggy Vivian geologic formations have saved the park from

deforestation in a quest for farming lands. So parkguards patrolling on these mountains is not required.

This led to mistakes in some opportunities, because the area that should reach a higher level was underestimated, in other words, an area that has already reach the highest ICC level was not "colored" in the map. For example, protected areas were only considered park's zones where patrolling was carried out, in this way, many areas without patrolling were not considered as protected, even if the are almost inaccessible and therefore they are not exposed to threats. Nowadays, if there are not strong reasons to suppose that an area is surrounded by others - that are protected - may be vulnerable, it assumed that it is being protected.

3. Basic area units have to be well defined

Although the units where progress is measured are represented in hectares, the basic representation unit for each activity was not well defined when the use of ICC started. This could have been the field of a community, basin, district, or the exact measurement of the real size of a chacra or parcela.

This suggested that the area's measurement unit must be standardized so as to avoid complications, assuming that the influence field of the activities must be represented based on the area of each community, being the latter the basic unit of work. However, such homogenization limited too much and made mistakes for underestimating or overestimating the influence area without having an real idea of the activity's reach or of the area of the ICC level reached.

For this reason, it was decided to be strict

regarding the influence areas of the activities and their impacts, recalculating the ICC levels reached at each geographical field and having then more flexibility to work on maps.

Some of the activities according to the influence field:

- ✍ Puntual or Plot field: demonstrative farms, school orchards.
- ✍ Community: Conservation corners, Uses and Asset Mapping.
- ✍ River Basin: fauna and fishing management, patrolling.
- ✍ District: environmental education, land-use planning.
- ✍ Regional: park's Management Committee, macro y meso land use-zoning

4. ICC used not only as a monitoring and planning tool

Before using ICC, activities were planned and monitored by performing their follow-up based on the Protection, Participation and Compatible Use programs, but in an isolated way. For this reason, the opportunity to work with ICC as planning tools - was not seized since the beginning; and they were used as a way of showing performance.

Nowadays, based on the periodical revision of the progress of the activities toward the conservation of the park - described precisely on the ICC maps - it is possible to project specifically to the needed changes either inside the park or in its buffer zone. Therefore, since 2005, ICC were also a way of planning activities whose action strategies may be readjusted based on the results obtained during its implementation. The achievements of the activities are more important than their development, because they are executed in different places with great variety of situations, in other words, with a group of opportunities, threats, assets and synergy that present the environment.

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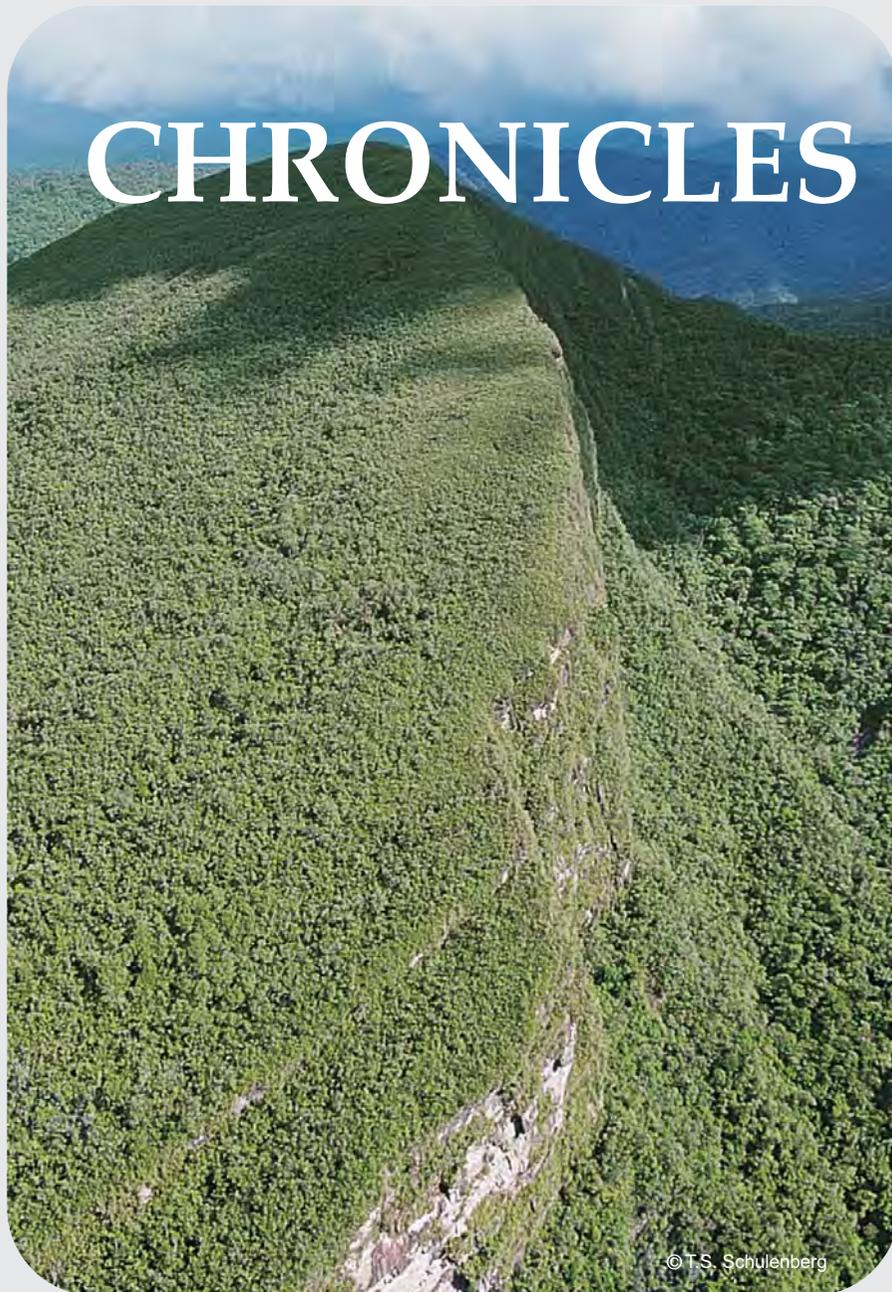
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CHRONICLES



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Level ICC 0. Recording the Base-line

The riches of PNCAZ being one of the primary places for research and conservation were not known before its creation. Therefore, information recording was needed to obtain a biological and social base-line.

In this way, the Rapid Biological Inventory was carried out in 2000 and identified more than 30 new species among other natural and social potentials for the science.



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"One of the things we do is Rapid Biological Inventories and we use the information of such inventories to create conservation areas. In 2000, we started to plan the inventory for Cordillera Azul (Biabo then). We knew that this was an interesting and not very much explored area, and as isolated mountains it would have a great potential for new species and different biological communities"
 Debra Moskovits. The Field Museum 2005.



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Level ICC 1.

Identifying Threats to the Park

The first thing that would lead to start the activities in favor of the conservation of the just created natural protected area was to know the threats that put in risk the park's integrity and the conservation objects it homes. In this way, the most critical areas were defined where parkguards were selected and a protection strategy was implemented.

The main threats were illegal logging, creation of farms and villages and hunting.



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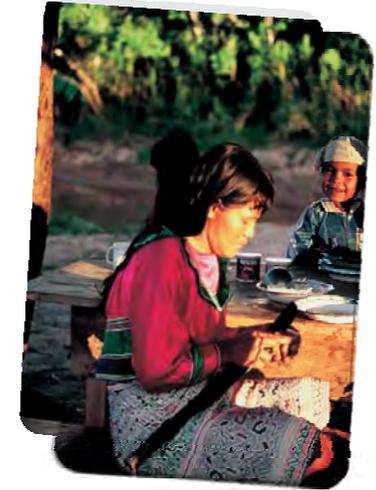


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Level ICC 2.

Knowing the Assets

It was very important to work directly with neighboring communities to the park knowing their origin, customs, values and ways of life through the Uses and Assets Mapping (MUF) methodology. Such methodology was essential for developing and implementing work strategies that would help reducing and mitigating threats already identified to the park. They would also help promoting improvement opportunities in the quality of life of neighboring communities.



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Level ICC 3.

Implementing the Master Plan

Activities focused on threats mitigation and improvement of land-use planning are developed based on the strategies of Cordillera Azul National Park's Master Plan. This document was developed in a participative way based not only on technical criteria but also on the perspective and expectations of the villages regarding the park.



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“Children participate informing themselves in the conservation corners and applying on their farms what they learn in the school orchards”

Liliana Grández. CIMA San Martín. 2005

“Conservation corners are premises built by communities’ residents to get information and technical awareness about the work that we (CIMA) perform and reinforce their knowledge”

Walter López. CIMA Loreto. 2005

“The park’s team bring us pictures and do a meeting in the communal place to train us and after that, they give us those materials to put it in the Conservation Corner where I, as facilitator, am in charge of explaining in my language to the children, students, young and old people that do not know how to read”

Armando Limas. Facilitador en comunidad nativa Shipibo-Conibo La Cumbre, Loreto. 2005



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“So that children learn that single crop framing must not be practiced as they parents do it now. That in farm may be a diversity of crops and that will benefit children and parents. This activity that we are doing at school they do it at their farms and what they learn from their parents they bring it to school. The change of attitude can be seen on children. They know everything about the park and they are learning how to preserve the environment because without it, we will not have water, animals, plants or fresh air in the future”

Norit Meza. Profesora de Canayo. Chazuta, San Martín. 2005

“Zoning consists of helping us to identify where the feeding places for tapirs, deers and peccaries are. As well as where medicinal plants or log trees are concentrated, all this to protect and manage our resources”

Hernán Pactio. Jefe de la Comunidad Nativa de San Luis de Charasmaná, Loreto. 2005

“This local populations participate in the park’s conservation through different initiatives. They are part of the Management Committee of the national park, have Acuerdos Azules (Conservation Agreements), Class in action and also participate as volunteer parkguards and many other initiatives. Let’s see this unique and important activity in the national system of natural protected areas”

Antonio Brack, Loreto. 2005.



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**Level ICC 4.
Benefits and Effective
Land-use Planning**

Communities from the park's buffer zone reckon the positive aspects of living near a natural protected area. They are aware of the potentials for their communities regarding land-use planning. This generates that successful management experiences are copied and their communities become known in the future.



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"Here at Cordillera Azul we are making a positive action(...) not only for our country but also for the planet. We are producing water for the atmosphere and capturing carbon dioxide to reduce warming of our planet. For this reason, the Peruvian government has made the decision and based on the agreement of biological diversity to protect Cordillera Azul as a national park by attracting international cooperation since it is a national and worldwide benefit"

Antonio Brack, San Martín. 2005



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**Level ICC 5.
Park's Protection
and Sustainable
Use of Resources
are Ensured**

Nowadays, park's conservation is expected to be guaranteed by a fund for recurrent expenses, in other words, for protection and surveillance activities as well as activities that support the sustainable use of land and resources by the neighboring communities who must be the first beneficiary of the park's conservation.



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