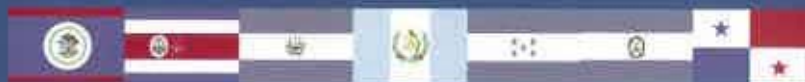




CATIE



Conference Report:

Central American Program for Environmental Defense in the Mesoamerican Biological Corridor

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11th
in a series

**CENTRAL AMERICAN PROGRAM
FOR ENVIRONMENTAL DEFENSE
IN THE MESOAMERICAN
BIOLOGICAL CORRIDOR:
VALIDATION WORKSHOP**

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CATIE

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CENTRAL AMERICAN PROGRAM FOR ENVIRONMENTAL DEFENSE IN THE
MESOAMERICAN BIOLOGICAL CORRIDOR: VALIDATION WORKSHOP

Editors

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Arthur L. Bradshaw, Jr.
Bernard F. Griffard

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July 2003

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FOREWORD

It is a critical role of effective government throughout the world to strike a balance between environmental protection and economic development. In most regions, geography dictates that such a balance be struck on a regional—not merely national—basis to be effective. This is particularly true in Central America, which hosts a rich and vital biological wealth. Specifically, this narrow strip of land is unique in both its endemic species and as a corridor that enables the movement of species between two continents. It is known as the Mesoamerican Biological Corridor. The ecological health of this area has ramifications for the environmental and economic health of much of the hemisphere.

While democracy is not new to the region, the newly developed democracies, in particular, face numerous challenges. In an attempt to help in addressing the challenges within a framework of responsible environmental stewardship, the Tropical Agriculture Research and Higher Education Center (CATIE) developed a training program that is directed toward establishing a role for the militaries and police of the region in protecting the environment while supporting sustainable development plans of their individual nations. At the request of the U.S. Southern Command (USSOUTHCOM), the United States Army War College's Center for Strategic Leadership, USSOUTHCOM, and CATIE cosponsored a workshop for Central American states entitled "Central American Environmental Defense Program in the Mesoamerican Biological Corridor." The purpose of the workshop was to continue to promote regional security cooperation among the Central American states through the consideration of CATIE's proposed program and to identify ways that environmental defense cooperation and environmental protection could move forward on a regional basis.

The workshop was held on the CATIE campus in Turrialba, Costa Rica, from June 24th through the 27th, 2002. This publication is a report on the outcome of that workshop. As the report will indicate, the CATIE program was well received by the participants. Additionally, and perhaps as importantly, contacts were made at the senior leader level and the staff level between national Ministries and between the regional militaries of the

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nations attending. Such contacts engender dialogue that further strengthens cooperation, which leads to greater stability, and regional stability is the key to protecting the environment. Otherwise, protecting the environment can appear to be an unaffordable luxury for nations struggling to survive in a dangerously unstable region.

This workshop capitalized on progress made at the USSOUTHCOM, U.S. Department of State, and Army War College program entitled "Defense Environmental Cooperation for Central America and the Caribbean, which was held in San Jose, Costa Rica, in May 2001.

The Center for Strategic Leadership is proud to have been part of these efforts and looks forward to providing our talents and expertise in support of any future efforts to build upon this success.

Douglas B. Campbell
Director, Center for Strategic Leadership
U.S. Army War College

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Executive Summary

Dr. Kent Hughes Butts

Colonel (Ret.) Arthur L. Bradshaw, Jr.

Professor Bernard F. Griffard

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**Central American Environmental Defense Program in
the Mesoamerican Biological Corridor**

*By Prof. Bernie Griffard, COL(R) Art Bradshaw, and Dr.
Kent Hughes Butts*

One of the greatest conservation efforts ever undertaken on a worldwide level is the Mesoamerican Biological Corridor. Crossing eight national borders, this program aims to protect existing ecosystems, while at the same time promoting sustainable development projects that help to alleviate poverty in the region.

Famous for both its biological wealth and its vulnerability to natural disasters, Mesoamerica comprises Mexico's five southernmost states and the seven Central American countries, and constitutes one of the most dynamic "biological corridors" in the world. However, the continuous depletion of its natural environment, serious competition for scarce resources, and complex conflicts over harmonious use of nature are major concerns that greatly affect the current and future economic well-being of the region. The existing environmental deterioration in the Mesoamerican region is due largely to the poverty affecting over 60 percent of the population combined with destructive conventional production systems that adversely affect many important ecosystems.

Poor natural resource management and the absence of land use planning has resulted in the degradation of natural resources and has set the conditions for many of the natural disasters suffered in the region. Since many of the institutions that regulate and control access to these sensitive areas lack the capacities to effectively execute their critical roles, options to provide auxiliary support need to be explored. One such option is to leverage the organizational capacity, communication networks, discipline and rapid response capability of the regional Armed Forces and Police Corps to improve disaster mitigation and even in their prevention.

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With this as their focus, the Tropical Agricultural Research and Higher Education Center (CATIE) designed the “Central American Environmental Defense Program for the Mesoamerican Biological Corridor,” a training program conceived to contribute to improving and strengthening the capacity of the members of the Armed Forces and Police Corps in technical areas related to environmental, forestry and agricultural roles as well as to disaster management and prevention.

In support of this regional initiative, the United States Army War College Center for Strategic Leadership, the United States Southern Command (USSOUTHCOM), the U.S. Department of State, and the Tropical Agriculture Research and Higher Education Center (CATIE) cosponsored a validation workshop for Central American states



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entitled “*Central American Environmental Defense Program in the Mesoamerican Biological Corridor.*” The workshop was held on the campus of CATIE in Turrialba, Costa Rica, on June 24th through the 27th, 2002. Attendees included military and civilian officials from Guatemala, Honduras, Belize, El Salvador, Nicaragua, Costa Rica, and Panama. This event maintained the momentum established at the USSOUTHCOM, U.S. Department of State, and Army War College May 2001 *Defense Environmental Cooperation for Central America and the Caribbean Conference* held in San Jose, Costa Rica. At this senior-level conference, the Ministers of the Environment and Defense agreed to cooperate and involve the military and police forces in addressing the environmental issues that threaten regional security.

A Regional Standard for Environmental Protection

Mandated by their governments to participate in the process of the defense of society and nature’s rights, the regional Armed Forces and Police Corps now receive instruction in the areas of human rights and humanitarian law, and in matters concerning agricultural and environmental management, vulnerability reduction, impact assessment, and disaster mitigation. Further, the regional militaries and police are working hard to improve their historic image and have dedicated themselves to supporting the needs of their civilian populations. Energized by the impact of Hurricane Mitch, the Central American Ministers of Defense and Ministers of Public Security have dedicated forces and planning efforts to better respond to Humanitarian Assistance and Disaster Response missions. In another positive action, they have started to work closely and are actively seeking the advice of non-governmental organizations (NGOs) who share a common purpose for the region.

In an effort to provide a regional standard, CATIE proposed and developed an educational program aimed at improving and strengthening the capacity of members of the Armed Forces, the Police forces, and the Ministries of Environment in Central America

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in the technical aspects of environmental defense and protection, most notably as related to agriculture, forestry, and environmental concerns. The program allows member countries to comply with mandates set forth by the Central American Presidents through the Alliance for Sustainable Development, the Treaty for Democratic Security in Central America, and the Devolvement and Conservation Strategy for the Mesoamerican Biological Corridor. It also acts as the vehicle to improve the national and regional capabilities to deal with vulnerability issues and disaster management aspects that concern the use, conservation, planning, valuation, and sustainable management of natural resources and the environment.

Promoting Regional Security Cooperation

CATIE's proposed program promotes regional security cooperation among the Central American states. It provided the workshop participants with a guide to identify ways that regional environmental defense and protection could move forward on a regional basis.

The proposal has four stages. This validation workshop initiated the first program stage (5 months). It reviewed the design and overall concept and identified the necessary follow-on events required to establish the criteria for program participation. Stage Two, conducted at CATIE, teaches 35 Central American officers, five from each country in the region, to be environmental security trainers and to design and validate the Basic National Programs (2 months). The national and local multiplier effect is demonstrated during the third stage (22 months). The officers trained in Stage Two design and execute courses in their national and local spheres prioritizing those military regions located geographically in the Mesoamerican Biological Corridor. It is estimated that each Trainer will in turn train 40 personnel at the national level, and then use these personnel to assist in developing and teaching courses at the local levels for 200 more personnel. Stage Four addresses the sustainment of the program's expertise within each Central American country (24 months). The program will facilitate

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the awarding of two Masters Degree-level scholarships per country. The graduates of this program will ensure continuity and permanence of the Central American Defense Program in the Mesoamerican Biological Corridor.

An Outline for Regional Cooperation

The participating military and civilian officials from Guatemala, Honduras, Belize, El Salvador, Nicaragua, Costa Rica, and Panama backed this regional initiative agreeing that effective environmental defense and protection efforts could only move forward on a regional basis. During the working sessions, two parallel lines of attack were identified. First, at the strategic concept level, a coordinated effort had to be made to identify potential donors, and to gain additional support from the regional governments, the concerned government ministries, and the Non-Governmental Organization (NGO) and International Organization (IO) communities. Second, there was agreement that each Central American participant must take the initiative to build the military capacity at the national level to execute the program objectives. Actions in this area include integration of the concept of military environmental stewardship throughout force training and in the curriculums of the nations' Professional Military Education (PME) systems. At the regional level, capacity-building will be enhanced through joint training and exercises and the sharing of the informational and practical tools required to effectively plan and execute environmental initiatives.

Participants agreed on two Stage One follow-on events. In the third quarter of 2002, a Honduras-sponsored Training Program Development Workshop addressed how to coordinate regional military capacity-building. Additionally, a Senior Level Military Workshop focused on gaining government ministry support will be conducted in the near future in El Salvador.

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Looking Beyond the Traditional Remedies

Maintaining the Mesoamerican Biological Corridor as a viable avenue of ecological diversity requires looking beyond the traditional remedies. The CATIE proposal reflects a regional approach to preserving this critical environmental region. By incorporating the organizational strengths of the military and police forces into the effort, they provide support to the less capable government agencies responsible for conserving these resources. The willingness to provide the military and police forces with the training and resources to support this effort reflects the enhanced role that security forces now play in supporting the people and democratic institutions in the countries of Central America.

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Section 1: Introduction

Armando Campos Santelices
Workshop Facilitator

The main objective of this workshop was to analyze the political, technical, and economic viability of the “*Central American Program for Environmental Defense in the Mesoamerican Biological Corridor.*” This project, presented by the Tropical Agricultural Research and Higher Education Center (CATIE), seeks to contribute to filling a void in the training of the Armed Forces in Central America, and to make advances in the continuous training process conducted by the different Military Academies, in order to respond efficiently to demands for participation in the new model of democratic security and in the sustainable development model adopted by the region.

This program constitutes an example of effective cooperation between civil society and the military, which is always looking towards the future through planned actions, continuous execution, and a wide multiplier effect, from officers on down to operational units.

The project was conceived with the aim of generating regional capacity that will strengthen the Armed Forces and Police Corps, allowing them to offer optimal short-term environmental defense and protection services. Aspects covered will be of transcendent importance for the well-being, protection, and continuation of life on the planet.

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For the sponsors of the event—The U.S. Southern Command, the Center for Strategic Leadership of the U.S. Army War College and CATIE—the first step in carrying out the program is its validation, or the incorporation of the perspective of the final users in its design and evaluation. This Validation Workshop was conducted with this in mind, and its results are presented in this document.

Representatives from the Armed Forces and Police Corps from Guatemala, Belize, El Salvador, Honduras, Nicaragua, Costa Rica, Panama, and Paraguay participated in the Workshop, as well as those from the following organizations or projects:

- Central American Commission on Environment and Development of the Central American Integration System (CCAD/ SICA).
- Regional Mesoamerican Biological Corridor Project (MBC).
- Central American Protected Areas Program (PROCAM).
- University for Peace (UPAZ/ ONU).
- International Union for Nature Conservation (IUNC).
- Program for the Prevention and Control of Forest Fires for Latin America (Office for Foreign Disaster Assistance OFDA).
- Conservation Areas System and Pro-Zoo Foundation of Costa Rica.
- Convention on International Sale of Endangered Wild Flora and Fauna Species (CITES).
- International Consultancy for Cooperation (COINCO).



**TROPICAL AGRICULTURAL RESEARCH AND HIGHER EDUCATION
CENTER (CATIE)**

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The program basically has educational aims; it seeks to offer progressive and differentiated training to a wide range of military personnel and police officers in the seven Central American countries and to encourage appropriate attitudes of change for their optimum participation in the complex task of environmental defense. Likewise, it is proposed that these cognitive and value contents become generally accepted by a target population consisting of tens of thousands of people within the Armed Forces and Police Corps throughout the region.

Nevertheless, it is absolutely necessary to take into consideration different aspects of the regional reality and define possible mechanisms and proposals to strengthen their feasibility and viability in order to plan, execute and evaluate the program.

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Section 2: Opening Remarks

Rogelio Ramos

Minister of Public Security, Costa Rica

Carlos Manuel Rodriguez

Minister of Environment and Energy, Costa Rica

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Opening Remarks

Rogelio Ramos, Minister of Public Security

The protection of the natural environment constitutes one of humanity's biggest challenges in the 21st century. Two milleniums of interaction between humans and the global environment demonstrates humankind's growing disrespect for natural resources and the miopic conception that resources are inexhaustible. Although technology and human understanding has been advancing over time, our actions are still altering the earth's natural equilibrium.

Initiatives like the 1972 Stockholm Summit and the 1992 Earth Summit in Rio have successfully incited the international community to attempt to mitigate centuries of irresponsible use of the global ecosystem.

Central America, as a region, does not escape from this harsh reality. Central America suffers from deforestation and the over explotation of many types of natural resources. In recent times, our countries have suffered catastrophic events like the eruption of Volcano Casitas in Nicaragua and the enormous human and material losses caused by Hurricane Mitch. These events dramatically demonstrate that with adequate environmental planning and protection, we would have been able to substantially mitigate and perhaps avoid these disasters.

There are a series of obstacles making the implementation of state-level environmental protection measures difficult. The first is that disasters don't respect borders. Programs that are not transboundery will not effectively address this problem. Further difficulties arise because the authorities that carry the burden of environmental protection must also maintain a constant presence in the rest of their country. These circumstances lead us to the conclusion that environmental protection programs need to be shared between territories, while coordinating with other, similar development forces in neighboring countries.

The Central American Environmental Defense Program in the Mesoamerican Biological Corridor was initiated in-line with this philosophy of integration. This intitiative involves the security forces of all mesoamerican

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countries that have a presence in the region. Circumstances will ultimately permit these security forces to integrate with existing institutions to shape a regional plan that will overcome the failures of isolated programs.

Costa Rica is known for its environmental protection. A significant part of our territory has benefited from these efforts. However, until a few years ago, the environmental protection of natural resources was limited to specialized institutions and did not directly involve the police force. Conscious of the need to change this situation, the Ministry of Public Security together with Ministry of Environment and Energy, as well as other government organizations, developed a course to improve the capacity of the police to participate in such protection measures.

Our police is made up of sixty civil employees distributed in every region. They have the power to protect natural resources at the borders as well as persecute illegal immigrants. The orders for police protection of the natural environment has received an enormous boost from President Abel Pacheco's decision to continue their involvement in these activities. In response to the President's order, the Ministry of Public Security will coordinate the initiatives of environmental protection and will further develop the capacity of the police. For this reason, I'm announcing today the creation of an Environmental Office within the police corps structure.

I am without a doubt that the joint action of the security forces and institutions already involved in the fight for the environment will yield positive results that could not be obtained individually by each country. For this reason, I consider it an honor to participate in the inauguration of this important event.

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Opening Remarks

Carlos Manuel Rodriguez, Minister of Environment and Energy



**CARLOS MANUEL
RODRIGUEZ**

The environmental agenda should be considered as the fundamental axis of policies development in our countries, in conjunction with the economic and social aspects. The Central American Environmental Defense Program is a good example that we're going in the right direction.

We need to enhance the capacity of the armed forces in environmental, forestry and agricultural activities. Specific topics of training could be analysis of environmental impacts, environmental control and protection.

With the presence of both the Ministers of Public Security and Environment here today, the government of Costa Rica demonstrates its commitment with environmental protection issues.

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Section 3: Program Context

Armando Campos Santelices
Workshop Facilitator

Now that the Workshop has finished, one may look at the group of contributions by the speakers and panelists in order to appreciate the doctrinal, theoretical-conceptual, and practical richness of the context surrounding environmental defense. This wealth opens up interesting possibilities for the discussion of this topic among various protagonists within the social reality of the region.

This Workshop demonstrates the importance of involving the armed forces in socially organized environmental protection, beginning at the event's inaugural session, in the welcome speech delivered by CATIE's Acting Director General, Dr. John Beer, and in the presentations of the Ministers of Governance and Public Safety, Lic. Rogelio Ramos, and of the Environment and Energy, MSc. Carlos Manuel Rodríguez, both from the host country. As proof of Costa Rica's national interest in the subject, Minister Ramos referred to the recent offer of a course directed towards high and middle ranking officers of the Costa Rican Police Force. This course was under the auspices of both Ministries and was supported by the Citizens Rights (Ombudsman's) Office. He stressed that Costa Rica's President, Dr. Abel Pacheco, has passed a decision to "involve to a very important

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extent these public servants in environmental defense.” Minister Rodríguez referred to the “horizontal” nature of the environmental issue, which makes it necessary not only to commit his Ministry as well as other specialized entities, but also to include a wide group of public institutions and society in general.

The first panel began with the presentation of the program offered by the COINCO consultant, Désirée Segovia. She pointed out, as one of the program’s goals, the purpose of complying with the mandates contained in the Alliance for Sustainable Development, the Central American Democratic Security Treaty, and the development strategy of the Mesoamerican Biological Corridor (MBC). Complementarily, she explained the reasons why this initiative constitutes an exercise in effective cooperation between civil society and the military state. The program seeks to complement CATIE’s areas of specialization with thematically related activities carried out by the military academies and police schools in Central America. She ended her presentation by explaining the program’s objectives, target population, themes and steps, and she informed the participants of the support that has been received to date from the Secretaries and Ministers of Defense and Public Safety in the Central American countries, as well as those people responsible for permanent training programs within the Armed Forces and Police Corps.

Immediately after the COINCO presentation, the Director of the Mesoamerican Biological Corridor Project (MBC), Lorenzo Cardenal, pointed out that the MBC, from a geological point of view, has always existed as a biological bridge even before humans inhabited the isthmus. However, considered as a complex initiative, the MBC can be defined, according to the Declaration of the XIX Summit of Central American Presidents (Panama, 1997), as “a system of territorial ordering, composed of the interconnection of the Central American System of Protected Areas (SICAP), with areas bordering buffer and multiple use zones, which offers a group of environmental services to the Central American and international society, and

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promotes investment in conservation and sustainable use of natural resources; through extensive social harmonization, to contribute to improving the quality of life of the region's inhabitants." It is clear that the achievement of an initiative of this type would not be possible without the concerted participation of a plurality of actors possessing the necessary knowledge and attitudes to contribute to the objective. This need can be seen even more clearly when we observe that, in practice, the MBC program cannot be separated from the fight against rural poverty, the implementation of economically sustainable models for natural resource management and use, and the reduction of risks affecting inhabitants, infrastructure, and crops. Complementarily, Mr. Cardenal analyzed different aspects that are required to construct a common vision of the MBC and presented a strategic focus proposed by the CCAD to implement it. One essential part refers precisely to the widespread development of human resources.

This first panel concluded with a presentation entitled, "Central America and the Caribbean Basin: Environmental Challenges for the XXI Century" presented by the Executive Secretary of the CCAD, Mr. Mauricio Castro. The speaker presented different contradictory points between the region's biological wealth and the degradation that it suffers due to various causes, such as inappropriate waste management, deforestation, toxic emissions, and disasters, among others. This entire situation generates important environmental challenges that require a truly regional vision and the participation of all of the State's permanent institutions and of civil society, coming together under the shared definition of the corresponding priority geographical areas. In the framework of the different activities proposed, he referred to gender equality as a key factor for social viability. He offered CCAD's cooperation for the Environmental Defense Program (geographical information, visits to demonstration areas, etc.), which he specified only needs to be requested formally.

The second panel began with a presentation by the Director of the National Security Issues Branch, Center for Strategic Leadership,

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**BG ROSALES ABELLA, UNDER SECRETARY
OF DEFENSE, HONDURAS, DISCUSSES
REGIONAL COOPERATION INITIATIVES**

U.S. Army War College, Dr. Kent Hughes Butts, who presented a focus on the concept of environmental security and its importance. The Honduran Under Secretary of Defense, General Marco Antonio Rosales; Mr. Robert Brown, of the U.S. Army Southern Command, and Dr. Butts offered their views on the subject. They analyzed "The Role of

the Military in Central American Environmental Conservation." General Rosales informed the group that, in Honduras, the mandate emanated by the National Constitution, and the Constitutional Law of the Armed Forces stipulates that these forces must cooperate with the Executive Branch in "natural resource conservation." He also presented a historical review of the compliance with this mandate, some specific training initiatives in the field, and of collaboration with civilian organizations.

After a brief introduction in which Professor Bernard Griffard, from the Center for Strategic Leadership, suggested that the group consider certain "priority areas for attention" in the validation of the program, group work commenced. This activity continued into Day 2, and in order to give it the time needed, the theme for the third panel (viability of the program from an international cooperation standpoint) was left for the last day of the Workshop.

The fourth and last panel, focusing on "the Importance of the Environment," brought together different important perspectives to help to understand the context in which the MBC initiative was developed, and thus, the development of CATIE program. Dr. John Beer, Head of CATIE's Agroforestry Department, made a presentation on agroforestry systems. The PROCAM-APM protected areas

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specialist, Mr. Juan Carlos Godoy, referred to the benefits that can be expected from these areas, to the history of the corresponding regional system and to the evolution of concepts oriented towards defining them. Within the subject “protected areas management,” Mr. Godoy stressed the formation of human resources and the development of social participation. He mentioned the importance of consolidating inwards conservationist values and practices in the military field. The armed forces are able to carry out various activities such as protection, restoration, biological monitoring, education, and anticipation of changing conditions in the areas that they administer.

Three speakers discussed, from different angles, the relation between environmental management and different sources of risk. Dr. Francisco Jiménez, an expert in watershed management at CATIE, presented a focus on watershed management, as planning units, oriented towards natural disaster vulnerability reduction. He analyzed various natural and socio-natural threats and emphasized the importance of links between human activity and natural processes, and the interdependence between the high, middle, and low areas that are comprised by the watersheds. Based on this, he presented an analysis of the watershed management elements that must be considered in order to reduce vulnerability to disasters, and strategic considerations implied by watershed management. The OFDA representative in the Workshop, Ms. María Luisa Alfaro, presented a conceptual analysis of “natural and manmade disasters,” applying this to the problem of forest fires. She examined their impact on the MBC and the OFDA’s training efforts with firemen; she explained that the results were used to plan similar educational initiatives in the case of the Armed Forces. To wrap up the panel, Ms. Yolanda Matamoros from CITES spoke on the traffic of endangered species, and presented the instruments regulating legal traffic, characteristics of illegal traffic (national and international), and the problems and responsibilities brought on by effective control.

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This fourth panel ended with the presentation by the Director of the IUNC Regional Office for Meso-America, Dr. Enrique Lahmann, on the importance of coastal ecosystems for sustainable development in Central America. He spoke on the importance of coral reefs, marine grasses, and mangroves and on the principal threats affecting them. He summarized the "coastal problem," pointing out the existence of many different ecosystems, the variety of definitions of the term "coastal area," the inadequate recognition of its benefits, its insufficient political weight, the marked sector divisions that can be seen in its management, scarce inter-institutional cooperation, and the lack of (or faulty) information available to the corresponding decision makers on the benefits that can be offered to local populations. Finally, he explained the concept and principles of "integrated coastal management."

Generally speaking, there was a wealth of multifaceted presentations on environmental defense. These stressed the need to design and develop training programs with an integrated perspective that tie-in themes that are often fragmented and disconnected. It is easy to understand that this perspective is applicable to all social actors who can contribute to this cause, and of course, to the end-users of the program examined in this Workshop.

Section 4: First Working Period

Armando Campos Santelices **Workshop Facilitator**

The following are the contributions from the work groups and the corresponding debates. These are summarized following the set of themes proposed in the analysis guides utilized by each group.

First theme: Reasons that support the role and responsibility of the Armed Forces and Police Corps in environmental defense

Participants did not have any objections or reserves about this training and service. In the positive sense, the conclusions were the following:

- Members of these institutes form part of the States' permanent entities and of the region's population and, thus, cannot be removed from the problems faced therein. More insertion in environmental defense forms part of the changes that are needed to achieve military institutional culture.
- Society and governmental authorities possess ample knowledge regarding the importance of environmental management, which strengthens the need to have a wide range of capable actors working in this area.

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- Inherent capacities and available resources are entirely applicable in this field. Many times, other institutions lack these means.
- The present legal ordering in the countries and their constitutional contracts either demand or permit such participation. In addition, normative similarities in this area favor the coordination of different initiatives among countries.
- Due to the characteristics of their internal organization and logistics, the Armed Forces and Police Corps possess qualities that guarantee the efficiency of their actions in the environmental defense field. In this aspect, it is important to consider their proximity to populations living in nearby areas.

Second theme: Conditions that would need to be created, modified and strengthened to comply with the program's objectives

The following are considered necessary in this aspect:

- Review the legal framework that defines the role of the Armed Forces and Police in environmental defense to bring about the necessary changes, adjustments, or interpretations. As a specific recommendation, representatives suggested that the commitment signed in San Jose in May 2001, by the Ministers of Defense and Natural Resources be updated.
- Secure a favorable political attitude, at short and medium term.
- Determine, with the utmost exactitude, the economic resources needed and the mechanisms needed to keep or obtain them.
- Determine the inter-institutional coordination mechanisms that should be created or improved in each country and procedures to guarantee regional coordination. This point was taken up again in more detail in the plenary session, and it was made clear that there are different levels of coordination,

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some of which transcend the program's objectives. A positive attitude must be maintained when dealing with these. Participants reiterated that this coordination should not be seen as bureaucratic and that existing agreements, systems, and other applications should be considered. Nevertheless, the option to create work commissions or coordination teams, and the implementation of specific regional agreements, is left open for later decision making. A specific coordination factor is the need to leave military and police together to carry out environmental education activities, which leads to joint training.

- Elaborate inter-Ministerial environmental security agendas.
- Incorporate the environmental theme in the missions and programs of military and police institutes.
- Make specific curricula homogeneous in the respective academies and study the possibility and convenience of using some common texts.
- Guide curricular design, taking care that collaboration links with civil society organizations are clear in every phase of execution, as is the complementary (never substitutive) role of the Armed Forces and Police Corps. In general terms, the program should not be limited to merely training, but it should widen its focus to study national and international realities.
- Maintain constant assessment of the program. A follow-up commission should be created to analyze advances and problems, and also to disseminate reports of progress achieved in the region.
- Create specialized units in environmental defense.
- Develop campaigns to inform the population, especially those living in marginal zones.
- Present more precisely the expected results and social benefits that should be derived from greater participation of military and police officers in this field.

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*Third theme: Critical aspects (problems, risks, and difficulties)
to be handled*

The following were presented:

- The challenge to improve the credibility of the Armed Forces in each national society and in the regional context.
- Possible lack of consensus in program contents.
- An excess of themes could cause teaching to be superficial.
- Criteria and procedures for participant selection in training activities.
- Possible communication difficulties, in the border areas, between public safety and environmental workers.
- Possible deviations at the academies could diminish the program's institutional impact.
- Deficiencies or weaknesses that could occur in regional coordination mechanisms.
- Financial shortcomings.
- Possible internal resistance, caused by insufficient awareness of the importance of environmental defense.

*Fourth theme: Doubts concerning the contents of the program and
their conceptual basis*

Participants did not voice any conceptual doubts concerning the program to be validated. Some participants requested information regarding the continuity of the people participating in the Workshop and the mechanisms to be followed to guarantee their continued participation. In this sense, it was stressed that, within the consultative procedures that will be followed, a permanent dialogue with military and police officers with experience in the field of environmental defense must be maintained. This opens, of course, the possibility of developing other workshops with similar objectives in the near future. This does not, however, change the participative options that must be strengthened.

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*Fifth theme: Thematic observations and suggestions
for curricular design*

Various issues that should be included or reinforced in this design were mentioned: the marine-coastal issue, community resource management, planning and conflict resolution tools, waste management, environmental services, and others that were noted so as to continue refining the program's curricular planning. It was clarified that, by definition, training establishes a theoretical-practical relationship between acquired learning and specific demands of professional performance. In other words, training is oriented directly towards the execution of specific tasks and must unite participative and learning-by-doing qualities in its methodologies.



WORKSHOP PARTICIPANTS

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Section 5: Second Working Period

Armando Campos Santelices Workshop Facilitator

During the second work period, the groups elaborated a set of data necessary for program communications in the near future, and analyzed the pertinent selection criteria again. The following suggestions were added for program management:¹

- Distribute the program in military schools and police academies throughout the region so as to conduct a comparative analysis of the contents with the existing courses in similar fields already offered at those schools and academies.
- Program meetings between the countries that share borders in order to coordinate activities that support the program and environmental protection in general.
- Pay special attention to awareness among mid-ranking officers, taking into consideration their important role in internal communications in military and police institutes.
- It was reiterated that it is important that officers who are trained as trainers must have environmental formation and/or vocation, teaching experience, permanence, and leadership. The general terms of the profile were defined for training officers with ranks of Captain or Major.

¹ Those recommendations quoted in the first day of work will not be repeated.

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- National and local trainers must have basic formation in environmental issues, leadership capacity, and a minimum rank of Lieutenant, Police Sergeant, or the equivalent.
- At the Masters level, the profile corresponds to higher ranking officers with university degrees in related fields who could teach university-level courses and are permanent staff.
- In the specific case of Panama, it was suggested that police officers from all areas, zones, and offices, including administrative offices, be considered, in order to encourage the multiplication of the program. Additionally, some trainees should be chosen from among volunteers.
- In terms of institutions that could be linked to the program in their respective countries, participants pointed out governmental and nongovernmental authorities working in the areas of environment and natural resources. In addition, educational and public health institutions were mentioned in some cases. In some countries, representatives recommended involving staff members from the President's Office, and, in the case of Panama, from the Inter-Oceanic Region Authority, the Canal Authority, IPAT, and the Panamanian Hotel Association. In this way, training of human resources, and efforts and interests in support of the program would be more expeditious.
- Representatives mentioned specific counterpart resources that their countries could make available to implement the program. Among them, they mentioned physical installations, educational infrastructure, geographical information systems, support material and documentation on protected areas, teaching materials, and support.
- Representatives identified various possible sources of cooperation to support the program at a regional level or to implement the multiplier effect phases on a local level in each country.

Section 6: General Considerations

Armando Campos Santelices Workshop Facilitator

The Workshop has allowed us to confirm that there is already a certain degree of consciousness and a variety of organic measures and concrete experiences related to the Armed Forces' and Police Corps' role in the fostering and strengthening of environmental security. This does not mean that a new role will be created, but rather that existing activities will be consolidated. In this sense, training linked to the reality in the region and to national particularities, along with the cultivation of appropriate attitudes and values, will become an indispensable option to continue with the advances being made, and help to construct a socially relevant facet for institutional culture.

The degree of acceptance shown by the participants in the Workshop, as well as their enthusiasm and commitment to contribute to the improvement of the program, can be interpreted as validation, even though, given the richness, complexity, and interest of the proposal, it will continue to be an object and beneficiary of constructive criticism.

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APPENDIX B - Conference Agenda

Day 0 (24 June 2002)

14:00-16:00 Registration

Day 1 (25 June 2002)

- 08:30 Welcome to Participants:** Dr. John Beer, Acting Director of CATIE
- 09:00 Inauguration of the Workshop:** Lic. Rogelio Ramos, Minister of Public Safety, Costa Rica; M.Sc. Carlos Manuel Rodriguez, Minister of the Environment and Energy, Costa Rica
- 09:45 Coffee break**
- 10:00 Panel 1**
- Presentation of the “Central American Environmental Defense Program in the Meso-American Biological Corridor:”
Ms. Desiree Segovia, International Consultant, COINCO
 - Presentation of the Meso-American Biological Corridor: *Mr. Lorenzo Cardenal, Director of the Meso-American Biological Corridor*
- 11:15 Conference on environmental problems, “Situation of the Region” (Central America):** Ing. Mauricio Castro, Executive Secretary, CCAD
- 12:15 Presentation of Workshop participant**

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- 12:30** **Working Lunch: Informal discussion of Panel 1**
- 14:00** **Panel 2**
- *“Value of Environmental Security”*: Dr. Kent Hughes Butts, Director, National Security Issues Branch, Center for Strategic Leadership, U.S. Army War College
 - *Discussion: The Military’s Role in Sustaining the Central American Environment”*: General Marco A. Rosales, Under Secretary of Defense of Honduras; Mr. Robert Brown, U.S. Southern Command; and Dr. Kent Hughes Butts, U.S. Army War College
 - *Questions and Answers*
- 16:00** **Coffee break**
- 16:15** **Work Groups; Validation of needs, identification of problems and difficulties for program success, establishment of priorities**
- *Introduction: Problem Areas for Attention*: Professor Bernard F. Griffard, Associate Professor, Center for Strategic Leadership, U.S. Army War College
 - *Presentation of the Dynamics of the Work*: M.Sc. Armando Campos Santelices, Workshop Facilitator
- 17:00** **Work Groups**
- 19:00** **End of the Session and Integration Activity; Barbecue on CATIE’s campus**

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Day 2 (26 June 2002)

- 08:00** **Reports from Group Work and Discussion**
- 09:30** **Coffee break**
- 09:45** **Panel 3: “Viability of the Proposal and Perspectives for International Cooperation” (Moderator: Mr. Manfred Peters, Adviser for External Relations, CATIE);** Country representatives will discuss the current situations in their respective countries and any barriers that might hinder environmental work.
- 11:00** **Panel 4: “ The Importance of the Environment to State Success”; Political and Economic Considerations (Moderator Mr. David Alarid, Director, Environmental Hub, U.S. Embassy, Costa Rica)**
- *Hillside Agriculture and Degraded Lands* (Dr. John Beer, Head, Agroforestry Dept., CATIE)
 - *Watershed Management and Vulnerability* (Dr. Francisco Jiménez, Watershed Management Unit, CATIE)
 - *Protected Areas Management* (M. Sc. Juan Carlos Godoy, PROCAM-APM/Guatemala)
 - *Natural and Technical Disasters* (Ms. Maria Luisa Alfaro, Office of Foreign Disaster Assistance, U.S. State Department)
 - *Traffic of Endangered Species—Organized Crime* (Lic. Yolanda Matamoros)
 - *Protection of Marine Areas—Fishing, Reefs, and Wetlands* (Dr. Enrique Lahmann, IUCN Regional Director)

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- 13:00** **Working Lunch (Informal Discussion of Panel 1)**
- 14:00** **Field Visit: Practical Examples of Environmental Protection
(Ing. Manfred Peters Seevers, Advisor to the General
Directorate, CATIE)**
- 18:30** **End of Session**

Day 3 (27 June 2002)

- 08:30** **Group Work**
- *Program Implementation Plan*
 - *Ideas and Proposals to Improve the Program*
- 10:30** **Coffee Break**
- 10:45** **Report from Work Groups**
- 11:30** **Final Report by the Facilitator**
- 12:30** **Conference Closes**

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APPENDIX C - CATIE Program

CATIE

**TROPICAL AGRICULTURE RESEARCH AND HIGHER EDUCATION
CENTER**

***CENTRAL AMERICAN ENVIRONMENTAL DEFENSE
PROGRAM IN THE MESOAMERICAN BIOLOGICAL CORRIDOR***

VALIDATED FROM JUNE 24-27, 2002

TURRIALBA, COSTA RICA

JULY 2001

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1. Summary

Title	Central American Environmental Defense Program in the Mesoamerican Biological Corridor (technical aspects, agricultural, forest and environmental resources, coastal ecosystems)
Sector	Environmental, institutional strengthening, human rights
Coverage area	Central America : Guatemala, Honduras, Belize , El Salvador : Nicaragua, Costa Rica and Panama ¹
Direct beneficiaries	<ul style="list-style-type: none"> • Panama: Police Academy (ACOPOL) and Centro de Enseñanza Superior de Policía Dr. Justo Arosemena (CEPS) Honduras: Academia General Francisco Morazán; Academia Militar de Aviación; Academia Naval; Academia Nacional de Policía; Escuela de Aplicación para Oficiales y Escuela de Mandos Intermedios El Salvador: Academia Nacional de Seguridad Pública (ANSP); Escuela Militar Cap. General Gerardo Barrios; Escuela de Aviación y Escuela Naval Guatemala: National Defense Staff; Centro de Estudios Militares y Escuela Politécnica Costa Rica: Escuela de Policía Francisco J. Orlich and Escuela del Servicio Nacional de Guardacostas Belize: National Defense Staff Nicaragua: Escuela Superior del Estado Mayor; Directorate for Civilian Affairs • 35 trainers trained as trainers (regional scope) representing: <ul style="list-style-type: none"> - 3 National Defense Staff members, 1 from the Centro de Estudios Militares and 1 from the Escuela Politécnica, Guatemala - 5 Officers designated by the Joint Staff of the Escuela Militar Capitán General Gerardo Barrios, El Salvador - 5 Majors from Honduras - 5 Officers from the Centro de Enseñanza Superior Dr. Justo Arosema, Panama - 4 Officers from the Escuela de Policía Francisco J. Orlich and Escuela del Servicio Nacional de Guardacostas, Costa Rica

¹ Considering that constitutionally, Costa Rica and Panama have done away with their armies as permanent institutions, the program is open to the participation of those in charge of law enforcement in the specialized police environment.

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	<ul style="list-style-type: none"> - 3 Officers from the Escuela Superior del Estado Mayor and 2 from the Directorate for Civilian Affairs, Nicaragua - 5 Officers of the Presidential Staff, Belize. • 280 Officers (captains, lieutenant and second lieutenants) 40 per country trained as trainers, in the basic environmental defense program in the Mesoamerican Biological Corridor • 1400 Sub-officers and soldiers trained, 200 per country in the basic environmental defense program in the Mesoamerican Biological Corridor • 14 Officers with a Masters degree in Integrated Management of Natural Resources; Ecological Agriculture, Management and Conservation of Tropical Forests and Biodiversity; Environmental Economics and Watershed Management; 2 per country. <p>The multiplier effect of the training will directly benefit approximately 168,400 members of the armed forces and police forces in Guatemala, Belize, Honduras, El Salvador, Nicaragua, Costa Rica and Panama.</p>
Executing Organism	CATIE : TROPICAL AGRICULTURE RESEARCH AND HIGHER EDUCATION CENTER
Sponsoring organisms	<p>Central American Commission for Environment and Development (CCAD/SICA)</p> <p>Regional Central American Program for the Meso-American Biological Corridor (XIX Central American Presidential Summit meeting, Panama)</p> <p>Secretaries and Ministers of Defense and Safety of the Treaty for Democratic Safety for Central America</p> <p>US Army Southern Command</p> <p>Center for Strategic Leadership of the US Army War College</p>
Length	<p>A total of 30 months that will cover the following stages:</p> <ul style="list-style-type: none"> ➤ Stage 1: Design and validation of the program for officer trainers (Length : 5 months) ➤ Stage 2: Training for trainers (Length : 2 months) ➤ Stage 3: National and local multiplier effect (Length: 22 months) ➤ Stage 4: Specialization program (Length : 24 months)

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Cost	<p>Request to international cooperation :</p> <ul style="list-style-type: none"> √ Phases I and II (<i>financed</i>): Program Validation, Training of Trainers (regional scope) and program dissemination/promotion: US\$187,590.00 √ Phase III: National and local multiplier effect: US\$1,356,735.00 √ Phase IV: Specialization Program: US\$481,228.00 √ General total: US\$2,025,553.00 √ Financed: US\$187,590.00 √ To be financed: US\$1,837,963.00
Summary of reach	<p>The program is conceived to contribute ? improving and strengthening the capacity of members of the Armed Forces in technical aspects related to agricultural, forestry and environmental aspects which allow them to comply efficiently with mandates set forth by the Central American Presidents through the Alliance for Sustainable Development, the Treaty for Democratic Security in Central America and the Development and Conservation Strategy for the Mesoamerican Biological Corridor.</p> <p>In this context, the members of the armed forces in Central America, as permanent State institutions, have received mandates in the national, regional, constitutional, legal and international ambit, to participate in the process of defense of society's and nature's rights. Within the new model of democratic security, members of the armed forces receive additional instruction in the areas of human rights and humanitarian law, preparing themselves in matters concerning agricultural and environmental management, vulnerability reduction, impact assessment and disaster mitigation.</p> <p>The program will allow countries to fill a void in the formation of the Armed Forces in Central America and advance in the process of continuing and sustained education conducted by the different Military Academies to respond efficiently to demands for participation in the new models of democratic security sustainable development adopted by the region. It constitutes an example of effective cooperation between civil society and military forces through planned actions with a tremendous multiplier effect which reaches from the highest officers to the operative units.</p> <p>The Tropical Agriculture Research and Higher Education Center (CATIE) will join forces in the conception and execution of the</p>

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program with the different Academies and Military Schools, with the Police forces and the Ministries of Environment in the region, taking into account that these institutions hold the responsibility and capacity to assume this type of challenge in Central America, due to the ample experience that they have in the area of training in their respective work areas and the complementarities of their specializations.

The execution of the program contemplates firstly, the intensive training, over an eight-week period, of 35 officers as trainers, in different thematic areas. They will be selected according to their importance to program beneficiaries. They will, with the permanent advising from CATIE experts, continue to train over 240 more people, from officers to troops, in each of the countries. Areas to be covered by the program include subjects such as ecology for production and conservation, environmental policy and legislation; natural and technical disasters, waste management; geographic information systems; biological conservation; watershed and coastal biodiversity management; protected areas planning, management and conservation; forest fire prevention and control; forest plantations and ecological agriculture; and natural forest management, among others.

In addition and to guarantee the intergenerational responsibility for sustainable development, the program will award 14 scholarships for specialization at the Masters level to 14 high-ranking officers, 2 per country, who will conform, on the short term, a network of regional specialists in the area of environmental defense in the military state which will facilitate the concretion of permanent environmental defense agendas and programs in the region.

The teaching methodology of training integrates participatory and tutorial training modules and the design and development of didactic material in accordance with each modality. The Masters degrees will respond to a combined methodology of formation-research in accordance with the pensum of each specialization. 14 specific research studies geared towards priorities of environmental and agricultural problems in each country in the region and related to the Meso-American Biological Corridor will be obtained at the end of the Masters programs.

Program development establishes a formal relationship between CATIE and the Armed Forces, Police Corps and Military and Police

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	<p>Academies in each Central American country. This will help to insure that training efforts become institutionalized in the region and that they eventually form part of the regular pensum of these institutions' study programs. The conception of this program takes into account the availability of the officers' time as well as the teaching methods and techniques most compatible with the daily routine and accumulated experience.</p> <p>The project is conceived with the aim of generating regional capacity which will strengthen the Armed Forces and will allow them, in the short run, to offer an optimum service to society for environmental defense and protection. It is hoped that at the end of the Program, those members of the Armed Forces and Police Corps who have participated in the process will be sufficiently strengthened in vulnerability issues and disaster management aspects as well as those concerning the use, conservation, planning, valuation and sustainable management of natural resources and environment, to be able to offer better services to the region.</p>
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2. Presentation of the executor and sponsors:

2.1 CATIE (Tropical Agricultural Research and Higher Education Center)

CATIE, with headquarters in Turrialba, Costa Rica, and a network of 10 national technical offices in its member countries, is an international, non-profit institution, with over fifty years of experience and service in the field of agricultural sciences, natural resources and environmental aspects related to both areas. With a slogan of "producing while conserving and conserving while producing", CATIE's mission is to directly benefit the countries and populations of the Americas through the application of knowledge, experiences and technologies for development, conservation and sustainable use of natural resources in the American tropics. The Center is committed to obtaining substantial and verifiable impacts on economic growth as well as social development and conservation of natural resources and the environment. It conducts its activities through an integrated strategy of basic research, education (training and higher education) and technical assistance activities, in close cooperation with national, regional and international institutions in the public, private, non governmental and academic sectors.

CATIE operates in a decentralized manner through its National Technical Offices (NTO) where the Center carries out many of its activities in the countries. These Offices offer follow-up and administrative and financial control to projects under their responsibility, and at the same time, act as a link to connect knowledge generated in the region, both to Headquarters in Turrialba, in CATIE's member countries, as well as in the other Institutions involved in the management of natural resources in tropical zones. The NTO are key instruments for CATIE's involvement with

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national institutions and organizations. The Offices are headed by a National Technical Coordinator (NTC) who coordinates activities in the country.

CATIE's research efforts focus on forestry and agroforestry systems, strategic inputs for sustainable agriculture and valuation of natural resources. In close collaboration with research, CATIE also offers human resource formation at the Masters and Doctorate levels in conjunction with North American and European universities, in the fields of ecological agriculture, agroforestry, tropical forestry; management and conservation of tropical forests and biodiversity; environmental economics and watershed management. Technical cooperation concentrates its efforts on information gathering and dissemination through printed, electronic, optic, audiovisual and multi-media; human resources are developed through training and technology diffusion and its integration in the management of land use systems, environmental and natural resource conservation.

As far as training is concerned, CATIE offers services to develop professionals' cognitive and technical abilities. It also aims to strengthen the operative capacities of organizations and institutions dedicated to agricultural and forestry production, conservation and protection of natural resources and the environment.

During the year 2000 CATIE organized more than 250 training events with more than 5000 participants.

Training courses combine theoretical and practical teaching in specialization subjects. CATIE has the necessary educational infrastructure: classrooms, laboratories, greenhouses, experimental fields, audiovisual and electronic equipment, lodging and food services.

CATIE has two major strengths: a) close cooperation with national, regional and international institutions and organizations in the public, private, non governmental and academic sectors in its member and other countries and b) the closely linked integration of the Center's three basic activities, which are research, education and outreach, all of which are directed towards human development and natural resource conservation.

During the year 2000, CATIE has invested over US\$19 million to execute its activities, which are financed through a combination of annual member fees paid by its member countries² and the Inter-American Institute for Cooperation on Agriculture (IICA); projects sponsored by countries and international cooperation agencies³ special contributions from developed countries and resources generated by its own activities and Foundations⁴.

² Belize, Colombia, Costa Rica, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Dominican Republic and Venezuela, plus the IICA are regular members of CATIE. Bolivia, Brazil, Peru, Ecuador, Paraguay and some Caribbean countries are negotiating admission.

³ Among cooperating countries, we find Germany, Canada, Denmark, United States, Finland, France, Norway, The Netherlands, United Kingdom, Sweden and Switzerland. Institutions such as the European Union, the

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CATIE's governing authorities are the Inter-American Board of Agriculture, the Superior Board of Ministers of Agriculture (and the Environment) of member countries and the Board of Directors. Its Director General executes the directions sent down from these instances, and is supported in his functions by the Finance, Administration, Strategic Planning and External Cooperation Areas. The Center's human resources are constituted by executives, scientists, technicians, administrators and field laborers, some 400 people, of which approximately 90 hold Ph.D. degrees, 50 hold M.Sc. degrees, and some 50 hold Licenciatura or Engineering degrees. The main qualities of the group of professionals and technicians are:

- * Its vision and interdisciplinary practices, which are products of its experience in the development of activities at the field level.
- * Its management capacity, by having to interact permanently with decision-makers, technicians and local populations.
- * Its permanent updating, through networks and access to direct information from the entire world.

In particular, CATIE has a professional staff with expertise in forestry, ecological, agronomical, and biological sciences, animal sciences, economy, sociology/community organization, chemistry and civil engineering, among others.

The Administration applies internationally accepted procedures and standards to rigorously control the correct and efficient use of resources.

2.2 Co-sponsoring organisms to date:

2.2.1 Central American Commission for Environment and Development (CCAD/SICA)

In December 1989, during the Summit meeting held in San Isidro de Coronado, Costa Rica, the Central American presidents signed the Central American Agreement for Environmental Protection and constituted the Central American Commission for Environment and development (CCAD), in order to valorize and protect the region's natural patrimony, characterized by its high level of biological diversity and ecosystems. In addition, it acts as the link that establishes collaboration among the Central American countries for the joint search for sustainable development tools, for the optimal and rational use of natural resources, to control pollution and reestablish the ecological

World Bank, the Inter-American Development Bank and the American Cocoa Research Institute (ACRI) team up with CATIE to mobilize human and financial resources.

⁴ FUNDATROPICOS, based in Costa Rica and The Tropics Foundation, based in Atlanta, Georgia.

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balance. Another of its objectives is to seek regional and international financial resources to reach the Agreement's goals.

Another of the CCAD's objectives is to promote participative, democratic and decentralized environmental management in the region. It will act as the regional entity that will determine priority action areas, among other things, environmental education and training; watershed and shared ecosystems management and protection; toxic and dangerous substance and residues management, and other issues concerning environmental deterioration that affect human health, safety and quality of life in Central America.

According to its charter, the CCAD aims to maintain and preserve the natural environment in Central America. This challenge was reiterated with the signing, in August 1994, of the Central American Alliance for Sustainable Development (ALIDES), which placed the responsibility of adopting an integrated strategy for sustainable development in the Region on the area's presidents.

Since its creation, the CCAD has played a leading role in protecting the natural patrimony; in the establishment of important alliances among the Central American countries for the search for and adoption of sustainable development tools; in the formulation of strategic policies and projects with other friendly governments to strengthen national environmental and natural resource protection institutions under them, and in promoting compatibility of the major political and national legislation guidelines with sustainable development strategies in the Region.

2.2.2 Center for Strategic Leadership of the US Army War College (CSL)

The mission of the Center for Strategic Leadership is to serve as an educational center and a high technology laboratory, focused on the decision-making process at the interagency, strategic and operational levels. It stimulates the creation of leadership for officers in the Armed Forces and expands and refines the study of the strategic use of landpower and its application in joint and combined operations, and to help senior leaders solve strategic problems with information-age technology. The CSL has its genesis in the need to increase the use of simulation and wargaming at the strategic level. Its thematic areas include: joint operations, educational gaming, political-military interfaces, mobilization and deployment, theater logistics, joint and multinational warfighting, worldwide threats and operations other than war, such as humanitarian assistance and support to civil authorities, peacemaking and peacekeeping. The Center's methodology has proven to be successful in creating capacities using the teamwork concept combined with Masters level studies, the use of civilian, academic/university and military information and multidisciplinary teaching technologies. University professors, students from the institute, strategic studies specialists, independent contractors and those from other academic institutions participate in the educational program and make up each project team. This allows great flexibility and adaptability to participants' demands and needs.

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The environmental issue of natural resource conservation and preservation, as well as the prevention and mitigation of vulnerability to natural and anthropic disasters is considered to be strategic material within the CSL's frame of action. For this reason, it has organized special training programs for officers in the United States and has sponsored organizations specializing in similar activities throughout the Americas. CSL's teachers participate actively with regional experts to create leadership to generate strategic decision-making processes for the conservation and protection of environmental patrimony.

2.2.3 US Army Southern Command

The US Army Southern Command is an institution which, since its creation in 1946, is responsible for promoting democracy, stability and the bringing together of the United States of America and the other countries on the American continent. Upon request by civilian authorities, it responds unilaterally and multilaterally to crises that threaten regional stability. Presently, the Southern Command, with headquarters in Miami, Florida, is preparing to contribute to solving new and future hemispheric challenges, which include natural resource protection, conservation and sustainable use.

The Southern Command conducts the Environmental Security Program, which is based on the belief that the region's stability is threatened by increasingly violent natural disasters, by the vulnerability of vast populations to the lack or excess of water, disorganized migrations that cause pressure for quality public services, by the use of agricultural and industrial practices which are potentially destructive to natural resource sustainability and by border disputes that are closely linked to the rational use of these natural resources. The program examines, with the cooperation of a wide range of military, institutional and civilian representatives as well as international experts, the threats to regional stability due to environmental conflicts. It also collaborates actively in the flow of communication and cooperation between and among the American States to seek common solutions that will strengthen collaboration links and avoid conflicts.

It is a priority Program since the American continent represents a sixth of the continental territory covered by the US Army as well as a great part of the Pacific and Atlantic Ocean areas including island territories.

3. Proposal justification

Global interest in biodiversity, conservation, natural resources, environmental protection and sustainable development play an important role in the Agendas of the Presidents and within the theme of Democratic Security, on the worldwide as well as regional levels. This theme was ratified during the IV World Congress of National Parks (Caracas, 1992), the Agreements of Río de Janeiro (1992), the First World Congress for Nature (1996); the Alliance for Sustainable Development in

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Central America (ALIDES, for its acronym in Spanish)⁵ (1994) and the Frame Treaty for Democratic Security in Central America (1995)⁶.

The legal tools mentioned above serve to orient this proposal within the geographical ambit of the Mesoamerican Biological Corridor, and its need for protection. This Corridor covers 30% of the territory in Central America and includes the greatest area of remaining forested land on the Caribbean side of the isthmus. The Mesoamerican Biological Corridor is a product of the commitment of the Central American Presidents (XIX Central American Presidential Summit, April 2000) to create a new cooperation instrument that aids territorial ordering through a network, and creates and strengthens protected areas in the region, as well as nuclei of bioregional management. Additionally it creates ecologically friendly agroforestry production systems in protected areas, ecological rehabilitation and ecotourism. The Corridor aims to create a biological avenue in harmony with the area's inhabitants, and is one of the region's greatest efforts to establish an organized system to offer environmental goods and services to the Central American and worldwide societies, while promoting investment in the sustainable use of natural resources.

Due to the continuous depletion of natural resources in the region, serious competition for scarce resources is occurring, which creates complex conflicts over harmonious use of nature. This has led to accelerated scientific and normative development for the environment which, together with aspects concerning agriculture, acts as a complement and feedback to guarantee human rights of the second and third generations. Both disciplines benefit from scientific and technological advances in the exact sciences -biology, ecology, chemistry, information sciences, etc. Nevertheless, with very few exceptions, these disciplines are incorporated into the study plan of the members of the Armed Forces. There are still serious limitations for the incorporation of these norms for the protection and conservation of natural resources and the environment, as well as for the prevention and attention to emergencies caused by natural and technical disasters, whose effects are even greater due to the inadequate management of natural resources and environmental deterioration.

⁵ ALIDES constitutes the regional development strategy embraced by the Central American presidents, and whose fundamental objective centers on the improvement of populations' quality of life, in an integrated framework to achieve political, economic, social and environmental sustainability in the region. Among ALIDES's fundamental characteristics are: the integrated focus on development and the participation of different sectors within society, as well as the effective articulation among the regional agenda and priorities established in national and local ambits.

⁶ The Central American Model of Democratic Security is the first attempt in the region to conceive a doctrine of alternative security based on **respect, promotion and tutelage of all human rights**. Its dispositions guarantee security of the Central American countries and their populations, through the creation of conditions which allow personal, family and social development in peace, liberty and democracy.

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In general, the absence of trained human resources has hindered the development of a strategy to collaborate efficaciously in tasks related to monitoring and security and to aid in the interchange of information among the principal National authorities.

During the past decades, different governments have promoted a number of special laws and have established guidelines so as to regulate agricultural, livestock and forestry and biodiversity productive processes, oriented to the adequate protection of natural resources, as a function of development in a global world as society's response to the slow depletion of these resources and the ensuing increase of conflicts, both in quantity as well as complexity, which is generated by the competition for their use. Also in the regional ambit, ratification of agreements regarding forests, biodiversity and protected areas, climatic change, dangerous substances and bi-national agreements, such as the La Amistad Park (Costa Rica-Panama) and the Si-a-Paz Reserve (Nicaragua-Costa Rica), have been increased. However, the "sectorization" characteristic of the norms and the dispersion of regulations has hindered the integrated analysis and complementarity of activities.

In this context, members of the Armed Forces in the Central American countries, in the permanent national institutions, have received mandates in the national and regional, constitutional, legal and international ambits to participate in the process of defense of society's and nature's rights. Members of the Armed Forces receive additional training in human and humanitarian rights within the new model of democratic security. Training is deficient, however, in technical aspects of agricultural and environmental issues, and in particular in issues related to the prevention and mitigation of natural and technical disasters.

Due to the organization, good communications, and readiness to act, the Armed Forces can provide a unique contribution to attend to natural and technical disasters.

Representatives of the Executive Branches and the Armed Forces and Police in Central America, have requested CATIE's aid in articulating a concerted response to this situation. They believe that it is essential to make an effort to increase personnel training within the Armed Forces in areas of agriculture and the environment in the region.

This proposal is conceived to contribute to improve and strengthen officers' and sub-officers' abilities in these fields, and to bring about a multiplier effect in aspects related to agricultural, forest and environmental aspects. .

CATIE will join forces with the different Military and Police Academies and Schools in Guatemala, Belize, Honduras, El Salvador, Costa Rica and Panama and with environmental authorities in the

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conception and execution of the Program. An assumption is that these institutions have the capacity to assume this type of challenge in Central America, due to their ample experience in training and field work in their respective work areas and the complementarity of their specializations.

The relationship between CATIE and the Central American Military and Police Academies allows for the institutionalization of training efforts in the region. Additionally, these begin to form part of the regular study pensum for the military through the development of teachers and support didactic material. It takes into account time availability of the members of the Armed Forces in the region as well as the most compatible teaching methods and techniques for daily needs and accumulated experience.

Among the specific training needs established by members of the Armed Forces for the execution of their functions is specialized technical knowledge about agriculture, livestock production, forestry, environment, topography, water resources, meteorology, ecology and geographic information systems. These topics are indispensable for the articulation of concerted responses to Civil Society and Governments for the defense, protection and conservation of natural resources and the environment.

The program will fill a void in the formation of the Armed Forces in Central America in second and third generation human rights, and advance the continuous and sustained training process conducted by the different Military and Police Academies to respond more efficaciously to demands for participation in the new democratic security model as well as in the sustainable development model adopted in the region. It constitutes an example of effective cooperation between Civil Society and the military.

4. Program validation

From June 24-27, 2002, CATIE, in conjunction with and sponsored by the Center for Strategic Leadership of the US Army War College (CSL) and the US Army Southern Command, conducted a Validation Workshop for the *Central American Environmental Defense in the Meso-American Biological Corridor* Program (see Program in Annex #1) at its headquarters in Turrialba, Costa Rica.

The main objective of the workshop was to analyze the Program's political, technical and economic viability. Representatives from the Armed Forces and Police Corps of Guatemala, Belize, El Salvador, Honduras, Nicaragua, Costa Rica and Panama participated in the event. One

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representative from the Paraguayan Army also participated.⁸ Speeches and conferences on environmental issues of interest to the region were delivered by participants from the Central American Commission for Environment and Development of the Central American Integration System (CCAD/SICA), the Regional Meso-American Biological Corridor Project (MBC), the Central American Protected Areas Program (PROCAM), the University for Peace (UPAZ/UN), the International Union for Nature Conservation (IUNC), the USAID Program for the Prevention and Control of Forest Fires for Latin America (Office for Foreign Disaster Assistance (OFDA), the Conservation Areas System, CATIE experts and CITES (the entity in charge of combating the illegal international traffic of endangered species). The coordination of the Workshop was undertaken by the International Consultancy for Cooperation (COINCO).

For three days, participants discussed different issues to insure that the program would truly achieve the cognitive and value contents proposed by CATIE, and that its activities would reach the target population of tens of thousands of people belonging to armed forces and police institutes in the region. A look at the varied contributions by the speakers and panelists as well as the outcome of group work, reinforces the idea of doctrinal, theoretical-conceptual and practical richness of the context which includes environmental defense in the region. This richness opens interesting possibilities for improvement and service for a varied group of protagonists within our social reality.

All participants confirmed that their military and police institutes form part of the State's and the region's permanent organisms, and therefore, cannot remove themselves from the imminent problems being faced therein and that a greater insertion in environmental defense forms part of the changes required of the military institutional culture; that there is ample knowledge within society and governmental authorities about the importance of environmental management. All of this strengthens the need for different actors who are capable of acting in this area. Participants also confirmed that their installed capacities and resources are plainly applicable in this area, as has been shown on numerous occasions when they have faced natural disasters in the region.

In addition, many times other institutions lack these measures and the present legal structure in the countries orders or permits this military participation. Due to the normative similarities in this area, the coordination of different initiatives between countries is possible.

The Workshop also proved that due to the characteristics of its internal and logistic organization, the Armed Forces and Police Corps possess qualities that guarantee efficiency and national coverage of their actions in the area of environmental defense aided by their proximity with populations inhabiting remote and vulnerable areas.

⁸ The Paraguayan representative participated as an observer, and was invited to attend due to the interest in the Southern Cone of establishing a similar program.

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This commitment along with CATIE's proposal was also enriched by participants' observations in the sense of amplifying the program with new components related to technical assistance to design and manage regional environmental agendas for the Armed Forces and Police Corps in the region within the framework of the Central American Treaty for Democratic Security and ALIDES, as well as for the programmatic incorporation of environmental defense in the framework of the Armed Forces and Police Corps' operative plans. It must be pointed out that the concern shown about the need to offer greater coverage and dissemination of the Program and to intensify activities to bring together the contributions of international cooperation, in the sense that these would strengthen the training component as a first step towards the design of other proposed components.

The Workshop allowed us to confirm that there is already a certain degree of consciousness, various organic measures and concrete experiences related to the role of the Armed Forces and Police Corps to encourage and strengthen environmental security in the region. Likewise, important commitments of counterpart institutions in each country to the program were voiced. It was seen that CATIE's initiative does not attempt to create a new role, but rather to consolidate a position that is already forming. In this sense, training linked with to the regional reality and to national particularities, along with the cultivation of appropriate attitudes and values, will become an indispensable option to insure that the advances made to date are not stopped or lost, but rather that they continue onward with the construction of a socially relevant facet of institutional culture.

The degree of acceptance manifested by Workshop participants, as well as their enthusiasm and commitment to contribute to improving the Program, both in terms of defining new contents in coastal and maritime protection and that which is related to their institutional framework for execution, can be legitimately construed as a basic validation of the Program. Due to the proposal's richness, complexity and interest, it will receive continuous constructive criticism and will benefit from widespread contributions. (See Annex 2: Facilitator's report)

As a result of the Workshop, CATIE was able to achieve the international cooperation of the event's sponsors; the Center for Strategic Leadership of the US Army War College (CSL) and the US Army Southern Command will finance the first and second stages of the Program.

5. Objectives

5.1 General Objective

To perfect theoretical and practical knowledge in the area of sustainable management of natural resources and natural and technical disaster prevention and mitigation in Central American countries, through the execution of a training program in regional environmental defense directed towards members of the Armed Forces and Police corps.

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5.2. Specific Objectives

- a) To promote an attitude of continuous change, strengthening and improvement of the Armed Forces and Police corps in the region, to sustainably conserve, utilize and manage natural resources and the environment, in an integrated manner, particularly in the Mesoamerican Biological Corridor.
- b) To train members of the Armed Forces and Police corps to strengthen the democratic security system adopted in the region and to comply with ALIDES, in the sustainable use, conservation and management of agricultural fields and the environment.
- c) To train members of the Armed Forces in issues related to vulnerability, prevention and mitigation of natural and technical disasters.

6. Form of intervention

The proposal has been structured in four phases of execution:

- Phase 1: Design and validation of the program for officer trainers. Edition and publication of didactic materials. Elaboration of guides for tutors and participants. Selection of participants and training of teachers/facilitators (Length: 5 months)
- Phase 2: Training of 35 Central American officers as trainers and design and validation of the Basic National Programs (Length: 2 months)
- Phase 3: National and local multiplier effect. Design and validation of the basic program. Elaboration of guides for tutors and participants. Execution of courses in the national ambit and design and execution of local courses, prioritizing those military regions located geographically in the Mesoamerican Biological Corridor. (Approximately 1 national course and 5 local courses per country) (Length: 22 months)
- Phase 4: Specialization program in environmental defense (Length: 24 months)

The main activities to be conducted in each phase are found below:

Phase 1: Design and validation of the program for officer trainers. Edition and publication of didactic materials. Elaboration of guides for tutors and participants. Selection of participants and training of teachers/facilitators

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Based on the joint Validation Workshop between CATIE and the Military and Police Academies and Schools in the Central American countries, conducted from June 24-27, 2002, the basic program and tools to increase its effectiveness and efficacy are presented, considering the different points of view of the beneficiaries. The training proposal is divided in three parts: a) global subjects which should be covered in the general modules and which implicate ecological bases, policies and legislation and Geographic Information Systems, b) conceptual subjects and c) implementation which implies different management systems. Each part is presented below:

a) SUBJECTS: GLOBAL

- **Ecology for production and conservation**
 - a) Basic principles and concepts of ecosystems
 - b) Relations among ecosystems
 - **Principles of Conservation Biology**
 - a) The relation among abiotic and biotic factors in a natural system
 - b) Studies of distribution of live organisms and natural processes that permit the classification of the biosphere in different units and,
 - c) Diverse species that inhabit and interact in determined spaces and population dynamics in these units.
 - **Environmental Policy and Legislation**
 - a) Environmental policy and law
 - b) Environmental legislation in the framework of Central American integration
 - c) Penal protection of the environment
 - d) Control, protection and judicial procedures in ecological offenses
 - e) bases for the introduction to national environmental legislation
 - **Geographic Information Systems**
 - a) Mitigation: prompt response, organization, social actors
 - b) Prevention, early warning, social actors

b) CONCEPTUAL SUBJECTS.

- **Criteria for Biological Conservation**
 - a) Knowledge related to endemic, exotic, endangered, migratory and other species,
 - b) Necessary knowledge to establish connections between protected natural species; and,
 - c) Knowledge related to interaction spaces of different species between territorial units or wider spaces.
 - d) Biological corridors
 - **Watershed management**
 - a) Problems of natural resource management in Central America
 - b) Modern concepts in watershed and environmental management
 - c) Watershed management, experiences and opportunities

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- d) Watershed management and its relation to vulnerability to natural disasters
- e) Water as a present and future strategic resource - water contamination/treatment
- f) Benefits of watershed management
- g) Institutional and local participation in watershed management.
- h) Legislation for soils, water and territorial ordering
 - > **Criteria for establishing and managing Protected Areas**
 - a) Knowledge regarding necessary criteria for establishing protected areas, such as: values to be protected, objectives for protection, manipulation levels of resources, status of the ecosystems present, uses given to the area, resource demand;
 - b) Knowledge related to the establishment of protected areas, determined by the protection objectives defined for each area and,
 - c) Necessary knowledge to establish adequate zoning of the area to orient and regulate use in accordance with the characteristics of each zone.
 - > **Agroforestry systems**
 - a) Introduction to the module (history, definition and ecological aspects of agroforestry systems)
 - b) General agroforestry concepts and classification of agroforestry systems
 - c) The most common silvoagricultural, silvopastoral and agrosilvopastoral systems in Central America, Belize and Panama: description and management guidelines
 - d) Ecological interactions in agroforestry systems
 - e) Basic knowledge of soils and water for agroforestry systems management
 - f) Climate and agroforestry
 - > **Integrated coastal areas management**
 - a) Definition of the coastal maritime area
 - b) Importance of coastal ecosystems: coral reefs, marine pastures and mangroves
 - c) Fish resources and aquaculture
 - d) Threats to coastal ecosystems
 - e) Concept and principles of integrated coastal areas management
 - > **Natural and Technical Disasters**
 - a) Vulnerability to natural and technical disasters
 - b) Prevention, early warning, social actors
 - c) Natural disasters: floods, landslides, earthquakes, volcanic eruptions, forest fires, hurricanes, etc.
 - d) Global problems: land degradation, desertification, over-population, climatic change, contamination
 - e) Biological vulnerability: pests, diseases, epidemics, threats to humans and biodiversity
 - f) Technical Disasters: oil spills, contamination, waste management

c) IMPLEMENTATION SUBJECTS.

- > **Protected Areas planning**
- a) Necessary knowledge to elaborate a management plan of the area to be used as a practical and management control tool: this must include measurable management objectives and goals

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- b) Necessary knowledge to elaborate operative planning tools that aid the execution of management plans
- c) Knowledge related to the design of special plans to develop specific operations in protected areas
- d) Legislation regarding protected wildlands and biodiversity
 - **Tools for follow-up and evaluation of Protected Areas Management**
- a) Knowledge related to the status of advancement of protected areas objectives and actions that can determine the state of their management
- b) Knowledge related to tourism management in protected areas and the determination of limitations to public use
 - **Basic operations**
- a) Tools to enumerate and analyze information gathering and registration procedures required to implement programs in protected areas
- b) Development of knowledge and abilities to elaborate and execute search and rescue plans
- c) Provide personnel with first aid knowledge, abilities and skills
- d) Develop abilities and capacity for visitor attention and work with community groups
- e) Learn about basic models of infrastructure, material and equipment use, control and maintenance
- f) Provide personnel with techniques for pathway construction and maintenance
- g) Know techniques to elaborate and maintain environmental interpretation materials
 - **Prevention and control of forest fires**
- a) Knowledge about causes and benefits of forest fires
- b) Identify the behavior and influence produced by fire in forest fuels, topography and climate
- c) Techniques to elaborate forest fire prevention, detection and control programs
- d) Organization of personnel for forest fire prevention and control
- e) Safety norms in combating forest fires
- f) Manual tools for controlling forest fires
- g) Techniques to determine causes of forest fires
- h) Elaboration of a burn and protection plan
 - **Natural forests**
- a) Social and economic aspects of natural forest management
- b) Biodiversity and environmental services, concepts, value
- c) Dasometry and silviculture
- d) Silvicultural techniques for forest management
- e) Low impact logging
- f) Forest inventories for management
- g) Management plans
- h) Non-timber forest products, importance, conservation and management
- i) Forest legislation
 - **Forest plantations**
- a) Dasometry and silviculture
- b) Forest sedes

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- c) Forest nurseries
- d) Species and site selection
- e) Plantation establishment
- f) Silvicultural techniques for plantation management
- g) Thinnings and logging in plantations
- **Ecological agriculture**
- a) Problems associated with the conventional agricultural production model (erosion, loss of organic material, contamination by pesticides, etc.) and innovative options
- b) Genetic resources: genetic erosion, resistance to abiotic factors and pests, improvement in biotechnology
- c) Focuses and conservation practices to maintain soil fertility and control soil erosion
- d) Management of soil microflora (mycorrhizas) for crop nutrition and disease management
- e) Selection and modification of appropriate environments, through agricultural practices (organic fertilizers, cover crops, green fertilizers, mulches, shade management, soil solarization, etc.)
- f) Agricultural practices for pest management (live barriers, trap crops, cover crops, etc.)
- g) Biological pest control, through antagonistic organisms, entomophagous insects (parasitoids and enemy insects) and entomopathogens
- h) Persistence induction and use of semi-chemical substances (repellents, attractants, pheromones)
- i) Organic agriculture as a productive option: concepts, practices, requirements and certification processes, and local and international markets
- **Economics and agroforestry systems**
- a) Legislation on water, soil and air pollution
- **Agroforestry systems**
- a) Diagnosis and design of agroforestry systems on farms: agroforestry analysis, social and economic-financial analysis
- b) Dissemination of agroforestry systems
- c) Perspectives of agroforestry systems
- d) Legislation of toxic and dangerous substance management

Each part can be seen as an independent academic unit; nevertheless, there is a very close relation between them, to ensure that together they offer integrated formation to achieve the objectives.

The preparation of each of the modules requires the contracting of a specialist, or consultant, who besides structuring the modules, will also prepare complementary didactic materials to be incorporated into the student manual.

To do this, specialists in this area, dedicated full-time to the program, will be advised by CATIE experts. Curricular design (course plans, text books, written and audiovisual materials, tutors'

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guides, participants' guides, etc.) will be conducted. Permanent communication is foreseen to validate the program with each of the military academies. Two specialists in military training will join the team of consultants to coordinate their work. Part of the time will be used to train the teachers through a workshop for facilitators, given by a specialist in military education. During this time, the CATIE staff members will learn about the target group, the teaching methods and techniques to be used in the training. This stage will be carried out at CATIE headquarters in Costa Rica.

To ensure the quality and appropriateness of the contents and materials, the consultants will work under the supervision of CATIE specialists and a representative designated by each of the Academies in the region.

This stage, in which the modules will be prepared, should last five months. At the end of this period, 3000 manuals for participants should be printed.

Phase 2: Training of Central American trainers

This is the stage in which 35 officers from the Armed Forces will be trained, five from each country in the region (Belize, Honduras, Nicaragua, El Salvador, Costa Rica, Guatemala and Panama). Selected participants will commit themselves to conduct teaching activities in their respective countries, within the national and local ambit, in conjunction with a group of CATIE professors. This stage will take place at CATIE headquarters in Turrialba, Costa Rica. The three training components will last 8 weeks, and will include participatory academic activities as well as field work, evaluation of the knowledge acquired during training and design of a first draft of the multiplier program to be incorporated in the academic pensa of the military training Centers in each country.

Courses will be structured based on modern foci for teaching-learning processes, so as to optimize resource use. Each event will be developed based on a congruent structure of objectives, contents, techniques, learning activities and evaluation, so as to achieve a true integration of the themes with priority areas. Principal techniques to be used will be lectures, directed studies, individual work, group discussions, field work and case studies. Interactive and criteria-forming processes will be favored. The process will be developed with a constructive focus, to ensure that participants acquire significant learning within their realities.

Phase 3: Multiplier effect

The execution of this phase falls mainly on the group of CATIE teachers and the 35 officers trained as trainers during the previous stage. Execution will take place within each of the Military

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Academies through a national course in which 40 officers will participate, and five local courses for 40 sub-officers and soldiers in each country. The military zones covered by the Mesoamerican Biological Corridor will be given priority. Watershed zones will be given priority in El Salvador. The program will be validated with each Military Academy, and teaching procedures and methodologies used in each will be respected. At the end of this stage, each country will have at least 245 officers, sub-officers and soldiers trained, thus fulfilling the program's objectives. CATIE's team in conjunction with the military trainers, will give technical assistance during this stage, to incorporate the permanent subject courses into the pensas of each Academy.

Phase 4: Specialization program in environmental defense

During this phase, the program guarantees the creation of a permanent specialized capacity in each institution of the Armed Forces to ensure continuity and permanence to the attention to problems related to agricultural and environmental issues associated to them. The program will facilitate the awarding of two Masters scholarships per country. In the case that these are not used, they will be distributed equitably among the remaining countries.

Scholarships for Masters degree work at CATIE will be awarded to officers of the Armed Forces who hold a university degree in similar areas, have at least two years of work experience and who have a working knowledge of English. Each Masters program is for two years, and courses last one quarter (12 weeks) each. Besides the academic load, each Masters student will be a research assistant working under his/her Faculty Advisor. The Masters Program includes the following types of courses:

- **Required general courses:** ecological bases for sustainable production; statistics; experimental design and analysis; sampling techniques; management of scientific literature; English.
- **Essential subjects in the study area or major field*:**
 - **MANAGEMENT AND CONSERVATION OF TROPICAL FORESTS AND BIODIVERSITY:** options for uses and conservation of tropical forests, forest plantations and biodiversity within the framework of up-to-date knowledge of ecological and socioeconomic bases that determine these alternatives, with high community participation from the private sector and the rest of society. This field has two emphasès: forest management and silviculture, which focuses on social, economic, technical and operation aspects of management systems that permit the sustainable use of forests and forest plantations; and biodiversity conservation, which evaluates conservation within the framework of sustainable natural forest management.
 - **ENVIRONMENTAL SOCIOLOGY AND ECONOMICS:** this Masters degree considers cultural changes reflected in a greater global environmental

* Emphasis will be given, in course and thesis work, to issues related to vulnerability, prevention and mitigation of natural disasters, GIS, and the like.

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consciousness and the present and future demand for professionals prepared in tropical resources valuation, participation, gender issues, environmental accounts, technology adaptation and general management and business for environmental issues. This Masters allows students to specialize in important lines of Environmental Administration and Management and Environmental Economics and Sociology.

- **ECOLOGICAL AGRICULTURE:** students this Masters degree study agricultural systems where natural processes are regulated to maintain or improve soil fertility and water conservation, as well as beneficial microorganisms. Pests are managed in an integrated manner, emphasizing biological control and their preventative management. Ecological agriculture systems are evaluated considering social objectives of agriculture, without neglecting those related to economic yield. The emphasis in Plant Genetic Resources and Biotechnology focus on technical aspects of plant genetic resources management and improvement. Beside all this, students study biotechnological techniques such as characterization, *in vitro* multiplication, genetic manipulation, etc. The emphasis on integrated pest management allows students to analyze technological alternatives capable of increasing productivity of productive systems in the tropics in a sustainable manner and one which is in harmony with the environment.
- **TROPICAL AGROFORESTRY:** professionals are trained who are capable of identifying problems and designing agroforestry alternatives that improve land productivity, insure natural resource conservation and contribute to increasing income. Scientific and technical fundamentals of agrosilvicultural and silvicultural systems are seen, and students are exposed to different diagnosis methodologies on farms. Technical instruction, both regarding technological innovations well as of diagnostic methodologies, are complemented with practical applications and field trips. This Masters offers ample opportunities to choose minors in the following areas: agroforestry systems with permanent crops; agroforestry systems with annual crops and silvopastoral systems for degraded pastures.
- **WATERSHED MANAGEMENT:** this Masters aims to train professionals with leadership skills and capacity to carry out natural resource management and conservation in watersheds, through the integration of biophysical dimensions of the use of water and soil resources, climate and biodiversity with social, economic, political and environmental protection aspects. To do this, students are encouraged to develop knowledge, abilities, skills and attitudes to conduct diagnosis, prioritization, planning, project implementation, and rehabilitation and monitoring of watersheds. This is focused on a multidisciplinary vision and strategy where conservation paradigms of productive capacity of ecosystems, active participation of the population, competitiveness, valuation of externalities and equity are basic elements.

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Scholarships to be awarded include registration costs, classes, field trips, educational materials, scientific and computer laboratory use, library privileges, personal medical insurance, student live activities, transportation CATIE-Turrialba-CATIE, communication and editorial services, project design and thesis. In addition, the scholarship will cover the student's transportation costs from his/her country of origin, room and board. Special emphasis will be placed on ensuring that research projects are directed towards specific problems within the student's country of origin, with special priority to those related to the Mesoamerican Biological Corridor and watershed management in El Salvador.

7. Timetable of main activities

Phases I and II

Main activity /month	September 2002	8	9	10	11	12	1	2	March 2003
	7								3
Ratification of political and military commitments									
Program consultations									
Design of promotional campaign									
Selection of trainers									
Methodological development of the program									
Training of trainers in methodological aspects									
Start of trainers program									
Design of national trainers program									
Dissemination and promotion campaign									
Final report: First and second phases									

Phase III

Main activity /month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Ratification of political and military commitments																
Program fine-tuning																
Design of promotional campaign																
Selection of trainers																
Methodological development of the program																
Reinforcement for trainers in methodological aspects																
Start of program by countries																

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7 Thematic and methodological consultants	7 Consultants (one for each module) (part time)	2 Methodological consultants (part time)
7 External consultants to develop modules and participatory training		7 External consultants to develop modules and participatory training 7 External teachers (national and local multiplier effect)
Support personnel		30 months
External consultant for evaluation and follow-up		30 months consultancy
Program dissemination and promotion campaign	1 full/time staff member	External communications consultancy
External Audit		3 months consultancy

The program calls for the following didactic resources, travel, room and board for its execution:

Resource	CATIE contribution	Contribution from the Military and Police Schools	Requested from the donor
Classrooms and/or coordination meeting rooms (Phases I, II and III)	CATIE Headquarters	Academies' headquarters	
Offices and equipment for instructors (Phases I, II and III)	CATIE Headquarters	Academies' headquarters	
Audiovisual teaching equipment (Phases I and II)	CATIE Headquarters	Academies' headquarters	
Local transportation for participants (Phases I and II)	CATIE Headquarters	Academies' headquarters	
Air tickets (training officers) (Phase II)			25 air tickets (average \$400 each)
25 full scholarships (room and board) (Phase II)			25 full scholarships (\$ 2340 each)
5 partial scholarships (board) (Phase II)			5 partial scholarships (\$1620 each)
Publication of didactic material (Phase I)			3000 copies (\$3,5 each)

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Support material, photocopies and communications (Phases I, II and III)	\$500 / mes		\$500 / month
Air tickets and per diem for validation and coordination missions			25 tickets (average) 175 days of per diem (\$150/day) 25 trip expenses (\$100 each)
Air tickets and per diem (institutional management)			12 tickets (average) 60 days of per diem 12 trip expenses
Air tickets and per diem, national and local multiplier effect			25 tickets (average) 1500 days of per diem (\$150/day) 25 trip expenses (\$100 each)
Contribution to Military School for the development of the national and local multiplier program			8 Academies at \$10000 each
Scholarships for specialization studies			14 scholarships at \$28730 each
Air tickets for specialization scholarship recipients			14 air tickets (average \$400 each)

9. Budget (requested from international cooperation)

Phases I and II (financed)

Line /Amount in US \$	US\$
<i>Fees and salaries</i>	
1 Coordinator (4 months \$4000/month)	16,000.00
2 Methodological consultants (\$ 3,000/month 2 months each)	12,000.00
4 teaching consultants (\$ 5000/each)	20,000.00
Support personnel (4 months, \$800/month)	3,200.00
<i>Scholarships and trainers' tickets</i>	
30 airplane tickets (ave. \$400 each)	12,000.00
30 room and board scholarships (60 days at \$39/day)	70,200.00

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5 housing scholarships 42 days each (Costa Ricans)	3,900.00
5 meal scholarships (60 days at \$20/day)	6,000.00
<i>Documentation and didactic material</i>	
Edition and publication of material	6,400.00
Photocopying and binding	800.00
<i>Dissemination and promotion of the Program</i>	
Promotional program in 7 countries	20,000.00
<i>Administrative and organizational expenses</i>	17,000.00
Total	187,590.00

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Phase III

Line /Amount in US \$	US\$
<i>Fees and salaries</i>	
1 Coordinator (16 months)	64,000.00
6 Methodological consultants (6 months each)	36,000.00
12 teaching experts (6 months each)	25,200.00
Evaluation and follow-up	25,000.00
Support personnel (16 months)	17,520.00
<i>Travel and per diem</i>	
36 airplane tickets (ave. \$400 each)	14,400.00
1500 days of per diem (\$150/day)	225,000.00
36 other travel expenditures (\$100 each)	3,600.00
<i>Validation workshops and seminars</i>	
3 Validation workshops	120,000
<i>Documentation and didactic material</i>	
200 Instructional packages	240,000.00
Photocopying and document reproduction	10,000.00
Support to Military and Police Academies	80,000.00
<i>Dissemination and promotion of the Program</i>	
Regional promotional campaign	25,000.00
<i>Administrative and organizational expenses</i>	
Financial administration	244,212.00
Total	1,653,732.00

Phase IV

Line /Amount in US \$	US\$
<i>Fees and salaries</i>	
1 part-time Coordinator (27 months)	40,500.00
<i>Full Masters scholarships</i>	
14 scholarships (\$28,730 each)	402,220.00
<i>Travel expenses</i>	
14 airplane tickets (ave. \$400 each)	5,600.00
<i>Administrative and organizational expenses</i>	
Financial administration	32,908.00
Total	481,228.00

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10. Viability and Risks

10.1 Viability

- **Technical Viability:** The proposed Training Program is considered to be viable from the technical point of view, since its execution is oriented towards contributing through different options to reduce eco-agro-environmental problems in the region and CATIE has the needed capacity to conduct it.
- **Economic Viability:** The Program is economically viable since it is compatible with the search for increased sustainable use, conservation and management of natural resources in the region, due to the strengthening and improvement of the Armed Forces' capacity to collaborate efficaciously with Governments and Civil Society. This could reduce costs incurred due to environmental deterioration. In the same sense, it could help to avoid economic losses caused by natural and environmental disasters.
- **Financial Viability:** The execution of the planned activities within the Training Program by trainees and their respective territorial jurisdictions could permit, at medium and long-term, the return on investments, in agrarian and environmental aspects.
- **Institutional Viability:** The Program is institutionally viable since ample participation and support from the Armed Forces and Police Academies in the region is foreseen, during the training process and execution of activity by trained personnel.
- **Legal Viability:** The countries possess constitutional and legal frameworks in the national, regional and international ambits which support the development of the Program, since this is focused on protection, conservation and wise use of natural resources, improvement of the environment and well-being of Central American populations.
- **Social Viability:** Direct and active participation of the Armed Forces and Police Academies is contemplated in the Program. These are members of permanent social entities within the national structure who will help to bring about the consolidation of a new model of democratic security in the region, which is in harmony with the environment.

10.2 Risks

- **Risk of convocation:** The convocation at the national level conducted by those in charge of the Training Program might have difficulties communicating and disseminating the invitation, and members of the Armed Forces might not have sufficient knowledge about the program nor sufficient time to act. This could reduce participation in the Program.
- **Risk of lack of continuity of trainees:** Given mobility of the institutions, there is a risk that personnel trained through the Program will be dedicated to different tasks in the future than those which they were trained to do; however, upon recommendation of the representatives of the

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Armed Forces during the Validation Workshop, norms to significantly reduce this risk were elaborated.

- **Risk corresponding to the budget situation of the Armed Forces in the region:** The ensuing risk is that budget constraints will hinder the attainment of the Program's objectives.

11. Administrative and financial management of the Project

The Training Program will be administrated financially through the Directorate for Administration and Finances at CATIE's Headquarters in Turrialba, Costa Rica. An exclusive bank account will be opened at a local bank and all expenditures will be made according to what is set forth in the budget, terms of reference and execution modalities. Any modifications or reorientation of the activities, or modifications of budget lines, if this were the case, should be requested formally from the development cooperation agency, which will grant authorization. Back-up information and documentation (files, invoices, justifications, accounts, etc.) will be available to the cooperation agency for verification and utilization. Funds coming from the cooperating organism will be audited by the organism during the project's execution and for five years after its finalization. An external audit by CATIE is also foreseen. The institution will present duly audited financial reports.

The project will be evaluated through systematic and comprehensive actions which will take into consideration both quantitative (quantity and quality of direct beneficiaries, counterpart contributions, number of formal agreements and others) and qualitative (commitment and adherence of the beneficiaries to project goals) aspects, as well as impacts (effective use of material, availability, consultations, etc.) during the period of project execution. These will be reflected in:

- Quarterly Technical and Financial Reports from CATIE to donors
- Final recapitulative report with results and impact evaluations from CATIE to the donor
- Final financial and administrative report for each phase

Following the plan of activities and the timetable, CATIE will elaborate and present technical and financial reports to the donor each three months. These will contain details of the activities conducted and results of the specific evaluations which will show the advancement of the project as a function of the specific objectives set forth. The report will include a financial report of the expenditures incurred with a corresponding explanation. Both reports will include a program for the next quarter.

In order to guarantee the most adequate control of the project, CATIE, through the General Directorate, will establish an external evaluation to elaborate quarterly reports on the execution in terms of evaluation and follow-up of the activities in general; the *ex ante*, current, and *ex post* evaluations of each activity; the design and control of compliance to the experts' terms of reference; compliance in terms of quality, quantity and opportunity of the services for the adequate

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development of the activities and others, so as to be able to correct actions, if necessary, and guarantee the optimum development of the project.

From the onset of the project, and with external technical assistance, the design of the instruments and their application to measure the project's impacts according to the beneficiaries' criteria and the institutional commitment of participating organisms is foreseen. Analytical reports of results will be remitted to the cooperating agency.

At the end of each Phase, a Comprehensive Technical and Financial Report will be submitted. This will include an analysis of each of the items of the original document, with special emphasis on the comparison of the results achieved with those planned; the final measurement of impact; conclusions and recommendations. Additionally, detailed financial information for all expenditures, which has been verified and approved by the Delegation for cooperation in Costa Rica, will be included. The report will be accompanied by appendices covering each activity (programs, evaluations, documental material, graphic material, etc.). The donor will be able to evaluate any facets that it deems necessary as well as any corresponding financial audits during the project's execution. CATIE will keep the files and financial back-ups available during the course of the project and for five (5) years after its finalization.

12. Planning Matrix

Objectives of the Program	Indicators	Sources of verification	Main Activities
Perfect theoretical and practical knowledge in the field of sustainable management of natural resources in the Central American countries, through the execution of a regional Training Program in environmental defense, directed towards members of the Armed Forces in Belize, Guatemala, Honduras, El Salvador, Nicaragua, Costa Rica and Panama.	35 Officers selected by the Central American Military Academies, 5 per country, trained as trainers of the Armed Forces, in five thematic modules in areas such as ecology, forest production and management, agricultural production and management, geographic information systems and topography, evaluation of environmental damage, and special and compared agroenvironmental legislation, among	<p>1. Of the Academic Program</p> <p>Lists of participants in training and specialization events.</p> <p>Course plan of the five training modules.</p> <p>Methodological training program for trainers.</p> <p>Text books and written and audiovisual materials.</p> <p>Trainers', tutors and participants' guides.</p> <p>Evaluations</p> <p>Masters Study</p> <p>Evaluations</p> <p>2. Of the Project</p> <p>Quarterly technical</p>	<p>Organization, administrative and interinstitutional coordination arrangements at the beginning of the program.</p> <p>Selection, hiring and training of facilitators for training courses</p> <p>Edition and publication of didactic material to support training courses</p> <p>Selection of participants for Military Academies.</p> <p>Training for trainers.</p> <p>Multiplier effect in each Military Academy.</p> <p>Selection of participants in specialization courses</p> <p>Beginning of Masters courses</p> <p>Follow-up and evaluation as a</p>

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	<p>others.</p> <p>Through the 35 trainers, training in the same areas of more than 175,000 people in all the countries through the Military Academies.</p> <p>14 Masters scholarships awarded to 14 officers, 2 per country, who will conform a network of regional specialists in the environmental defense field. 14 specific research studies with priority on environmental and agricultural problems in each country in the region.</p>	<p>and financial reports from CATIE to the donor</p> <p>Final comprehensive report with the results and impact evaluations from CATIE to the donor</p> <p>Final financial and administrative report.</p>	<p>continuous activity.</p>
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