UNIVERSITY OF CALIFORNIA
Santa Barbara

and

SAN DIEGO STATE UNIVERSITY

INFLUENCE OF ECOTOURISM ON CONSERVATION
POLICY FOR SUSTAINABLE DEVELOPMENT:
THE CASE OF COSTA RICA

A Dissertation submitted in partial satisfaction
of the requirements for the degree of

Doctor of Philosophy

in

Geography

by

Fred Thomas Wildes

Committee in charge:

Professor Ernst C. Griffin, Chairperson
Professor Philip R. Pryde
Professor Hugo A. Loaiciga
Professor James D. Proctor

March 1998
The dissertation of Fred Thomas Wildes is approved

Philip Brooks

J A Rea

Kengo Takashige

Committee Chairperson

March 20, 1998
ACKNOWLEDGEMENTS

This dissertation would not have been possible without the advice and assistance of a number of people and organizations. First and foremost, I wish to express my deep appreciation to Dr. Ernst C. Griffin, San Diego State University, advisor and chair of my Ph.D. Committee. His outstanding support was instrumental in the whole process of this research and dissertation, from beginning to end. The guidance provided by other committee members is also appreciated -- my sincere thanks to Dr. Philip R. Pryde, San Diego State University, Dr. Hugo A. Loaiciga, University of California at Santa Barbara, and Dr. James D. Proctor, University of California at Santa Barbara. Laura Edwards provided expert technical assistance and production for all of the maps contained in the dissertation.

In Costa Rica, the National University’s School of Geographical Sciences provided me a lot of required assistance. I appreciate all of the administrative and technical support from Omar Arrieta and his staff. The
Latin American University of Science and Technology's School of Tourism also furnished much-appreciated assistance. The Ministry of Environment and Energy, especially the National System of Conservation Areas (SINAC), was of substantial help in archival research, interviews and questionnaires, and the protected area visits. A number of other organizations were also very helpful in the research. Noteworthy among these were the Center for Environmental and Natural Resource Law (CEDARENA) and the Program of Environmental Studies (ProAmbi), valuable sources of information and assistance with archival research. Thanks also to the Costa Rican Tourism Council (CANATUR) and the Association of Private Reserves which provided help in transmitting and collecting questionnaires.

The help and kindnesses of many gracious people in Costa Rica, too numerous to acknowledge individually, were of tremendous assistance to me during my stay in that beautiful country. I will fondly remember my experience there.
VITA

DATE AND PLACE OF BIRTH

25 October 1943 - Brooklyn, New York

COLLEGE EDUCATION

1965 -- B.A., Political Science, University of Maine

1973 -- M.A., Public Administration, University of Oklahoma

1992 -- M.S., Geography, Virginia Polytechnic Institute And State University

PROFESSIONAL EXPERIENCE

1965-66 -- Safety Assistant (U.S. Civil Service), Dow Air Force Base, Maine

1966-75 -- Personnel Specialist (U.S. Civil Service)
   Dow Air Force Base, Maine
   Plattsburgh Air Force Base, New York
   Andersen Air Force Base, Guam
   Hq Military Airlift Command, Scott Air Force Base, Illinois

1975-77 -- Personnel Officer (U.S. Civil Service),
   Bitburg Air Base, Germany

1977-88 -- Personnel Director (U.S. Civil Service),
   Hq Tactical Air Command, Langley Air Force Base, Virginia

1990 -- Retired from Federal Civil Service

1990-92 -- Teaching/Research Assistant, Department of Geography, Virginia Polytechnic Institute and State University

1992-98 -- Teaching/Research Associate, Department of Geography, San Diego State University

PUBLICATIONS


FIELDS OF STUDY

Major Field: Natural Resource Management

Studies in Natural Resource Management: Environmental Studies, Ecology, Biogeography, Conservation
  Professors Philip R. Pryde, Hugo A. Loaiciga and James D. Proctor

Studies in Development and Tourism: Third World Development, Ecotourism
  Professor Ernst C. Griffin

Studies in Latin America: Geography of Latin America, Development Issues, Environmental Issues and Conservation
  Professors Ernst C. Griffin and Hugo A. Loaiciga
ABSTRACT

Influence of Ecotourism on Conservation Policy for Sustainable Development: The Case of Costa Rica

by

Fred Thomas Wildes

This research examined the influence of ecotourism on conservation policy in Costa Rica. It sought to determine whether, and to what degree, ecotourism influences conservation in a developing country relative to conservation attitudes and paradigms; laws, strategies, regulations and other national policies; and establishment and administration of protected areas. The context of sustainable development provided a useful framework to determine and analyze the role of ecotourism in formulating and implementing conservation policy in Costa Rica. The research focused on the early stages of this evolving field, and is therefore bounded in a temporal sense. Additionally, ecological, economic and cultural effects of ecotourism, as well as reciprocal effects of conservation on ecotourism, were outside the bounds of
this research. A substantial amount of literature and archival research began in the United States and continued in Costa Rica. Seven months of field study included a survey questionnaire to officials and experts, interviews and other discussions, and site visits to many protected areas in the country.

Beginning in the late 1980s, sustainable development became the conceptual framework within which policies for both conservation and development (tourism in the context of this study) are formulated and implemented within Costa Rica. At the same time, ecotourism began its dramatic growth, becoming the leading earner of foreign exchange by the mid-1990s. The findings demonstrated that ecotourism has influenced conservation policy in a number of direct and indirect ways, as the primary instrument of sustainable development in Costa Rica. The influence of ecotourism is evident on environmental thought and conservation paradigms, national conservation policies, and public and private protected areas which comprise approximately one third of the national territory. The degree of influence, considered to be significant overall, is strongest in the area of protected areas, especially private reserves.
Ecotourism has also furthered the achievement of sustainable development principles and goals, primarily in its role as an economic justification for conservation. Ecotourism is contributing to formulation of an environmental ethic as well as conservation models and paradigms that foster sustainable development. Consequently, its role in changing the character of national conservation polices and protected areas is also contributing to sustainable development in Costa Rica.
# TABLE OF CONTENTS

ACKNOWLEDGEMENTS ........................................ iii

VITA ..................................................... v

ABSTRACT ................................................ vii

TABLE OF CONTENTS ....................................... x

LIST OF ILLUSTRATIONS ................................... xiv

LIST OF TABLES ............................................. xv

Chapter

1. INTRODUCTION ........................................... 1
   Background and Context
   Research Statement
   Choice of Study Area

2. REVIEW OF THE RELEVANT LITERATURE ................. 19
   Conservation of Nature and Natural Resources
   Physical environment
   Conservation measures
   Conservation attitudes and paradigms
   Environmental economics
   Ecotourism
   Definition and classification
   Context
   Applications of ecotourism

3. GENERAL PROCEDURES .................................. 49
   Field Research
   Data Analysis

4. COSTA RICA: THE PHYSICAL LANDSCAPE ............... 61
   Geomorphology
   Soils and Hydrology
   Climate
   Flora and Fauna
   Ecological Classification

x
5. COSTA RICA: THE CULTURAL LANDSCAPE

Human History of Costa Rica
  Pre-Colombian
  Colonial period
  Independence and national development
  1940s and since
Current Cultural Profile
  Social characteristics
  Economic characteristics
  Political characteristics
Human Impacts on the Physical Landscape

6. CONSERVATION AND TOURISM IN COSTA RICA

Early Conservation Development
  Pre-Colombian era
  Colonial period
  Development of the new nation
  Early-mid 20th century
Conservation Movement
  The 1960s
  The 1970s
  Early-mid 1980s
Tourism Development
  Tourism in general
  Emergence of ecotourism

7. THE MODERN ERA: A SUSTAINABLE DEVELOPMENT FRAMEWORK

Turning Point
  Sustainable Development
  International influences
  National developments
Growth of Ecotourism in Costa Rica
Costa Rican Perspective on Ecotourism
Conjunction of Interests

8. INFLUENCE OF ECOTOURISM ON CONSERVATION THOUGHT

Traditional Conservation Paradigm
Sustainable Development and Ecotourism
  Increase in environmental consciousness
  Role of ecotourism
  Change in conservation paradigms
ECODES
Protected areas
9. INFLUENCE OF ECOTOURISM ON CONSERVATION POLICY ........................................... 199
   National Environmental Policy
      Conservation strategy
   National Development Plan
   Organic Law of the Environment
   National System of Conservation Areas (SINAC)
      Evolution of SINAC
      Full implementation
   Other Legal and Administrative Action
      Policy changes
      Institutional changes
   Questionnaire and Interview Perspectives

10. PUBLIC AND PRIVATE PROTECTED AREAS ................. 225
    Public Protected Areas
       Purpose and utilization
       Entry fees
    Private Protected Areas
       Evolution and character
       Government policy
       Ecotourism in private reserves

11. COMPOSITE ANALYSIS ......................................... 257
    Sustainable Development and Ecotourism
    Influence of Ecotourism on Conservation
       Conservation thought
       Conservation policy
       Protected areas
    Synthesis and Analysis
       Overall influence of ecotourism
       Contribution to sustainable development
    Land Values

12. SUMMARY AND CONCLUSIONS ............................... 289
    Summary of the Dissertation
    Concluding Remarks

GLOSSARY ...................................................... 305

Appendix

A. SURVEY QUESTIONNAIRE ................................. 319

B. QUESTIONNAIRE RESULTS ............................... 323
C. QUESTIONNAIRE DISTRIBUTION .............. 329
D. INTERVIEW GUIDE .............................. 335
E. REGISTER OF INTERVIEWS ..................... 337
F. OTHER CONTACTS/DISCUSIONS ............... 341
G. PROTECTED AREAS VISITED .................... 347
BIBLIOGRAPHY ..................................... 349
## LIST OF ILLUSTRATIONS

<table>
<thead>
<tr>
<th>Figure</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Geographic Context for Research</td>
<td>2</td>
</tr>
<tr>
<td>2. Spheres of Interest Model for Sustainable Development</td>
<td>6</td>
</tr>
<tr>
<td>3. Costa Rica</td>
<td>16</td>
</tr>
<tr>
<td>4. Geomorphology</td>
<td>64</td>
</tr>
<tr>
<td>5. Soils</td>
<td>66</td>
</tr>
<tr>
<td>6. Annual Average Precipitation</td>
<td>71</td>
</tr>
<tr>
<td>7. Seasonal Distribution of Precipitation</td>
<td>72</td>
</tr>
<tr>
<td>8. Annual Average Temperature</td>
<td>74</td>
</tr>
<tr>
<td>9. Ecological Life Zones</td>
<td>83</td>
</tr>
<tr>
<td>10. Major Protected Areas</td>
<td>233</td>
</tr>
<tr>
<td>11. Patterns of Influence: Ecotourism, Conservation and Sustainable Development</td>
<td>279</td>
</tr>
</tbody>
</table>
## LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Research Data Summary</td>
<td>51</td>
</tr>
<tr>
<td>2. Study Area Schedule of Activities</td>
<td>53</td>
</tr>
<tr>
<td>3. Ecological Life Zones in Costa Rica</td>
<td>82</td>
</tr>
<tr>
<td>4. Population Growth Pattern</td>
<td>89</td>
</tr>
<tr>
<td>5. Foreign Income Earning Activities</td>
<td>105</td>
</tr>
<tr>
<td>8. Types of Public Protected Areas in Costa Rica</td>
<td>228</td>
</tr>
<tr>
<td>9. Major Public Protected Areas</td>
<td>230</td>
</tr>
<tr>
<td>10. Major Private Protected Areas</td>
<td>244</td>
</tr>
<tr>
<td>11. Influence of Ecotourism</td>
<td>274</td>
</tr>
</tbody>
</table>
CHAPTER 1
INTRODUCTION

Background and Context

Many developing countries around the world are pursuing a natural resource strategy of sustainable development. The objective of this strategy is complementary socio-economic growth and conservation of resources for sustained, long-term use. Protection of the natural resource base has been recognized as an integral component, and a necessary counterbalance to socio-economic needs, for achieving rational and sustained development. Ecotourism has come to play an increasingly important role in both development and conservation. The ways in which it has influenced natural resource conservation to contribute to sustainable development principles and goals is the subject of this research.

A theoretical framework for the research begins by establishing its geographic context (Figure 1). The human-environment tradition has long been recognized as one of the main avenues of geographic thought, a road
INFLUENCING FACTORS
- Physical features and conditions
- Environmental philosophy
- Natural resources and their uses
- Economic interests and needs
- Socio-cultural and political milieu

Figure 1. Geographic Context for Research
recently described by Kates (1987) as still needing and
beckoning our attention. The geography of natural re-
sources, natural resource management in this context,
is indicated as a sub-discipline in this model, clearly
within the human-environment tradition. It includes, as
a recent but increasingly important subset, the field
of sustainable development, represented here as the
confluence of economic, social and environmental in-
terests. The model depicts other dynamic forces impac-
ting the human-environment relationship. These relevant
factors will be developed and discussed in detail in
subsequent chapters. The rest of this section goes on
to further establish the theoretical framework for the
research, leading into presentation of the research
problem itself.

During the past ten years, sustainable development
has been perhaps the most studied and visible aspect of
natural resource management as well as Third World de-
velopment. Although the concept was conceived and util-
ized earlier -- for example, the World Conservation
Strategy called for integration of conservation and de-
velopment as two sides of the same coin (IUCN/WWF/UNEP
1980) -- it was popularized by the report of the well-
known and respected Brundtland Commission (WCED 1987). "Sustainable development" was defined there as addressing the concerns of both development and conservation in order to meet needs of the present generation without compromising the ability of future generations to meet theirs.

The World Conservation Union has since adopted the marginally less ambiguous definition of sustainable development as improving the quality of human life while living within the carrying capacity or ability of ecosystems to maintain their own integrity and productivity (IUCN/UNEP/WWF 1991). This change also reflects the evolution of the concept to include social as well as economic development. This trend of furnishing a more comprehensive and integrated perspective of the definition of development has been followed by most of the works on the subject, with various permutations and embellishments.

These definitions are conceptually useful, but their broadness and vagueness present difficulties in applying the concept of sustainable development. In discussing sustainable development and expressing some concerns about it, O'Riordan refers to the concept as
the "refuge of the environmentally perplexed" and susceptible to misuse by technocrats with a stake in the status quo (O'Riordan 1989, 93). Redclift (1987; 1992) highlights ambiguities and contradictions of sustainable development, such as the perceived need to protect the environment versus the environmental implications of progress itself and the dichotomy in environmental values between developed and developing nations. Some others go further in expressing doubts or pessimism about sustainable development, labeling it, for example, as a politically attractive excuse for continued material growth (Evernden 1993; Rees 1990).

Barbier (1987) has made a useful contribution to the subject with his model depicting sustainable development as the confluence or juxta-position of social, economic and environmental interests. This has generated a number of other similar models to demonstrate the relationships and dependencies between these interests, such as Munasinghe and McNeely (1994) and Carew-Reid et al (1994). Figure 2 provides a generic representation of these models. The juxta-position of two of the three spheres of interest signifies confluence of those interests; juxta-position of all three is necessary for
Figure 2. Spheres of Interest Model for Sustainable Development
the realization, or at least maximization, of sustainable development. This perspective of sustainable development is preferable, both in conceptualization and in application, to those previously described. It is also important to recognize that sustainable development is not a product but a dynamic process, strongly conditioned by social context and values, external relationships, and geographic differentiation (Wilbanks 1994).

Continued economic growth has often been identified as antithetical to conservation and real sustainable development. Some of the literature makes a compelling case for qualitative rather than quantitative economic growth, an expansion in value versus volume (Lewis 1992; Norton 1991). The World Bank (1992) and others make the valid and important point that conservation problems, especially in poor countries, are due to both inappropriate development practices and lack of development (i.e., poverty). This leads to the sometimes contentious point that not only does development need conservation in order to be sustainable, but conservation needs development of the right kind in order to work. This will be seen to be an important factor in
examining the influence of ecotourism, often as a means of development, on conservation policy.

At any rate, sustainable development is now being widely promoted as an integrative and guiding ethic in resource management (Slatyer 1991). Wilbanks (1994) correctly suggests that sustainable development is a powerful concept because it is ambiguous, thereby versatile in shaping broad consensus about the need for action, and because it integrates a variety of agendas and subject-matter. While noting sustainable development’s lack of conceptual clarity leading to inconsistency of interpretation, Lélé (1991) identifies its primary strength as a set of fundamental objectives that cut across most previous intellectual and political boundaries. Mora Castellano (1993) contends that it is an inevitable development, representing a sensible and accepted outcome of sustainable yield, preservation and ecological movements. It has become increasingly clear that conservation and development are in fact interdependent, and sustainable development, despite its shortcomings, may be the most useful model at this time (Wildes 1995). It has been widely embraced by the United Nations and other international bodies, as
well as most if not all developing countries. This fact was well illustrated by the United Nations Conference on Environment and Development held in Rio de Janeiro in 1992. The so-called Rio Earth Summit resulted in a comprehensive blueprint for global actions to achieve sustainable development and produced firm commitments from its member nations (Earth Summit 1992).

Evident from this discussion, sustainable development provides the context and framework for this research. This point is developed further in the literature review contained in the next chapter and is examined specifically relative to Costa Rica in Chapter 7.

Conservation is used here in a broad, inclusive working context. It is defined as the management of human utilization of the physical environment, its natural areas and resources, to ensure that such use is sustainable. This encompasses protection, maintenance, rehabilitation, restoration and enhancement of ecosystems and their populations (IUCN/UNEP/WWF 1991). This definition should be broadened to include preservation, or non-use, of some ecosystem components when necessary to conservation objectives of the broader system, such as a particularly sensitive community or an endangered
key species within a larger ecosystem.

One of the primary means of achieving sustainable use of the environment and natural resources that is being increasingly employed in developing countries is that of nature tourism, popularly called ecotourism. This type of tourist activity, according to the most widely used definition, involves travel to pristine or relatively undisturbed natural areas for the purpose of studying, admiring and enjoying the natural environment and wildlife (Ceballos-Lascurain 1991). Ecotourism is an attempt to integrate the interests of development, tourism in this case, and conservation for long-term, sustainable resource utilization. As will be seen in subsequent chapters, ecotourism has become very big business in Costa Rica, as well as a critical component of public resource management policy.

A detailed review of the literature relevant to conservation and ecotourism in a general and conceptual sense is provided in the following chapter. A more applied perspective, specific to the study area, is found in Chapters 6 and 7. While the literature review in Chapter 2 demonstrates that additional empirical research is needed relative to the relationship of eco-
tourism with the economy, environment, and culture, particularly little research has been conducted in regard to the relationship between ecotourism and the environment. This is especially the case with respect to direct effects of ecotourism activities on the ecology and resources of an area. The manner and degree to which ecotourism has influenced conservation, in general, within the framework of sustainable development has received very little attention in the literature. This lack of research is even more apparent with respect to the impact of ecotourism on conservation policies and measures, and no known studies have been conducted relative to effects on conservation philosophy.

It is believed that the contribution of ecotourism and conservation to sustainable development cannot be fully ascertained without better knowledge of the relationship between ecotourism and conservation. This particular research focuses on the environmental or conservation side of the sustainable development equation, examining the influence of ecotourism on conservation policy, in order to better understand its relevance to the goals and principles of sustainable development from a resource conservation perspective. The research
attempts to add to our knowledge of this field, particularly the relevance and contribution of conservation and ecotourism to sustainable development in developing countries, where it is of such critical importance. These nations are striving to achieve social and economic improvements without destroying their natural resource base, and an increasing number of them are promoting ecotourism as a means of sustained, long-term resource use. However, poor or inadequate knowledge of the interaction between ecotourism and natural resource utilization is likely to produce ineffective or inappropriate resource management decisions which do not assist, and may even further disadvantage, developing countries and their people.

Sustainable development is an inherently geographic topic, bridging the sub-disciplines of economic geography and resource conservation geography. Consequently, this dissertation research is considered to be of theoretical significance in extending the body of knowledge in geographic inquiry. It also has potential practical value to the developing countries of the world. Better knowledge fosters more informed decision-making in the development of resource management poli-
cies, and improvement in the planning and management of both ecotourism and natural resource conservation programs. As a result, the principles and objectives of sustainable development will be served more effectively, thereby promoting tangible and lasting benefits to developing countries.

Research Statement

This research has investigated the influence of ecotourism on conservation of nature and natural resources. The specific purpose of the research was to examine the character and pattern of the influence of ecotourism, within the context of sustainable development, on conservation policy and practice in Costa Rica. It sought to determine whether, and to what degree, ecotourism influences conservation in a developing country relative to such indices as environmental awareness/attitudes and dominant philosophical paradigms of the conservation of nature and natural resources; conservation laws, regulations, strategies, and other national policies; and the establishment and administration of public and private protected areas.

The research study and resulting dissertation par-
tially fulfill requirements for the Ph.D. in Geography, Joint Doctoral Studies Program, San Diego State University and University of California at Santa Barbara.

The principal thesis of this research is that ecotourism strongly influences and can have an overall positive impact on conservation of nature and natural resources in developing countries, thereby contributing to sustainable development principles and goals. It was anticipated that the expectation and/or reality of ecotourism growth leads to a greater degree of conservation policy and regulation, in order to sustain the natural resource base upon which tourism depends. An important component of this is the influence on conservation thought -- providing opportunity and justification in moving from a closed and stable "balance of nature" perspective to a dynamic, contextual and holistic model more compatible with sustainable development.

Measures to protect nature and natural resources, such as more or better designed protected areas and public education programs, were also expected to result from a growth in ecotourism activities. While positive findings were anticipated, it was recognized that ecotourism can also have negative consequences, as discussed
in the literature review. Research findings then furnished a basis for examining overall impact and formulating conclusions concerning the relevance and contribution of ecotourism to conservation, and to the principles and goals of sustainable development in Costa Rica as well as other developing countries.

It is important to note that this research focuses specifically on the influence of ecotourism on conservation policy, even though the perspective of that policy is broad. Several closely related and important areas are not included in the study. These include the influence of ecotourism on the economic and cultural spheres. Even within the environmental sphere, the research does not examine ecological effects of ecotourism, application of conservation policy, or reciprocal effects of conservation on ecotourism. These areas also require initial or additional research, but are outside the bounds of this particular study.

**Choice of Study Area**

Costa Rica (Figure 3), the study area for this research, differs in some respects from many other developing countries, particularly in regard to its demo-
Figure 3. Costa Rica
cratic tradition and political stability. Nevertheless, it is typical and representative of developing countries in terms of such factors as persistent and pervasive poverty among a significant portion of the population, skewed land tenure patterns, application of inappropriate and often counter-productive economic development models, and a deteriorating natural resource base. In Costa Rica, as elsewhere, there is a critical need for both socio-economic development and effective management of natural resources. From these key perspectives, as well as a number of other fundamental similarities, the research findings and conclusions presented here are considered to be applicable to other developing countries.

Moreover, Costa Rica has had considerable recent experience with ecotourism and conservation, and has institutionalized both of them to a significant degree. The country has gained a favorable reputation for its system of protected areas (Boza 1988 and 1993; Rovinski 1991), and has incorporated ecotourism into the national conservation strategy for sustainable development (Quesada Mateo 1990). The importance and effects of ecotourism within Costa Rica has received considerable
attention in the research literature for the past several years. For these reasons, it is believed that Costa Rica, in addition to being an appropriate study area because of its status as a developing country, may also serve as a useful model for other developing countries in managing their natural resource and tourism development programs.
CHAPTER 2
REVIEW OF THE RELEVANT LITERATURE

This literature review consists of two primary sections which cover the subjects of conservation of nature and natural resources and of ecotourism. Since ecotourism is an emerging field and does not yet contain a large body of relevant and useful literature, it is appropriate to provide a relatively comprehensive, detailed and critical review for that subject. Conservation, on the other hand, has developed a substantial body of applicable literature that is far too broad and voluminous to cover here in a comprehensive manner. Consequently, the review of the relevant literature for conservation in the following section is fairly selective and limited primarily to its interface with ecotourism and how it fits into the context of sustainable development. Additionally, it is again noted that a more applied perspective relative to these subjects, specific to the study area of Costa Rica, is covered later in Chapters 6 and 7.
Conservation of Nature and Natural Resources

Physical environment. A number of sources describe the physical features and natural resources of the Central American region. The environmental profile of Central America by Leonard (1987) is perhaps the most useful. Other works of particular note include West (1989) for the region as a whole, individual country environmental profiles, such as that of Hartshorn et al. (1983), and Janzen’s comprehensive natural history of Costa Rica (1991). The topography and biota of Costa Rica, and of Central America in general, are very diverse. The terrain includes rugged mountainous and volcanic areas, intermontane plateaus and valleys, and coastal lowlands and wetlands. Tropical rainforest, dry tropical forest, montane forests and other wooded areas once dominated and now struggle for survival. The relatively short rivers flowing from the mountains contain numerous waterfalls and rapids. Plant and animal life is among the richest and most diverse in the world, with a large number of rare, endemic species. The coastal zone contains significant wetlands, mangroves and other biotically diverse ecosystems.

Current environmental conditions, however, do not
portray the same positive picture as described above. A number of works, but particularly those of Simmons (1989) and Goudie (1990), describe primary ways in which human activities have caused environmental changes. Population growth and increasing levels of technology are seen as key factors. The comprehensive volume edited by Turner et al. (1990) is also a valuable source of information in this study. In particular, Kates, Turner and Clark (1990) provide an excellent overview of the human-induced environmental transformation of the earth while McDowell, Webb and Bartlein (1990) give an insightful long-term perspective. Also of particular interest and utility are analyses of population (Demeny 1990; Whitmore et al. 1990), technology (Headrick 1990), and human attitudes (Lowenthal 1990).

The most serious problems in the Central American region include deforestation, soil loss, and species extinctions. Pollution of air and water resources from carbon fuels, solid waste, agricultural chemicals, and other pollutants is also a serious problem ( Heckadon 1992; Nations and Leonard 1986; World Resources Institute 1990). Population pressures, urban and industrial development, and expanding agricultural land uses are
causing extensive changes. Ecosystem destruction and environmental degradation is widespread, threatening the natural resource base upon which the region depends (Leonard 1987). Chapter 5 furnishes a specific, detailed examination of human impact on the environment in Costa Rica.

**Conservation measures.** The necessity for effective policies and programs for the conservation of nature and natural resources seems obvious, but such measures have been taken in Central America only in recent years. A 1982 directory depicts the progress until that time in establishing protected areas in the neotropics, portraying the relative lack of budget and staff existing in most of the areas (IUCN 1982). While the number of parks and reserves has increased since 1982, management capability has not kept pace in many cases. Nevertheless, most of these developing countries have taken action to formally set aside significant portions of their physical environment as protected areas. Many of them involve forests and other biotically diverse ecosystems which have been especially threatened by population and development pressures. Concern for the pro-
tection of coastal and marine resources has led to the creation of a number of conservation units in these areas. While coastal management efforts are elementary in some cases, they are more effective or improving in others, such as in Costa Rica (Silva and Desilvestre 1986; Sorensen and Brandani 1987). In a regional sense, Royte (1992) describes an imaginative proposal, Paseo Pantera, to link protected areas throughout Central America with a broad swath of greenbelt. Other transnational protected areas exist or are being proposed, such as La Amistad (Costa Rica-Panama) and the Maya Peace Park (Guatemala-Belize-Mexico). Several authors also point out the importance of local participation and institutional frameworks in the success of conservation efforts (Ashuvud 1991; Barborak and Green 1987).

Costa Rica has devoted substantial energy to conservation policies and programs in recent years and a significant body of relevant literature has developed there. Works of Fournier Origgi (1991) and Vargas Ulate (1993) have been of particular historical value. Also, starting in 1970, Costa Rica began to establish a system of protected areas which is probably the most complex network in Latin America (MacFarland, Morales and
Barborak 1984). The development of this system is described especially well by Boza (1988; 1993) and Wallace (1992). The protected area system and other conservation policies and actions will be described in more detail in subsequent chapters.

As extensive as the conservation literature is, it does not adequately address the relationship between ecotourism and conservation policy. Even a recent publication devoted specifically to conservation policy in Latin America (Hopkins 1995) only briefly mentions ecotourism and its potential for support of conservation programs. As previously discussed, the influence of ecotourism on conservation policy has been identified as the primary focus of this research study. The literature is also insufficient with respect to the issue of private protected areas, both in their relationship to ecotourism and in their contribution to conservation efforts. Yet some countries, such as Costa Rica, have a significant number of private protected areas. This issue has been incorporated into the study as well because it is relevant to the primary focus and in order to add to the professional literature on the subject.
Conservation attitudes and paradigms. While the field of environmental thought is far too broad to review here, some framework should be established for the context of this research. In a general sense, attitudes toward the environment and conservation operate mainly within the parameters of a conceptual dichotomy -- an anthropocentric and utilitarian approach toward resource use versus an ecocentric, preservationist philosophy of non-use (Wildes 1995). Developing countries, including those of Central America, can be seen to act within this framework; however, significant differences exist between them and the developed, more affluent world. Augelli (1987) and Umaña (1992) are especially relevant in their descriptions of the views of Latin Americans vis-a-vis nature and natural resources, a frontier mentality of resource abundance and use-value.

It seems clear from the literature that the man-in-nature, rather than man-outside or above-nature perspective has largely won out. The development of ecology as a widely accepted and studied field of science has been primarily responsible for this. Works by Leopold (1949) and later by ecologists such as Commoner (1971) were especially influential. Further, an anthro-
pocentric basis has been established as the primary paradigm in conservation thought (Norton 1991; Passmore 1974; Shrader-Frechette 1985). The combination of these trends has important implications for sustainable development as the key resource management strategy in developing countries.

These popular attitudes toward the environment did not necessarily determine conservation action, policies and models in the past. Initial efforts were driven primarily by the realization by professionals of the seriousness of environmental problems and their desire to save what was left (Janzen 1992; Wallace 1992). These individuals followed the prevailing conservation paradigm described by Pickett, Parker and Fiedler (1992) as the balance of nature model, designed to keep people away and let nature take care of itself. However, reality began to catch up with conservation measures. A number of experts and observers have attempted to describe how and why the traditional conservation model was not effective. These include the political ecology perspective of Thrupp (1990), the state of siege scenario of Janzen (1992), as well as Umaña and Brandon (1992) and others who contend that conservation
cannot be effective unless it also accommodates social and economic needs. The literature provides a starting point for ascertaining and understanding those social, economic and political factors that influence conservation, and resulting changes in conservation paradigms and policies.

Accordingly, much of the debate regarding conservation in developing countries, particularly its justification and support, has become increasingly centered around sustainable development. The rationale for conservation considerations balanced with economic development needs for the purpose of sustained, long-term resource use has been demonstrated for some time (IUCN/WWF/UNEP 1980; WCED 1987). McNeely (1990) and Slatyer (1991) provide compelling arguments for the role and contribution of conservation strategies to sustainable development goals. The World Conservation Strategy, in particular, has formed the basis for successfully linking conservation and development projects in Central America (Ashuvud 1991; Barborak and Green 1987). Rovinski (1991) points out that while the primary goal of the parks system in Costa Rica was initially habitat protection, it has since become sustainable development
of the country's key resources. This is clearly demonstrated in Costa Rica's national conservation strategy (Quesada Mateo 1990). Since the late 1980s, it has been increasingly recognized that perhaps the only way to save tropical biodiversity is to use it sustainably (Janzen 1992). Therefore, conservation policies and practices have been in essence enveloped in a sustainable development context.

While the literature with respect to conservation actions vis-a-vis sustainable development is becoming quite comprehensive, it is not with respect to conservation thought. There has been no known research on this particular relationship, even though conservation thought and paradigms constitute an important requisite and determinant of policy. It is suggested that ecotourism may be an influencing factor here as well as to conservation policy itself. Accordingly, the research study incorporates this issue into the broader scope of conservation policy. The research will demonstrate the trend in natural resource management described above, how ecotourism contributes to that trend, and how this is changing traditional conservation paradigms to more holistic, contextual and reality-based models.
Environmental economics. Within the literature on environmental issues, one of the fastest growing and most significant fields of study in recent years has been that of environmental and natural resource economics. Environmental issues have always suffered in the marketplace because of the difficulty of determining and allocating economic value to nature and natural resources. As a result, short-term economic gains from exploiting natural resources have usually been considered more attractive than the long-term benefits of conservation (Dixon and Sherman 1990). An economic system that properly values the resources of wild areas would appear to offer the best security for their future (Swanson and Barbier 1992). As stated by Munasinghe (1994), the valuation of environmental resources and effects is a key step toward the sustainable management of natural resources.

A number of useful works have been written to determine and analyze benefits and costs associated with maintaining protected areas and conserving biodiversity and in allocating monetary value to nature and natural resources. In particular, Pearce and Turner (1990) and Tietenberg (1992) have written very compre-
hensive and detailed treatments of the overall subject of environmental and natural resource economics. Perrings et al. (1995) use a somewhat different slant in looking at the anthropocentric reason for conserving biological diversity, arguing that human needs are satisfied directly through consumption or production needs of society, and indirectly through maintenance of supporting ecosystems.

Significant work is also being done to better determine and allocate the economic benefits of protected areas specifically from tourism utilization and similar use-values, thereby furnishing an economic justification for conservation of natural areas and their resources. Filion, Foley and Jacquemot (1994) conclude that nature and wildlife-related tourism probably has much more economic significance than was previously thought, presenting conservationists with an important opportunity for more fully justifying sustainable development. Sherman and Dixon (1991) examine the economics of nature tourism in terms of its costs and benefits, as well as potential for local and national economic development. An attempt has also been made to value (eco)tourism in a tropical rainforest reserve,
Monteverde in Costa Rica, using the travel cost method to estimate the value users place upon a site based on their travel behavior (Tobias and Mendelsohn 1991). The study indicates a higher value for the land than current purchase price, although the assumptions used and presence of other variables obfuscate the findings.

There are also some cautionary aspects to environmental economics. Too much emphasis can be placed on strict economic valuation and analysis. From an economic viewpoint, for example, ecotourism must lead to economic development in order to be a viable conservation strategy (Alderman 1994). Maximization of economic benefits and minimization of social and environmental costs is an oft-mentioned phrase (Boo 1993; Whelan 1991). Lees (1992) points out that few areas of high conservation value actually have potential to support economic tourism enterprises. She contends that ecotourism must move away from a conservation focus to a more business-oriented strategy in order to succeed. These references perhaps unwittingly highlight the potential danger of over-relying on economics in this area. Environmental economics has certainly contributed, and will hopefully continue to contribute, to pro-
viding an economic justification for conservation. However, the maximization of economic profit as the bottom line is not an enterprise in which conservation, or even sustainable development, is well-equipped to engage. Conservation, in particular, cannot equally compete or long endure in a context within which whatever activity produces the greatest financial profit gets the vote. It would appear that a broader, more balanced bottom line needs to be established if conservation interests and meaningful sustainable development are not to be subjugated to the economic vicissitudes of an overly market-focused perspective.

**Ecotourism**

Nature-based tourism has been around for a long time. Some of it has been predicated on scientific research and natural history, and some on broader interests such as hiking and sightseeing. However, as a major component of the tourism industry, it is of relatively recent vintage. What has become known popularly as ecotourism can be viewed as a confluence of two independent trends (Boo 1991). The first, based in the travel/tourism field, represents a change in the way
many people take vacations. Demand has grown, among some other shifts, for travel to relatively pristine natural areas such as parks and wildlife reserves. Much of this trend is due to the tremendous increase in environmental awareness and concern; some is attributable mainly to the search by many people for new and different travel experiences, or to get away from it all (Boo 1991; Toselli 1993). The other trend has been evolving since the early 1980s, and is primarily an environmental movement toward integrating conservation goals with economic development. It recognizes the need for greater economic viability of protected areas, as well as the potential for tourism to support conservation in a financial sense.

Ecotourism began to be recognized as an emerging trend in the mid-1970s. Mountfort (1974) provided one of the first accounts, recognizing the dominance of financial considerations and stressing the need to incorporate environmental principles into tourism planning. Budowski (1976) also recognized the increasing demand for tourism based on nature and natural resources. He called for a symbiotic relationship between tourism and resource conservation, in which both could benefit,
rather than the usual relationship of conflict or coexistence. This has proven to be a useful and widely cited model in the subsequent literature on the subject. The first actual usage or coinage of the term ecotourism can be traced back to the mid-1980s, both in Mexico with Ceballos-Lascurain (Young 1992) and Costa Rica with Mendoza (1986).

Definition and classification. Ecotourism has been defined in a wide variety of ways, complicating its examination as a research subject. Norris (1992) and Valentine (1993) define ecotourism rather narrowly, limiting it to direct, positive actions to protect the particular natural area or resource. Others take a more inclusive view; e.g., the conservation of natural environments through responsible travel (Cater 1992), and maintenance of natural systems through an equal partnership of nature and tourism (Farrell and Runyan 1991). Whelan (1991) and others take an even broader approach, including practically all tourist activities based on natural attractions. An example of this broad, inclusive perspective is that of Fillion et al. (1994) in defining ecotourism as travel to enjoy and appreci-
iate nature, opting to omit qualifying terms not amenable to measurement. Often, cultural as well as natural attractions are included, such as indigenous communities or Maya ruins (Boo 1990; Inskeep 1991). The most commonly used definition has been that of Ceballos-Lascurain (1991). He describes ecotourism as travel to relatively undisturbed natural areas with the objective of admiring, studying and enjoying the scenery and its wild plants and animals, as well as any cultural features found there.

Several authors have attempted to categorize the range of ecotourism definitions and activities to better deal with the subject. Budowski (1992) identifies two relatively distinct groups -- scientific tourism (research and educational travel) and nature tourism (further divided into hard-nature, soft-nature, and adventure travel). Another classification scheme specifies ecotourism as hard-core (science and education), dedicated (specific to local natural and cultural history), mainstream (nature-based enjoyment), and casual (incidental to a broader purpose) (Lindberg 1991). Valentine (1992) proposes a classification based on the degree to which the tourism activity depends upon na-
ture. His tripartite division includes activities (experiences) which are nature-dependent, nature-enhanced, or incidental to natural setting. Molina (1994) provides an interesting and more useful perspective with his dual model classification. The first model, representing the initial generation of ecotourism, is primarily a marketing variation by conventional tourism agencies offering a traditional product with a new label. The second generation model includes specialized nature oriented tours and activities catering to increasing numbers of environmentally sophisticated travelers.

It is difficult to come to terms with this surfeit of definition and categorization. The primary points of contention between the different positions appear to center around motive and scale. The choice is forced between environmentally-conscious tourism at low scale, any travel based on nature or culture attraction, or something in between based on the same criteria. Western (1993) argues convincingly that these are the wrong criteria, and that ecotourism needs to shift from a definition based on them to a set of principles applicable to any nature-related tourism. Impact matters more than motive or scale, in this viewpoint. While this
certainly entails a more inclusive model than may be preferred by many, it appears more situationally-based than uniformly broad. It also allows the incorporation of context and application with concept, a distinct advantage in dealing with a subject like ecotourism in a particular place. This point will be expanded upon in subsequent chapters, where the import of the Costa Rican context will become apparent.

Still, as Western recognized, an over-broadening of scope to include all nature-related tourism poses impossibilities in dealing with the issue. For this reason, it appears desirable to establish some definitional framework, albeit with the situational flexibility described above. Therefore, ecotourism, as succinctly defined by Young (1992), is deemed to be travel in the natural environment that promotes conservation. It is noted that any reference to culture-based travel is excluded from this definition. In the context of Costa Rica, ecotourism is nature-based rather than culture-based. In a more general sense, it is felt that travel to cultural attractions should not be considered as ecotourism anyway. The term has enough problems and ambiguities as it is, even when limited to nature-based
travel; cultural tourism is sufficiently different in type to be included in a separate category.

**Context.** Placing ecotourism in appropriate context is important in understanding its role and relevance. As a subset of tourism, it contains a demand dimension on the part of tourists and a supply dimension on the part of the tourism industry, developers, and also some governments. Pearce (1987) and Zurick (1992) have provided insightful spatial analyses of tourism, which apply as well to ecotourism and help to place it in an overall tourism perspective. A broader economic development perspective has been emphasized by authors such as In-skeep (1987) and Sherman and Dixon (1991).

Ecotourism is also seen as a means of protecting and conserving natural resources, and therefore considered within the context of environmental conservation. Cater (1992) and Norris (1992) are typical of authors stressing this aspect of ecotourism. The strategy is promoted by many who believe that ecotourism will provide the stimulus and means for greater conservation measures as well as much-needed economic development (Budowski 1992; Romeril 1989; Whelan 1991). It is be-
lieved that both the economy and environment will ben-
efit from nature-oriented, low-impact tourism (Boza
1993; Farrell and Runyan 1991; Salinas Chavez and Man-
nuel Rosabal 1993). Additionally, a cultural role is
perceived by some authors. This is particularly rele-
vant in regard to community participation in ecotourism
projects (Drake 1991; Place 1991) and the impact of
ecotourism on indigenous cultures (Boo 1990; Dearden

The most integrative and compelling role of eco-
tourism may be in sustainable development, or the man-
agement of natural resources for sustained, long-term
use. This is perceived as a means of generating needed
socio-economic development in poorer countries or re-
gions while minimizing adverse impact upon the environ-
ment. Long-term maintenance of the resource base is
necessary to continued economic growth, a mutual inter-
dependence or symbiosis between development and conser-
vation (Romeril 1989). This view is shared by Inskeep
(1991) and Whelan (1991), whereas Butler (1991) and
Cater (1994), among others, are more cautious. A very
recent perspective warns that many people have been se-
duced by the “eco” in their eagerness to embrace eco-
tourism, overlooking several decades of research on the impacts of tourism (Wall 1997).

Regardless of these differing views, there is consensus that ecotourism should be applied on the basis, and within the context of sustainable development goals and principles. The relevance of ecotourism to economic development (more recently, socio-economic development) and environmental conservation for the sustained, long-term use of natural resources is found throughout the literature. In order for ecotourism to succeed, it has to be based on a balanced understanding of both ecosystems and tourism systems. This focus seems to be well-founded and of considerable importance to developing countries in particular.

The relationships between ecotourism and the environment, economic development, and indigenous cultures are largely unknown. Social, economic and political issues which affect ecotourism are also not well understood (Butler 1991; Nations and Leonard 1986). The major work by Boo (1990) on the potentials and pitfalls of ecotourism is the most comprehensive and empirical treatment of these aspects of the subject; otherwise, the literature is still largely general and anecdotal.
The edited volumes by Whelan (1991), Lindberg and Hawkins (1993), and Cater and Lowman (1994), although not empirical research works, also provide some useful perspectives.

Several other key issues have been raised in regard to understanding and evaluating ecotourism. Agardy (1993) calls for accommodating nature-based tourism into multiple use planning, a necessity for areas with scarce resources and potential user conflicts. A key role for private sector funding and skills is foreseen, especially where developing country governments lack sufficient resources (Fowkes and Fowkes 1991). There are already cases of important private protected areas, such as La Selva and Monteverde Reserves in Costa Rica (Budowski 1992; Rovinski 1991). Some observers, such as Lees (1992), have argued that ecotourism be operated more as a business venture expected to earn money, although the author overstates the case for a completely profit-oriented strategy in which conservation is ill-equipped to compete. Another issue is measuring levels of ecotourism activity and impact, as sound measurement indices will be important to effective research and analysis (Lindberg 1991; Scace 1993).
The subject of local participation is one of increasing concern to ecotourism, and to tourism in general. Some projects specifically try to bolster the involvement of local populations and provide them with greater economic benefits (Drake 1990). An ecotourism project in the Costa Rican Santa Elena rainforest is specifically based on the socio-economic needs and management participation of the local community (Wearing 1993). On the other hand, Place (1991), in her research of Tortugero, pinpoints some of the problems that can develop from non-participation. A growing part of the evolving literature on ecotourism is being devoted to this issue.

Applications of ecotourism. A number of examples and applications of ecotourism are described in the literature, demonstrating a wide range of situations and tourist activities. Typical of the educational and scientifically-oriented dimension of ecotourism is La Selva Biological Research Station in Costa Rica, where significant research is being done in tropical studies (Rovinski 1991). In these situations, adverse environmental and cultural impacts are minimized but the eco-
onomic benefits are also small. The broader perspective of ecotourism is exemplified by Manuel Antonio National Park, a favorite beach area in Costa Rica (Sáenz 1992).

Several other developing countries have embraced ecotourism and are actively promoting its application. These include two long-time players in the field -- Kenya, with its big game reserves (Olindo 1991), and Ecuador, with its Galapagos Islands (Boo 1990; Norris 1994). Thailand and Nepal both have active and popular mountain trekking/biking programs (Dearden 1991; Gurung and de Coursey 1993; Zurick 1992). Fiji, with its many natural and cultural attractions, has become an increasingly popular travel destination (Young 1992). The Brazilian Amazon and Pantanal are now leading ecotourism locations (Kermath 1991; Norris 1994). Belize boasts of still relatively pristine terrestrial and marine environments which support a wide array of wildlife, and ecotourism is exhibiting rapid growth in that country (Cater 1992; Horwich et al. 1993). Guatemala's large and diverse biosphere reserves and more recently-established smaller units represent other natural areas where ecotourism has become an important enterprise (Boo 1990; Cohn 1989). While the focus of this review
is on ecotourism to natural areas, it is noted that culturally-oriented tourism is becoming increasingly important in both Guatemala and Belize, particularly to restored Maya sites (Boo 1990). Panama's Kuna Indians are another example of increasing tourism of this type (Archibold 1992; Chapin 1993).

Review of the literature on ecotourism, its application to date, and its relative merits leads to some general conclusions regarding impact and benefits, although there is certainly no consensus. The primary positive impact and benefit of ecotourism appears to be its role in economic development, particularly in rural regions not otherwise amenable to development (Lindberg 1991; Sherman and Dixon 1991). It enables developing countries to achieve economic growth without much investment in infrastructure (Inskeep 1991). Economic benefits appear to be greater where ecotourism activities are of the broader, more inclusive variety. Ecotourism also has the potential, which has been realized in some cases, of generating financial support for conservation efforts (Lindberg 1991). Boza (1993) claims that ecotourism has proven to be the strongest argument for the protection and development of Costa Rica's na-
tional parks system. Ecotourism is helping to pay for, or at least provide the impetus for, conservation actions elsewhere as well.

Conversely, several negative effects of ecotourism are also apparent. Examples exist of the money generated by ecotourism not benefitting conservation units, local communities, or even the host country (Norris 1992; Place 1991). The primary disadvantages of ecotourism, however, have been damage to the environment/ ecology and cultural change in local populations (Butler 1990 and 1991; Norris 1992). Examples proliferate of environmental degradation, especially where activities are broad in nature. An economic policy bias, especially, produces inevitable negative environmental effects (Butler 1991; Cater 1992). A particular concern is the ability of existing resources to support the particular activity (carrying capacity), since much of the problem is concentrated in the most popular sites (Lindberg 1991; Norris 1994). Even Budowski (1994), in examining the pros and cons of ecotourism, inadvertently reveals that many of the benefits reflect potential, while the problems are tangible and serious. Other ecotourism supporters caution against resource and ecosys-
tem destruction unless principles of sustainable development are followed (Boo 1990, Farrell and Runyan 1991; Lindberg 1991). Boo (1993), in particular, has attempted to develop a set of strategies and guidelines for more effective planning and management of ecotourism.

Similarly, concerns have been expressed by many observers over the negative cultural impacts of ecotourism on indigenous populations where they exist in areas of tourism activity (Butler 1990; Dearden 1991; Place 1991). Cater (1994) considers bringing previously undeveloped areas with delicate environs and habitats into the locus of international tourism as a potential threat of ecotourism. This suggests possible differences in environmental effect when ecotourism is implemented as an alternative to traditional mass tourism (lessened impact) and when ecotourism is implemented where no tourism activity has previously existed (more impact). Also, authors such as Olindo (1991) and Place (1991) emphasize the need for greater local involvement in the planning and management of ecotourism projects, and the likelihood of deleterious impact where that community participation is absent.

Boo (1993) furnishes perhaps the best synopsis of
at least the potential impact of ecotourism. Potential benefits are generation of funds for protected areas, job creation near those areas, and promotion of environmental conservation education/awareness. Potential costs are environmental degradation, economic instability and inequity, and socio-cultural changes. The challenge is considered to be identifying where ecotourism intersects with conservation and development, and minimizing costs while maximizing benefits. Even with this relatively positive view, however, it seems clear that the synthesis between tourism and conservation urged by Budowski over twenty years ago remains something of an ideal rather than reality (Cater 1994).

The previous section on conservation indicated how this research addresses and focuses on weaknesses or deficiencies in the literature relative to that area. That approach is repeated here due to the high degree of interrelationship which exists between conservation and ecotourism, particularly in Costa Rica. This research study is designed to examine this relationship, focusing on the influences of ecotourism on conservation policy within the framework and context of sustainable development. This is an integral and important
area of the overall field of study. It needs to be ex-
amined thoroughly, but it has not to date received much
attention in the research literature. Other related
gaps in the literature which this research addresses
include the influence of ecotourism on environmental
thought and conservation paradigms as an important de-
terminant of policy, and the issue of private protected
areas which appears to be of particular relevance and
importance in Costa Rica.
CHAPTER 3
GENERAL PROCEDURES

Several methods were utilized in order to gather data for this research study. Initially, a visit was made to Costa Rica in November 1993 in order to collect preliminary information, discuss the proposed project with several academic and governmental officials, and to explore and initiate plans for field study there. The National Autonomous University (UNA) in Heredia, eleven kilometers north of the capital city of San José, offered to furnish basic administrative and logistical support for the research. Accordingly, affiliation was arranged with that institution, specifically its School of Geographical Sciences.

Extensive literature and archival research was conducted, primarily at San Diego State University and the University of California at Santa Barbara, through the Summer of 1995. This furnished much of the necessary data relative to sustainable development, conservation and ecotourism policies and programs in general,
and more particularly in developing countries. It also provided a significant amount of data relative to the tourism-conservation nexus in a broad spatial and functional context.

The research data and methodology are described in detail in the following sections. Additionally, a data summary matrix depicting all of the required research data, as well as their sources and methods of collection, is shown in Table 1.

Field Research

Field study in Costa Rica was necessary for several reasons. The country has experienced recent growth in both natural resource conservation and ecotourism. Local research also has increased, although much of it is unpublished or, if published, is only available regionally or locally. Consequently, a significant amount of relevant literature and documentary material exists only in Costa Rica. Other data were best obtained by means of interviews, questionnaires and personal observation, necessitating additional time in the country. The field study in itself was beneficial in providing a grasp of the overall natural and cultural framework of
Table 1. RESEARCH DATA SUMMARY

<table>
<thead>
<tr>
<th>Data Required</th>
<th>Source and Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sustainable development, conservation, ecotourism</td>
<td>Archival research, interviews and</td>
</tr>
<tr>
<td>in broad context</td>
<td>discussions</td>
</tr>
<tr>
<td>Characteristics and status of study area</td>
<td>Archival research, interviews and</td>
</tr>
<tr>
<td>Ecotourism patterns and statistics</td>
<td>discussions</td>
</tr>
<tr>
<td>Environmental/conservation attitudes and paradigms</td>
<td>Archival research, interviews and</td>
</tr>
<tr>
<td>National conservation policies</td>
<td>discussions, questionnaire</td>
</tr>
<tr>
<td>Establishment and administration of protected</td>
<td>Archival research, interviews and</td>
</tr>
<tr>
<td>areas</td>
<td>discussions, questionnaire, personal</td>
</tr>
<tr>
<td></td>
<td>observation</td>
</tr>
</tbody>
</table>
the nation.

Field research in Costa Rica commenced in October of 1995. The schedule of activities is shown in Table 2. Completion of the field research required seven months. Of this time, approximately five and one half months were spent in the San José/Heredia area and the remainder was used visiting many of the protected areas in Costa Rica as well as some travel outside the country. The libraries at the University of Costa Rica, the National Autonomous University, the Latin American University of Science and Technology, several nongovernmental organizations, and numerous government agencies were utilized for additional literature and documentary research. Data were also collected on a variety of topics including environmental/conservation thought and philosophy within Costa Rica; laws, regulations and other national policies relative to sustainable development, tourism and conservation; the establishment and administration of public and private protected areas; natural resource conservation education and public awareness programs; ecotourism statistics, especially the volume and pattern of tourism in protected areas; and such related factors as the social, economic and
<table>
<thead>
<tr>
<th>Date Range</th>
<th>Activity Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>14 Oct 1995</td>
<td>Arrive Costa Rica</td>
</tr>
<tr>
<td>Oct-Nov 1995</td>
<td>Spanish language training. Develop and finalize interview and questionnaire survey instruments. Attend Sustainable Tourism Conference. (4 weeks)</td>
</tr>
<tr>
<td>Nov-Dec 1995</td>
<td>Archival research. Begin contacts and administration of questionnaires, discussions and interviews. (7 weeks)</td>
</tr>
<tr>
<td>Jan-Mar 1996</td>
<td>Continue contacts, discussions, interviews and administration of questionnaires. Attend Congress of Latin Americanist Geographers Conference. (8 weeks)</td>
</tr>
<tr>
<td>Mar-Apr 1996</td>
<td>Site visits to protected areas in Costa Rica. (5 weeks)</td>
</tr>
<tr>
<td>Apr-May 1996</td>
<td>Additional contacts, discussions, interviews, and administration of questionnaires. Follow-up as necessary. Conduct additional archival research. Finalize field study. (7 weeks)</td>
</tr>
<tr>
<td>25 May 1996</td>
<td>Depart Costa Rica</td>
</tr>
</tbody>
</table>
political milieu within which the research subject ex-
ists.

It was considered important to the research to ob-
tain data from as many as possible of the agencies, or-
ganizations and individual experts involved with con-
servation and/or ecotourism in Costa Rica, not only to
provide a comprehensive data set but also to obtain
different relevant perspectives to the issues involved.
Since these activities required querying a large number
of people, a survey questionnaire was utilized (Append-
dix A). This questionnaire was translated into Spanish
and administered in that language for the large major-
ity of respondents. The results of the survey, both a
summary of the objective responses and a categorization
of responses relative to the several subjective ques-
tions, are contained in Appendix B.

The questionnaires were distributed to officials
and Economic Policy, Ministry of Environment and Energy
(especially the National System of Conservation Areas
or SINAC), and Institute of Costa Rican Tourism who
have responsibilities in the areas of conservation,
ecotourism and sustainable development. Nongovernmental
organizations consisting of academic institutions, environmental conservation and research organizations, and tourism agencies were also surveyed. Another major component of the survey was the international community of worldwide, regional and foreign country agencies -- principally environmental or developmental organizations. Where it was not apparent who should complete the questionnaire, the head of the agency or appropriate organizational component was consulted. After completion, surveys were retrieved personally, returned by fax, or by postage-paid, return envelopes. Individual confidentiality was assured and maintained. A total of 204 questionnaires were distributed; 101, nearly 50%, were completed and returned. A register of the organizations and individuals to whom the questionnaires were distributed for completion is included in Appendix C.

Additionally, in-depth personal interviews were conducted with a number of the individuals who responded to the questionnaire. These interviews comprised a cross-section of the organizations and people noted above, but they provided data of greater breadth and depth. A total of 25 interviews were conducted (Appendix E). Persons interviewed were selected based on or-
ganizations representing a cross-sectional balance, degree of involvement/expertise in environmental conservation decision-making, and availability. Interviews were focused (nonscheduled-structured), and with open-ended questions. The interview guide utilized is shown in Appendix D. Additionally, a significant number of other contacts and discussions (Appendix F) provided valuable data. These discussions did not follow the interview guide. Instead, they were either more general in nature or specific to a particular topic, depending upon the individual, his or her area of expertise, and the purpose of the contact.

Data gained from the interviews and discussions paralleled some of the same documentary, statistical and survey data collected from archival research and questionnaires. However, these discussions and interviews also provided necessary and useful data on conservation thought and paradigms in Costa Rica, historical development of conservation measures and ecotourism experience, perspectives of different individuals and groups involved with the subject, and determining or influencing factors involved in the relationship between conservation and ecotourism. They also furnish-
ed the opportunity to pursue important subjects in greater depth and could be tailored to the particular specialty or expertise of the persons interviewed.

Five of Costa Rica’s ten SINAC Conservation Area offices were visited to obtain an operational level perspective on the relationship between conservation and ecotourism within the context of sustainable development. Individuals at those sites with whom discussions were conducted are included in the list of contacts in Appendix F. Site visits were also made to seventeen public and seven private protected areas (shown in Appendix G) in order to collect additional data through discussions with park management officials and through personal observation. Finally, interviews were conducted with several owners of the private protected areas.

A secondary objective of these site visits was to personally experience the scope and diversity of Costa Rica’s natural environment. This phase of the research was very worthwhile in providing a better understanding and appreciation of the overall situation in Costa Rica relative to the study. These protected areas visited represented a wide range of ecosystems, national geo-
graphic balance, type of ownership and management, and degree of experience with tourism. Consequently, they furnished a significant perspective of protected areas regarding the influence of ecotourism on conservation.

Data Analysis

Upon completion of the field research, data gathered were synthesized and analyzed to determine the influence of ecotourism on conservation within the study area. This phase of the research took place primarily at San Diego State University and the University of California, Santa Barbara.

Much of the data were collected using objective methods; however, determining the influences and impact of ecotourism on conservation philosophy and policy was necessarily a largely subjective and qualitative process. Most of the data from the questionnaires were amenable to basic statistical comparisons and analyses. Other questionnaire data, as well as information obtained from interviews, discussions and archival research, were evaluated through content-analysis. Archival data from a variety of sources, especially those uncovered in Costa Rica, turned out to be extremely
relevant and useful to the research and formed the primary basis of findings. These were supported and complemented by the other data collected, including those from questionnaires, interviews and open-ended discussions.

Analysis of these data and research findings revealed a number of ways in which ecotourism has influenced natural resource conservation in Costa Rica. The research demonstrated that ecotourism has been a major factor in changing attitudes and paradigms relative to environmental conservation. There are also influences evident in national conservation policy itself, including the type and degree of legislative and administrative actions. Finally, some important influences on the establishment and administration of protected areas, both public and private, will be discussed. These findings form the basis for conclusions pertaining to the overall impact of ecotourism on conservation policy. The research findings also lead to some conclusions regarding the relevance and contribution of ecotourism to sustainable development, as well as implications for public natural resource management policy in Costa Rica and other developing countries.
CHAPTER 4
COSTA RICA: THE PHYSICAL LANDSCAPE

Costa Rica is a relatively small developing nation of 51,000 square kilometers in Central America. This tropical, isthmian country occupies a relatively narrow longitudinal range of 83–86° west and a latitudinal range of only 8–11° north. Rather than having a homogeneous or even a consistent physical environment, however, Costa Rica is characterized by a very high degree of diversity and complexity of climates, surface features, and biota.

This chapter describes the physical conditions and features of Costa Rica in sufficient detail to furnish a basic understanding of the environment within the context of the subject research. Discussion of several important physical components leads into a more holistic, integrative treatment vis-a-vis life zones and ecoregions. A basic understanding of the Costa Rican physical landscape is requisite to a subsequent discussion of the cultural landscape, particularly human im-

61
pact on the environment and its central importance to the research.

Geomorphology

The geological formation of the Costa Rican portion of the Central American isthmus began approximately 150 million years ago (Hartshorn et al. 1983). The beginning of land formation, initially as an island chain, occurred mainly through tectonics and volcanism, forces which have continued to alter the physical landscape over the years (Vargas Ulate 1994a). Convergence of four tectonic plates -- North American, Caribbean, Cocos and Nazca -- have been largely responsible for the present rugged terrain and physical diversity of the region. This has also had major influence and implications in regard to climatic characteristics, demographic trends, and economic activities (Leonard 1987). The well-known physiographic province scheme of West (1989) shows most of the isthmian region and all of Costa Rica within the volcanic axis of Central America.

The geologic and physiologic features of Costa Rica exhibit a marked northwest-southeast structural trend, with a volcanic mountainous zone traversing its
entire length (Figure 4). The Guanacaste Cordillera in
the northwest reaches up to 2000 meters in elevation.
The Rincon de la Vieja volcano in this range is still
active, erupting as recently as 1995. The Tilarán and
Central Cordilleras lie further southeast and in the
center of the country, reaching heights of about 3000
meters. Several active volcanos are also found in this
area, including Poás, Irazú and Arenal. The last active
period for Poás was in the 1950s, while Irazú was ac-
tive in the 1960s. Arenal Volcano erupted in 1995 and
continues to produce lava flow. The activity of the
volcanos in these three ranges has been a very impor-
tant influence in Costa Rican physical geography, par-
ticularly in relation to landforms and soils. The Tal-
amanca Cordillera is situated in the south, and is less
volcanic in nature but is the highest (reaching more
than 3500 meters) and most extensive of the mountain
ranges in the country.

Significant highland basins, technically tectonic
depressions (Vargas Ulate 1994a), exist throughout most
of the mountainous regions of the country. The Central
Valley, with an average altitude of about 1200 meters
and desirable climatic and edaphic conditions, has been
Figure 4. Geomorphology
especially important to human activity and settlement patterns in Costa Rica.

There are two main zones of coastal lowlands. One is the fairly wide and uniform Caribbean coastal strip along with the large area of low-lying plains of the Nicaragua Depression often called the Limón Basin. This Caribbean coastline is relatively straight, fringed by swamps and lagoons north of Limón and contains the only significant coral reef ecosystem in Costa Rica. The other coastal zone is comprised of the Pacific lowlands, an area of greater length and complexity than its Caribbean counterpart. In this area, the coast includes bays, inlets, estuaries, and other irregular coastal features. The land surface consists of hilly and dissected promontories and peninsulas, particularly the large Nicoya and Osa Peninsulas, as well as the flat, alluvial Tempisque Valley in the northwest.

Soils and Hydrology

The soils of Costa Rica (Figure 5) vary spatially to a significant degree due to the great diversity of climate, geology, vegetation, and other factors (Vargas Ulate 1994a). Only about 20% of the land surface con-
Figure 5. Soils

Source: Adapted from Vásquez Moreira 1991
tains fertile volcanic or alluvial soils of the quality necessary for the permanent production of field crops (Hartshorn et al. 1983). These are found predominantly in the basins of the Meseta Central and river basins which drain them, the San Carlos River plain and the Tempisque Valley. Some of the coastal valleys and plains of the Pacific coast and the river valleys of Limón Province also contain fertile soil. Most of the rest of the country has relatively infertile soils -- some are poor in nutrients, others are shallow or poorly drained, and the rest are a combination of these.

The rugged topography and high rainfall found in much of the country provide a great richness of water resources (Hartshorn et al. 1983). There are numerous watersheds in Costa Rica, although some of them are quite limited in size (Vargas Ulate 1994a). The Costa Rican Institute of Electricity has classified them into 34 watersheds, the largest being the Térraba river system comprising 5100 km² and fourteen of them constituting less than 1000 km² (Costa Rica, ICE 1990). Moreover, all of the country’s rivers are relatively short due to the isthmian nature of the area. The Pacific side has few extensive river systems, but many short
and steep streams. The most significant of these are the Tempisque in Guanacaste, the Tárcoles which exits from the Meseta Central, and the Savegre, General and Térraba Rivers flowing from the Talamanca Mountains. The Caribbean river systems are longer, wider, and in some cases navigable, especially in the Limón Basin. Many of these rivers are subject to flooding much of the year. The most significant of these generally eastward flowing streams are the San Juan and San Carlos Rivers in the northern part of the country, as well as the Reventazón, Parismina, Chirripó, La Estrella, Sixaola, Pacuare, Sarapiquí and Telire Rivers.

Climate

Costa Rica is situated entirely within the northern tropics and, as noted, has a narrow latitudinal range. Nevertheless, there are substantial climatic variations over relatively short distances due to the physiographic complexity of the country. On a general level, the trade wind system dominates atmospheric circulation. The nation lies between the Atlantic and Pacific oceanic weather regimes. It is also located between a sub-tropical high pressure zone and the Inter-
tropical Convergence Zone (ITCZ). In the December-April (or shorter) summer (the tropical summer corresponds to the dry season), continuous high pressure exists over subtropical latitudes and the ITCZ lies south of Costa Rica. Consequently, strong Northeast Trade winds prevail, creating a fairly continuous pattern of rainfall on the Caribbean side of the country and a dry season of variable length elsewhere. In the May-November (or longer) winter, the circulation system shifts northward, weakening high pressure which permits the ITCZ to move closer to Costa Rica. This results in equatorial westerlies on the Pacific side in addition to continuing northeast trades on the Atlantic watersheds, and corresponds to the wet season of more consistent rainfall over the country (Coen 1991; Leonard 1987).

The general precipitation pattern in Costa Rica is significantly complicated by land features, especially mountain and valley areas; winds, including local sea breezes; and differences in solar radiation. These localized phenomena produce many microclimates, particularly in the mountains and inland valleys and basins (Coen 1991; Hall 1985). Nevertheless, some generalizations can be made relative to both precipitation and
temperature.

In regard to precipitation, there is generally rain distributed throughout the year in the Caribbean Basin and a dry season of variable length elsewhere in the country. Figures 6 and 7 respectively depict the annual average and seasonal distribution of precipitation in Costa Rica. Hartshorn et al. (1983) identifies three overall rainfall regimes. One is the Caribbean side with its heavy year-round precipitation (3000-5000mm per year) due to constant tradewinds originating over the ocean. Orographic effect produces more rainfall on the eastern slopes than on the coast itself, up to about 2500 meters elevation. Even here, clouds and fog persist due to high humidity (Hall 1985). Another precipitation regime is found on the Pacific side, where it rains mostly when westerly airflows displace the Northeast Trades, especially in the May-October time period. Thus, there is a dry season on the Pacific side, but differing in length from four to five months in the northwest of the country to fewer than three months in the south. Annual rainfall also is less than in the Atlantic lowlands, averaging 2000-4000mm. The third regime consists of areas with the most marked dry
Figure 6. Annual Average Precipitation
Figure 7. Seasonal Distribution of Precipitation

Source: Hall 1985
season, mainly in the central valleys and the northern Pacific's Guanacaste lowlands. These areas have the longest dry season and the lowest levels of annual precipitation, averaging less than 2000mm.

Latitude is not a factor in temperature variation within Costa Rica; temperatures differ primarily due to elevation, slope or aspect, and cloud cover (Figure 8). Also, typical of the tropics, there is little seasonal variation in temperatures, although diurnal changes are significant. Given its vertical zonation pattern, about 57% of Costa Rica falls into the hot zone or "Tierra Caliente". These are the lowlands up to about 800 meters, with temperatures averaging 24-27°C. The "Tierra Templada", 800-2000 meters in elevation, constitutes approximately 28% of the nation and has temperate temperatures of 12-24°C. The 15% of the country that falls within the "Tierra Fria", areas over 2000 meters elevation, have temperatures averaging less than 12°C (Hall 1985; West 1989).

Flora and Fauna

Biodiversity is a term made to order for Costa Rica, as the country is extremely rich in both plant
Figure 8. Annual Average Temperature
and animal life. It is one of the most biologically and genetically diverse countries in the world, a fact made even more dramatic by its small size. It is conservatively estimated that the country contains 500,000 species of plants and animals. Some believe it could be considerably higher and that Costa Rica is, in fact, the most biologically diverse country in the world per unit of area (Fournier Origgi 1993; Valerio 1991). Until the past few years, Janzen’s natural history of Costa Rica, first published in 1983, has provided perhaps the most comprehensive attempt to compile an inventory of wildlife. More recently, the Costa Rican Institute of Biodiversity (InBio), with considerable public and private support, has been actively engaged in compiling an inventory of the country’s flora and fauna. This organization now has the most comprehensive and detailed inventory of floral and faunal biodiversity in Costa Rica.

This high degree of biodiversity has been produced by Costa Rica’s significant physical diversity and numerous tropical climatic regimes which provide an enormous number of ecological niches within the nation’s boundaries. Costa Rica's position as both a land bridge
between North and South America and a barrier between the Atlantic and Pacific Oceans further augments this profusion of life. Since the isthmus is fairly young geologically, the current flora and fauna is also a relatively recent amalgam. This fact is significant to both terrestrial and marine biotic resources (Rich and Rich 1991; Vargas Ulate 1994b). A large number of endemic species, many of them rare and susceptible to loss, results from these ecological conditions as well.

It is estimated that Costa Rica, which represents only .03% of the earth's surface, contains about 10,000 species of vascular plants, almost 4% of the world's total (Boza 1993). Forests are the natural vegetative cover of most of Costa Rica. They have their maximum development in the warmest and wettest areas. For example, forest types include tropical rainforest, both in the lowlands of much of the Limón Basin and the Pacific southern coastal areas as well as in the lower montane regions of the interior of the country. Tropical mixed forest with deciduous and semi-deciduous trees appear in areas of low to moderate elevation and a discernible dry season, such as much of the Pacific mid-coastal area. Some of the last remaining areas of
tropical dry forest in Central America exist in portions of Guanacaste and the Nicoya Peninsula. Tropical savanna and scrub prevail in the driest areas; especially over large portions of the relatively arid Guanacaste northwest (Hall 1985; Leonard 1987). Because these vegetation patterns are closely associated with the ecological life zone classification scheme discussed in the next section, they are depicted in Figure 9.

The lowland dry and mixed tropical forest cover in places such as Santa Rosa National Park (dry) and the Carara Biological Reserve (mixed) is relatively low and open, consisting mainly of an upper story of deciduous trees and an under story of semi-deciduous and evergreen trees and shrubs. In moister areas, such as Manuel Antonio National Park and Caño Negro Wildlife Refuge, the formation is taller and denser. In very wet areas like Tapanti and Tortuguero National Parks, lush, dense and heterogeneous selva dominates. Additionally, in some of the coastal areas, particularly along the Pacific central and southern coasts, extensive marshes, mangroves, and other wetlands exist (Hall 1985; Leonard 1987).

In the Tierra Templada there are no really dry
areas. Here moist forest, wet forest and rainforest sub-types are found which correspond in formation to the lowland dry, moist and wet forest types just described (Hall 1985). At still higher elevations, moist and wet forest types are scarce, but lower montane and montane rainforest occur extensively on both sides of the Continental Divide. At elevations of 1500-2500 meters, such as in the Monteverde region, the montane rainforest sometimes becomes cloud forest. This consists mainly of such vegetation as evergreen trees and tree ferns, with epiphytes constituting a substantial proportion of its biomass. The cloud forest is enveloped in clouds and fog due to low temperature, elevation, slope and other topographic characteristics which produce a continually high level of humidity.

The fauna of Costa Rica is also characterized by tremendous diversity. Some 250,000 species of insects, nearly 850 species of birds, and over 200 species of mammals are estimated to occupy the national territory (Boza 1993; Leonard 1987). Spanning the boundary separating North and South America, Costa Rica serves as both the northern and southern range limit for a number of animals. As a result, it has monkeys, sloths and oc-
elots typical of South America, as well as snakes, deer and other animals characteristic of North America.

Marine resources constitute an important component of Costa Rica’s overall biodiversity. On the Pacific side, in particular, the significant extent of shoreline with mangroves and associated estuaries provides important habitats which serve as breeding and nursery areas for shrimp and many species of fish (Leonard 1987). Sport fishing along the Pacific coast has become an important part of the country’s tourism industry. Coastal wetlands furnish habitat for a large number of migratory birds, and the beaches provide nesting ground for the Pacific species of turtles that lay their eggs there. This latter phenomenon is even more dramatic on the Atlantic side, where the major sea turtle nesting area is along the country’s northern beaches. The coral reef south of Limón, although considerably degraded, is still a rich ecosystem supporting a wide variety of marine flora and fauna. These marine features and resources are also of interest and importance to this study as significant areas of both conservation and ecotourism, such as the sea turtle protection and research activities being done at Tortuguero.
Ecological Classification

While a basic knowledge of the elements of the physical environment is central to any understanding of Costa Rica, a more holistic and integrated ecological perspective is necessary to deal with the issues involved in this research. A number of classification systems have been developed to differentiate and analyze ecological and climatic zones, such as those of Koeppen and Thornthwaite. However, they are not sufficiently adaptable to highly variable tropical environments such as those found in Costa Rica.

Nevertheless, two systems have been developed which are particularly relevant to tropical ecology and are also potentially useful conservation tools. The first of these, the Holdridge Life Zone System, has been extensively used for analyses of climate and natural vegetation conducted in Central America over the last thirty years (Vargas Ulate 1994b). This system identifies a number of different ecological life zones based on factors of bio-temperature (the range of temperatures at which vegetative growth occurs), precipitation and humidity (Holdridge 1967). Within the Holdridge system, Costa Rica contains twelve ecological
life zones, a large number for such a relatively small area (Holdridge et al. 1971). This reflects the high degree of complexity and diversity characteristic of Costa Rica. These life zones and their territorial extent are listed in Table 3. Additionally, the zones are depicted graphically in Figure 9, but are combined into fewer categories for better visual representation.

Several important observations can be quickly made from Table 3 and Figure 9. In the life zone classification system, there are seven elevational zones which occur in tropical latitudes and comprise the first order of classification; five of these are found in Costa Rica. It can also be seen that a large majority (90%) of the country lies within humid provinces, where precipitation exceeds potential evapotranspiration. The tropical dry province is clearly delineated as well, limited to lower elevations. The figure also demonstrates the total area, more than half of Costa Rica, which is classified as lowland, corresponding to the Tierra Caliente.

Life zones are mainly predicated upon potential of natural vegetation and, as such, are no longer an accurate portrayal in many areas due to extensive human-
Table 3. ECOLOGICAL LIFE ZONES IN COSTA RICA

<table>
<thead>
<tr>
<th>Life Zones</th>
<th>% of Costa Rica’s Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tropical dry forest</td>
<td>10.3</td>
</tr>
<tr>
<td>Tropical moist forest</td>
<td>24.2</td>
</tr>
<tr>
<td>Tropical wet forest</td>
<td>22.6</td>
</tr>
<tr>
<td>Premontane moist forest</td>
<td>4.7</td>
</tr>
<tr>
<td>Premontane wet forest</td>
<td>13.6</td>
</tr>
<tr>
<td>Premontane rain forest</td>
<td>9.8</td>
</tr>
<tr>
<td>Lower montane moist forest</td>
<td>0.2</td>
</tr>
<tr>
<td>Lower montane wet forest</td>
<td>1.5</td>
</tr>
<tr>
<td>Lower montane rain forest</td>
<td>7.4</td>
</tr>
<tr>
<td>Montane wet forest</td>
<td>0.1</td>
</tr>
<tr>
<td>Montane rain forest</td>
<td>5.4</td>
</tr>
<tr>
<td>Subalpine rain paramo</td>
<td>0.2</td>
</tr>
</tbody>
</table>

Source: Holdridge et al. 1971
Figure 9. Ecological Life Zones
induced changes. Nevertheless, the system gives a useful scheme of bioclimates and regional variability, providing, among other things, an index of actual and potential land use. Holdridge’s system has been utilized effectively in land use studies and analyses such as those done by the Tropical Science Center (1985) and the Ministries of Natural Resources, Energy and Mines and Agriculture and Ranching (Costa Rica, SEPSA 1991). These studies developed a methodology and system for determining land use capacity in Costa Rica. The Tropical Science Center study used life zones as the first order of classification; while SEPSA’s study de-emphasized life zones but continued to use them as a parameter along with several other factors. A number of classes and subclasses were then formulated, ranging from land use with no limitations to zones limited to preservation (or non-use) only. These land use studies have subsequently been effectively utilized in conservation planning and management in Costa Rica, such as in determining land status and potential use, optimum type of protected area and degree of management, and regional SINAC planning.

A more recently developed and increasingly used
classification scheme is that of ecoregions, a biogeographic hierarchical system (Dinerstein et al. 1995). The system divides an area (e.g., Latin America and the Caribbean) into broad major ecosystem types, then major habitat types, and finally biologically distinctive ecoregions. Within Latin America and the Caribbean, this scheme includes five major ecosystem types, eleven major habitat types, and 191 ecoregions. It represents data at an appropriate and useful biogeographic scale for regional biodiversity studies and conservation assessment, planning and prioritizing. Additionally, it provides an excellent framework for further and more detailed analysis at the ecoregion and intra-ecoregion scale (Dinerstein et al. 1995).

To date, the ecoregion system has been applied on a limited basis in Costa Rica and elsewhere, as it is newly developed and used primarily by the World Bank. Nevertheless, the scheme appears to have excellent potential in Costa Rica for biodiversity conservation assessment and planning. By defining biological characteristics at a useful scale and determining landscape/land use status for that particular area, the need for environmental conservation can be more rationally as-
certained. Further, conservation policies and programs can be better prioritized, planned, and made more appropriate to the specific conservation need (e.g., stringent preservation versus multiple use including tourism, or the need for a publically-owned protected area versus a reserve of mixed ownership.

This chapter has provided an overall description of the physical landscape of Costa Rica. The following chapter depicts the cultural landscape of the country, containing a brief historical summary and then focusing on the current cultural profile. It goes on to describe human impacts on the environment. The development of conservation and (eco)tourism up to the late 1980s is discussed in detail in Chapter 6. The next chapter then focuses on the formulation and importance of a sustainable development framework beginning in the late 1980s, within which both tourism and conservation have taken a course far different than before.
CHAPTER 5
COSTA RICA: THE CULTURAL LANDSCAPE

Costa Rica's physical landscape has been affected and altered by human activity for many years. This has resulted in a cultural landscape, an historical and on-going interrelationship between the inhabitants of Costa Rica and their environment, which is of primary importance to this study. This chapter will describe the nation's cultural landscape by furnishing an historical context and a current cultural profile of the country. It concludes with an examination of the most salient impacts that human activities have had on Costa Rica's natural environment and resources.

Human History of Costa Rica

Pre-Colombian. Human beings have lived in what is now Costa Rica for over 10,000 years (Biesanz 1987). Hall (1985) speculates on initial settlement by Paleolithic hunters and gatherers as long as 14,000 years ago. The isthmus served as a bridge and filter for humans as well as flora and fauna. However, the scarcity of ar-
cheological evidence has hindered knowledge of early human inhabitants of the area. Even estimates of the indigenous population at the time of Spanish Conquest vary widely. Denevan (1992a) estimates a population of up to several hundred thousand persons while Biesanz (1987) and others use the much lower figure of 27,000. The latter estimate, or a figure not much higher, would appear to be supported by the lack of significant formal political organization or urbanization beyond small villages, as well as the apparent insufficiency of indigenous labor available to the Spaniards. The evidence points to the probability of a number of relatively small, autonomous tribes in fairly small villages and towns with low population densities. Table 4, based on various sources and personal estimates, depicts indigenous population as part of Costa Rica's overall population pattern.

Two primary cultural centers developed in the latter stages of Pre-Colombian history, one predominantly Mesoamerican and the other of South American influence. The more advanced and sophisticated Meso-American culture centered in the northwestern area resulting from migration, conquest and trade. Towns were formed with
Table 4. POPULATION GROWTH PATTERN

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Population (in thousands)</th>
<th>Indians (in thousands)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1550 (conquest)</td>
<td>27+</td>
<td>27+</td>
</tr>
<tr>
<td>1600</td>
<td>16</td>
<td>15</td>
</tr>
<tr>
<td>1700</td>
<td>20</td>
<td>15</td>
</tr>
<tr>
<td>1800</td>
<td>53</td>
<td>8</td>
</tr>
<tr>
<td>1821 (independence)</td>
<td>65</td>
<td>(Unk)</td>
</tr>
<tr>
<td>1900</td>
<td>304</td>
<td>5</td>
</tr>
<tr>
<td>1950</td>
<td>858</td>
<td>(Unk)</td>
</tr>
<tr>
<td>1975</td>
<td>1,965</td>
<td>(Unk)</td>
</tr>
<tr>
<td>1996 (current)</td>
<td>3,600</td>
<td>20</td>
</tr>
<tr>
<td>2000</td>
<td>4,000</td>
<td>(Unk)</td>
</tr>
<tr>
<td>2025</td>
<td>5,500</td>
<td>(Unk)</td>
</tr>
</tbody>
</table>
stratified societies, religious practices, and central plazas typical of northern Central America. Styles of agriculture based on corn, beans, squash, sunflowers and other crops also reflected strong Mesoamerican influences. In the eastern and southern parts of present day Costa Rica, South American influences predominated due to migrations from portions of Brazil, Ecuador and Colombia. Food crops based on tubers, housing styles, chewing of coca, religion and other cultural characteristics reflected South American origins and influence. These societies were less advanced than the Mesoamerican, even to the point of the persistence of a hunting and gathering lifestyle throughout much of their history (Melendez 1991).

Colonial period. The first European contact with the area was on the Caribbean coast during Colomubus' 4th voyage in 1502. Contacts were mainly along the coast for the next 60 years. The area became known as Costa Rica (rich coast) as a result of gifts of gold given to Captain Gil González during his explorations there in 1522 (Biesanz 1987). However, this title proved to be inaccurate, as little mineral wealth was subsequently
found. Additionally, the relative inaccessibility of the area and limited indigenous population which was low to start with. The population was further reduced by colonist-induced factors such as disease. Consequently, Costa Rica became a backwater, a minor and neglected province governed from the Captaincy General of Guatemala. It was never considered an economically valuable colony by Spain (Hall 1985).

Left on its own for the most part, for some 250 years Costa Rica developed differently than the feudal system typical of the rest of colonial Mexico and Central America. From the beginning of the colonial period, no large land grants were made and there were no Indians for enforced labor. Instead, the colony developed a pattern of small to medium size family subsistence farms, concentrated in the Meseta Central where the soil and climate favored the Spaniards. Significant social and economic stratification did exist (Hall 1985). Nevertheless, the relatively poor but tranquil setting formed the basis for the ideals of democracy.

There was also a greater degree of racial and cultural homogeneity than in the neighboring areas. Permanently settled Spanish colonists never numbered more
than a few thousand, but their influence was great. The history of the Conquistador group and continuing Hispanic domination, particularly in the Central Valley, in large measure is the basis of Costa Rican national history (Melendez 1991). While some initial intermarriage with indigenous women occurred, the large majority of the population remained relatively light-skinned and strongly Hispanic in a cultural sense -- the most "Spanish" of the Central American provinces (Biesanz 1987; Hall 1985). This was exaggerated by the decimation of the limited indigenous population. Hispanic values and systems were quickly imposed and prevailed. These were reflected in social and family values, political organization, economic activity, land use, and other facets of life.

**Independence and national development.** Along with the rest of Central America and Mexico, Costa Rica achieved its independence from Spain in 1821. Two years later, it joined the Central American Federation, which lasted, at least in name, until 1838. At that time, Costa Rica declared itself a sovereign state. Despite some divisive actions by the four primary central valley
cities of San José, Cartago, Heredia and Alajuela, national unity and integration prevailed and became firmly entrenched.

A key development in the mid-1800s was the beginning of the coffee industry, which quickly became the leading economic activity. The Meseta Central proved an ideal location for coffee production because of favorable soil and weather conditions, as this product experienced massively increasing demand in Europe and elsewhere. The coffee industry developed largely as a Costa Rican owned and operated enterprise, consisting mostly of small and medium size farms. Nevertheless, a coffee elite and national oligarchy soon came to exist (Biesanz 1987). Coffee was the great agent of change in the life of the country and a key factor in unifying the socio-economic foundation of Costa Rican society (Perez-Brignoli 1989). Export of coffee also opened the economy to the international market and it remained virtually the only export commodity for almost fifty years (Melendez 1991; Romero 1982).

The banana industry developed in the late 1800s. It began in the Atlantic lowlands and moved to the Pacific side in the 1930s. By 1905, bananas were earning
more foreign exchange than coffee (Hill 1985). This industry consisted of large foreign-owned estates and modern plantation economic systems. It was dependent upon and controlled by foreign capital and interests. Bananas, like coffee, is an export crop, subject to world markets. Further, banana production requires large capital investment for land clearing, drainage facilities, and transport. This industry, as well as other Caribbean coastal lowland crops such as cocoa, also brought a significant number of black West Indians into the country for labor. The Limón Province became, and has remained, disproportionately black and somewhat culturally removed from the rest of the country. Coffee and bananas, especially, changed the economy of Costa Rica from one based on small-scale peasant farming to monocultural cropping, economic dependence, foreign control, and foreign debt -- a pattern that still exists in large part (Romero 1982).

The late 1800s also included a shift from a largely patriarchal political system to liberal democracy (Biesanz 1987; Melendez 1991). This shift included separation of church and state (with the state dominant), democratic elections, a free press, as well as free and
obligatory public education. It was not so much a major restructuring of society as a consolidation of social control within a legal framework. Freedom of the press, compromise as a political maxim, and other factors allowed the peaceful political participation of various sectors of society (Perez-Brignoli 1989). The democratic tradition endured in Costa Rica, although there were numerous instances and periods of political turmoil and a growing list of socio-economic problems. These included protection of the status quo by the privileged class, lack of concern for the poor, worker exploitation, social and economic disparities and social stratification (Biesanz 1987). The economic internationalization of the country exacerbated many of the conditions, with declines in exports during bust cycles and increases in foreign debt.

1940s and since. The decade of the 1940s and its climax, the Civil War of 1948, mark a major turning point in Costa Rica's history (Biesanz 1987). Many social reforms were begun during that time, such as social security, land reform, and a strong labor code which established minimum wages and the right of workers to or-
ganize. These changes caused opposition and turmoil, resulting in Civil War and political control by a junta for several years. A new constitution was enacted in 1949 and the country's armed forces were abolished. The government instituted electoral changes, enfranchised women and minorities, nationalized the country's banks, and maintained previously enacted social reforms.

The legacy of the 1940s has been extended to the present. For the last 45 years, Costa Rica has been committed to government-guided development and social justice achieved through a social welfare or benefactor state. The country has been relatively stable and democratic. Economic growth, albeit erratic, has provided better living conditions than found elsewhere in Central America or in most other developing countries. These points are discussed in more detail in the following sections.

**Current Cultural Profile**

**Social characteristics.** Table 4 depicted the historical population pattern of Costa Rica, but it also shows current and projected levels. The country's mid-1996 population is estimated at 3.6 million (Population Ref-
erence Bureau 1996), doubling in the past 25 years due mainly to the high rate of natural increase. In fact, the rate of 3.7% in the late 1950s was one of the highest in the world. It has dropped significantly in recent years and is currently about 2.2%. Nevertheless, population projections show the effect of population momentum, short-term growth resulting from recent high birth rates and large proportion of youths. Projections for 2025 range from 5.3 million (Villareal 1991) to 6 million (Bonilla Duran and Meza Ocampo 1994).

Population is very unevenly distributed within the country. Nearly two thirds of Costa Ricans live in the central valley, an area representing only about 5% of the land surface of the country. This situation dates back to early colonial times; in fact, historically the population was even more spatially concentrated than it is currently (Nelson 1983). In recent years, internal migration has opened up previously empty rural areas as well as swelling the population of San José and other urban areas. These demographic trends are typical of all of the Central American countries.

Unlike its neighbors, Costa Rica displays relative cultural homogeneity. The culture is strongly Hispanic,
including Spanish language and the Catholic religion. Because there are only small numbers of Blacks, Indians and other racial or ethnic groups, there is little stratification along these lines. Over 90% of the people are of Spanish descent while mestizos and blacks make up most of the rest of the population. Some racial mixing occurred between the Spaniards and indigenous people for a couple of generations after the Conquest, but the dwindling number and isolation of the latter group precluded much of it then and almost none afterwards. Blacks, previous immigrants to Costa Rica in small numbers, came mostly from the West Indies during the 19th Century to work on railroad projects and then stayed to work on banana and other plantations (Biesanz 1987). Comprising about 2.5% of the national population (author's estimate), they are still concentrated in the Atlantic lowlands and are only gradually being assimilated into the mainstream of Costa Rican life. American Indians and recent Asian additions (mainly Chinese) each make up less than 1.5% of the national population.

Costa Ricans display a strong self-image and national pride. Claims of a "classless society" more accurately reflect a balance between elitism and egalitari-
anism that originated in colonial times and has charac-
terized Costa Rican society ever since (Biesanz 1987).
Social stratification exists, but to a lesser degree
than in other Central American countries. It is predom-
inantly class-based or economic in origin. Perhaps the
most obvious manifestation of this social stratifica-
tion is the significant and growing number of rural
landless poor as well as the rapidly expanding urban
lower classes. Still, the distinctions are blurred due
to Costa Rica's relatively large middle class, a con-
siderable degree of social mobility, emphasis on dress
and appearance by all groups, and faith in education as
a means of bettering one's position (Biesanz 1987).
Some observers point to recent changes in traditional
Costa Rican values. Traditionalism seems to be giving
way to modernization and urbanization, leading to
greater pluralism in society, lifestyle changes, pref-
erence for economic security over traditional values,
and growing social and economic inequality (Fernandez

Primary and secondary public education has been
free in Costa Rica for over 100 years. Primary educa-
tion (6 years) has been compulsory for all of that
time, and the first three years of secondary schooling were also made compulsory in the 1970s. The official literacy rate is over 90%, but significant functional illiteracy persists (Barry 1991; Nelson 1983). Quantity appears to be better than quality at the primary and secondary levels. Rojas (1992) points out that while Costa Rican education was never as good or universal as advertised, it has deteriorated in recent years. The percentage of resources devoted to education has dropped, leading to quantitative and qualitative declines, reinforcing social group differences, and causing increasing flight to private schools. Several national universities and regional colleges, as well as a growing number of private schools, provide the country with a good system of higher education.

As noted, Catholicism is the dominant religion. However, most Costa Ricans are rather passive or eclectic in their religious practices (Biesanz 1987; Lara, Barry and Simonson 1995). There is a strong tradition of separation of church and state. The Catholic Church has consistently supported the government, providing a force for stability and social harmony (Barry 1991).

Health and health care services have shown major
improvements since establishment of the social security system in the 1940s. Average life expectancy now stands at 76 years, the infant mortality rate has declined dramatically, contagious diseases largely have been brought under control, and well over 90% of citizens have access to potable water and waste disposal (Costa Rica, MIDEPLAN 1995). The national health system is available to all citizens paying into the social security system. Costa Rica leads Central American countries in almost every health indicator (Bonilla Duran and Meza Ocampo 1994). Recent declines in the effectiveness of social services have been noted, however. Additionally, the system is very expensive and this social overhead contributes to the nation's budget problems, which continue to worsen. Consequently, calls have arisen for greater privatization of health care providers and services. An enormous challenge for the government is to maintain fiscal integrity while not reducing health services, and social services in general, to people who need them the most (Barry 1991).

Economic characteristics. The Costa Rican economy operates within an overall framework of private enterprise.
The private sector is well entrenched in an open business climate. However, the government has played an active economic role since the 1940s through broad public regulation, an expansive social security system, public sector corporations, and outright ownership of some industries (e.g., banking, telecommunication, energy) (Nelson 1983).

Agriculture is still an important sector of the Costa Rican economy, although its contribution to the country’s Gross National Product has decreased from 41% in 1950 to 20% in 1992 (Lara, Barry and Simonson 1995). Coffee and bananas are the leading export crops, but increasing agricultural diversification has occurred in recent years with sugar, cacao, pineapples and non-traditional crops such as palm oil and exotic plants. These have assumed an important role in the country’s agro-exports. Crops cultivated for domestic consumption include maize, beans, rice, potatoes, plantains, and sorghum. These do not meet domestic needs, however, and the country has to import basic foodstuffs.

Traditional cattle ranching developed due primarily to internal markets and the social prestige associated with cattle production. There has been a tremen-
dous increase in cattle raising over the past several decades, however, to meet the demand for cheap lean beef used by the fast food industry. This has been responsible, along with monocrop estates and plantations, for increasing land concentration in Costa Rica. These agricultural and land tenure policies and practices are resulting in the same type of latifundia-minifundia pattern so evident in other Central American countries. At the same time, population is increasing and significant migration is occurring to previously unoccupied and often marginal areas. Rural landlessness and poverty are on the rise, as is the practice of illegitimate occupation of land by squatters, or "precarismo" (Barry 1991). As presented in the Review of the Relevant Literature, these factors, particularly poverty and lack of development, serve as significant obstacles to resource conservation and sustainable development.

Manufacturing and industry have developed slowly. Active government sponsorship and the Central American Common Market helped spur significant growth during the 1960s and 1970s. A fairly wide range of goods are produced but they are mainly small-scale, light industries concentrated in the central valley. Food processing,
chemicals, metal working, textiles and leather-working are leading activities. "High tech" and service industries have increased recently as well, but usually with active government involvement or ownership.

Tourism is the largest growth industry in the country, experiencing a significant boom period in the late 1980s and early 1990s. A great deal of favorable international attention has been accorded Costa Rica, due largely to the government's conservation policies with regard to parks/reserves and President Arias' Nobel Peace Prize in 1987 (Budowski 1992). Tourism is now Costa Rica's leading source of foreign exchange (Costa Rica, MIDEPLAN 1995). Tables 5 and 6, constructed from a number of sources, illustrate the role of tourism in the economy. The first table demonstrates its position as the leading foreign income earning activity in 1994, comparing it to traditional and nontraditional exports. The second table reflects the change in Gross Domestic Product (GDP), exports and tourism from 1987, when eco-tourism began coming into its own, to 1994. The growth of tourism, and especially ecotourism, will be discussed in detail in the next two chapters. However, it is appropriate here to point out that foreign earnings
Table 5. FOREIGN INCOME EARNING ACTIVITIES, 1994

<table>
<thead>
<tr>
<th>Economic Activity</th>
<th>Dollars (millions)</th>
<th>Foreign Income %</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tourism</strong></td>
<td>625.7</td>
<td>21.7</td>
</tr>
<tr>
<td><strong>Traditional Exports</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bananas</td>
<td>528.9</td>
<td>18.4</td>
</tr>
<tr>
<td>Coffee</td>
<td>310.2</td>
<td>10.8</td>
</tr>
<tr>
<td>Meat</td>
<td>52.3</td>
<td>1.8</td>
</tr>
<tr>
<td>Sugar</td>
<td>21.5</td>
<td>0.7</td>
</tr>
<tr>
<td>Other</td>
<td>4.3</td>
<td>0.1</td>
</tr>
<tr>
<td><strong>Nontraditional Exports</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plants and Flowers</td>
<td>91.1</td>
<td>3.2</td>
</tr>
<tr>
<td>Glass and Rubber Products</td>
<td>58.3</td>
<td>2.0</td>
</tr>
<tr>
<td>Pineapples</td>
<td>57.9</td>
<td>2.0</td>
</tr>
<tr>
<td>Pharmaceuticals</td>
<td>44.8</td>
<td>1.6</td>
</tr>
<tr>
<td>Garments/Fibers</td>
<td>39.0</td>
<td>1.4</td>
</tr>
<tr>
<td>Fish</td>
<td>24.9</td>
<td>0.9</td>
</tr>
<tr>
<td>Other</td>
<td>809.5</td>
<td>28.1</td>
</tr>
<tr>
<td>Maquila*</td>
<td>209.1</td>
<td>7.3</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>2877.5</td>
<td>100.0</td>
</tr>
</tbody>
</table>

* Value-added from off-shore assembly and duty free zones
<table>
<thead>
<tr>
<th>Economic Activity</th>
<th>1987</th>
<th>1994</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross Domestic Product</td>
<td>4530.8</td>
<td>8336.0</td>
</tr>
<tr>
<td>Total Exports</td>
<td>1165.7</td>
<td>2251.8</td>
</tr>
<tr>
<td>Traditional Exports</td>
<td>678.5</td>
<td>917.2</td>
</tr>
<tr>
<td>Nontraditional Exports</td>
<td>487.2</td>
<td>1334.6</td>
</tr>
<tr>
<td>Tourism</td>
<td>136.2</td>
<td>625.7</td>
</tr>
</tbody>
</table>
from tourism increased over four and one half times from 1987 to 1994. It can be seen from the tables that tourism, as a ratio of revenue to exports, increased from 12% in 1987 to 28% in 1994. Looked at in another way, tourism constituted 11% of total foreign earnings in 1987; this proportion increased to 22% by 1994. Additionally, Table 6 shows that tourism was responsible for fully 7.5% of the GDP in 1994, a substantial increase from its 3% contribution in 1987.

After two decades of impressive growth, the economy ran into significant problems in the late 1970s and early 1980s. This was also the case throughout the rest of Latin America, and the 1980s is often referred to as the "lost decade" for the entire region (Rodriguez Cervantes 1993). The economic collapse was caused mainly by the development model of an agro-export economy dependent on a limited number of crops decreasing in value on world markets (especially for coffee), sharply increasing oil prices, massive and often ill-advised government borrowing, rising debt and interest rates to pay for it, and social overhead costs of the benefactor state (Lara, Barry and Simonson 1995). Biesanz (1987) states that steps to tighten up by cutting back on ben-
efits, a number of austerity measures, and some privatization actions helped to stabilize the economy. The nation still experiences a large trade deficit in most years and has a high foreign debt.

Costa Rica's economic conditions and the standard of living enjoyed by its people exceed those of most other Central American and developing countries elsewhere. Costa Rica's MIDEPLAN (1995) reports a per capita income of US$2700. However, it also reports that 16% of families live in poverty, half of them in extreme poverty. Other estimates are higher, pointing to a growing gap between rich and poor (Lara, Barry and Simonson 1995). This highlights the fact that Costa Rica suffers from many of the same economic problems as other developing countries. These include dependence on monoculture crops (bananas and coffee still dominate agricultural exports), poor land use practices, inequitable land tenure patterns, large numbers of landless poor, too rapid urbanization, mounting trade deficits, and intractable foreign debt (Bonilla Duran and Meza Ocampo 1994). Campos (1989) accurately points out the disappearance of the agricultural frontier, irrational use of the land, increasing foreign control, and
market uncertainties as root causes of the economic problems. He probably carries his polemic too far, however, in claiming that Costa Rica has become an economic dependency of the developed world.

Economic problems and criticisms of the benefactor state have led to arguments for government restructuring and downsizing. Greater decentralization and privatization have been advocated to increase efficiency and productivity, improve quality of service, reduce the deficit, and make the economy more competitive. Vega (1992) refers to this as a necessary process for economic democratization. Rovira (1992) sees a new development style emerging from the problems manifested so dramatically a decade before, one based on global trends and a new world economic order as well as internal national factors. This style is more economically than socially driven, with a reduced government role in favor of greater reliance on free market forces. The controversial issue of privatization has a number of ramifications for both conservation and tourism in such matters as private protected areas. These topics are discussed more fully from a political and public policy perspective in the following section.
Political characteristics. In many respects, the current political situation and political tradition in Costa Rica is different from the other countries in Central America and most developing nations. The government of Costa Rica is stable and orderly. This benefactor state, with its expansive bureaucracy, has a pervasive presence, socially and economically active in a manner similar to that of many European countries (Barry 1991). Some have described the political system as overly stable, to the point of immobility due to emphasis on compromise, incrementalism and symbolic solutions; therefore it is unable to promote fundamental socio-economic change (Biesanz 1987).

The Constitution of 1949 put in place an effective system of checks and balances among the three branches of government. The Executive consists of the President, two Vice-Presidents and the Ministries. The Legislative arm consists of a 57-member unicameral Assembly elected from provincial slates based on proportional representation. The Judicial system plays an important public role, similar to that of the United States. The Executive and Legislative members are elected in national elections every four years and are ineligible for suc-
cessive re-election. Voting is mandatory, at least officially. The Executive, while playing a dominant role vis-a-vis the Legislative, does not dominate national politics as elsewhere in Central America, because the Assembly is relatively well-developed and has an important decision-making role. Public corporations and semi-autonomous institutions also have a prominent and powerful role within the Costa Rican governmental system (Bieszcz 1987). However, the provinces have generally been sub-divisions of the national government and have few administrative powers (Nelson 1983). At the local level, the canton is the primary political unit. Like the provinces, the country's approximately 80 cantons possess relatively limited roles and functions.

The National Liberation Party (PLN) and Social Christian Unity Party (PUSC) are the two main political parties in Costa Rica. They are not far apart ideologically in terms of their values and goals, with centrist positions generally prevailing in both parties. Elections have been fair with peaceful transitions between administrations. The PLN has overall been the dominant party since 1949, although presidents of the different parties have alternated with some frequency.
The opposition, previously splintered among several groups, has more or less consolidated into the PUSC. Now the two parties appear to be alternating in controlling the Assembly as well as the presidency. The emergence of a two-party system is a significant development in Costa Rica, reflecting changing political ideology, values, and power relationships between and within parties (Steichen 1992).

National military forces were abolished after the 1948 Civil War. The country and its citizens are very proud of their strong stand for peace. There are some concerns, however, over the large and growing number of police or security forces (Barry 1991). A number of different police agencies exist, with no central command structure, and several have received military training. As a result, fears of militarization and secret armies have arisen. In the view of many people, however, additional police forces and protection are needed due to recent increases in crime.

As alluded to previously, the responsibilities and functions of the public sector are undergoing scrutiny. Changes in values and attitudes are leading to calls for state reform and redefinition of the state's role
within Costa Rica. There is a feeling that government is too pervasive, inefficient and undemocratic (Villasuso 1992). A need for downsizing is perceived, decentralizing and privatizing for greater citizen and private sector participation, personal freedom and efficiency. Some actions have been taken along these lines and the trend will likely continue. How these developments are affecting conservation and related subjects will be discussed below. Political changes are coming slowly and quite controversially, however, particularly in regard to privatizing current governmental functions. In addition to strong vested interests and institutional resistance to change, up to 40% of the Costa Rican population is opposed to privatization, highlighting significant popular support for the existing social and economic welfare structure (DiMare 1992; Villasuso 1992).

**Human Impacts on the Physical Landscape**

The Pre-Colombian impact on the natural environment was apparently relatively minor and localized. Some observers claim that Costa Rica's aborigines lived in harmony with nature, and their philosophy toward the
environment probably did minimize adverse impacts (Fournier Origgi 1991). It is likely, though, that low densities of population and low levels of technology were more important reasons. Nevertheless, localized pressures on the land, especially agricultural practices in the more heavily populated areas, did result in some deforestation and perhaps assisted in the formation of savannas (Hall 1985).

The Spanish settlers imposed a different human-land relationship. Land ownership, religious values of dominion over nature, economic values of cleared versus forested land, and introduction of Old World plants and animals quickly changed the landscape (Fournier Origgi 1991). In the Central Valley, forests gave way to permanent clearing and private farms with Old World crops, animals and agricultural techniques (Hall 1985). It did not take long for this area to be cleared of most of its original forest cover, while almost all of the remaining stands disappeared with development of the coffee industry in the 19th century.

Plantations and estates in the lowlands and other undeveloped areas followed in the late 1800s and resulted in extensive forest clearing. This began with ba-
nanas in the late 1800s, and was followed by sugar cane and cacao. More recently, crops such as pineapples have been planted on large tracts of cleared land and oil palms have been planted in many of the former banana lands.

Perhaps the most significant land use activity in terms of land clearing during the past several decades has been the cattle industry discussed earlier. The "Big Mac Factor", also called the hamburger connection and hamburgerization of the forest, resulted in a 75% increase in pasture area and herd size from 1960 to 1980, and a 40% reduction in forest due to conversion to pasture during that same time period (Hedstrom 1993). Cattle raising continues to constitute an important economic activity but has declined somewhat in recent years. Some former pasture land is being reforested as a result, either purposefully or by natural regrowth of forest cover.

Deforestation rates and estimates vary from source to source. However, in the 1960s and 1970s, the country lost approximately half of its then-existing forest cover, with forests and woodlands decreasing form 51% to 36% of total national territory in the 1970s alone.
(Leonard 1987). At present, the country is about 25% forested, including protected areas (Meza and Bonilla 1995). While the rate of forest loss has decreased somewhat recently, some observers still foresee the probability of further extensive deforestation outside of protected areas (Lara, Barry and Simonson 1995; Meza and Bonilla 1995).

Soil deterioration, in terms of both quantity and quality, is a critical problem in Costa Rica. Millions of tons of fertile topsoil are lost each year due to erosion (Meza and Bonilla 1995). Costa Rica’s MIDEPLAN (1995) estimates that 25% of soils are affected by light to moderate rates of erosion and over 15% by moderate to heavy erosion. This is caused in some locations, and exacerbated in others, by land clearing, especially on steep slopes in areas of heavy rainfall (Hall 1985). Watershed destruction from deforestation and resulting soil erosion has been identified as an equally serious problem, threatening potable water supplies, hydroelectric power plants, and coastal resources (Barry 1991; Leonard 1987). Hedstrom (1993) points out that there have been actual decreases in the amount of precipitation due to cloud forest destruction. Sig-
significant chemical pollution in soil and water from fertilizers, pesticides and herbicides presents serious health problems for humans and other animals (Leonard 1987; Thrupp 1988).

Coastal resources, such as mangroves, wetlands, and reefs, as well as the animal species they support, are also being degraded and destroyed (Leonard 1987). Meza and Bonilla (1995) identify significant littoral ecosystem destruction due to pollution from domestic, agricultural and industrial wastes; increased sedimentation from deforestation and soil erosion; and urbanization and development for industrial or commercial purposes along the coasts. They point out examples such as the destruction of the coral reefs at Cahuita from sedimentation and agrochemical pollution.

Increasing levels of population, urbanization and industrialization have brought a host of environmental problems such as waste disposal and air and water pollution in most settled areas of the country (Leonard 1987; Ramírez Solera and Maldonado Ulloa 1988). These problems are most prevalent in the densely populated and more industrial Central Valley, but are also being increasingly manifested in other urban/industrial areas.
such as Limón, Puntarenas, and Liberia (Barry 1991; Costa Rica, MIDEPLAN 1995; Leonard 1987).

Inappropriate and inefficient land use practices, exacerbated by population pressures, poverty and inappropriate technology, are at the heart of environmental degradation in Costa Rica (Hartshorn et al. 1983; Leonard 1987). The characteristic model and pattern of development has been wasteful and destructive (Brenes Castillo 1989). However, the lack of economic development and its associated poverty have been as much to blame as bad development, resulting in subsistence-level exploitation of resources by the rural poor (IUCN 1991; WCED 1987; World Bank 1992). Thrupp (1990) and Hein (1993) point to poverty and the socio-economic needs of the poor as underlying reasons for the acceleration of resource degradation problems. They also identify government policies and international economic practices as worsening the situation, putting added pressures on environmental resources and resulting in their overutilization, degradation and destruction.

It should be noted that traditional human values and attitudes toward the environment and natural resources are also very important factors in relation to
environmental impact. This subject will be addressed in the following chapter and then examined in detail in Chapter 8, as it is an essential and integral component to the history of conservation in Costa Rica.
CHAPTER 6

CONSERVATION AND TOURISM IN COSTA RICA

This chapter describes the development of environmental conservation in Costa Rica from Pre-Colombian times until the late 1980s. The conservation movement of the early 1960s to the late 1980s is particularly important. The growth of tourism and the tourism industry is also described, although necessarily in a more contemporary timeframe. Conservation and tourism developed along separate paths, unrelated to each other for the most part, until the era from the late 1980s to the present. Several trends then coalesced to link the two and significantly alter their further evolution.

Early Conservation Development

Pre-Colombian era. It has been stated that the area that is now Costa Rica had a population of about 27,000 prior to the Spanish conquest. Fournier Origgi (1991), suggests a populace rationally living in balance with nature and maintaining the environment and resources without major deterioration. He argues further that
their attitude and knowledge with respect to nature suggest the origins of the conservation movement in Costa Rica. While this is perhaps a philosophically appealing feature of the "noble savage" notion, it appears questionable in a practical sense. As previously stated, the relatively limited impact on land and resources was likely a function of low population density and low levels of technology. Even so, Lewis (1992) and Denevan (1992b) point out destructive practices of native societies which often had significant local, sometimes even regional, environmental impacts. Hall (1985) also cites several examples of adverse consequences specific to Costa Rica.

Colonial period. As mentioned in the previous chapter, the Spanish had a different philosophy and attitude toward nature. It was based on an aversion to wilderness, a perceived abundance of resources, and use value in cleared versus noncleared land. Thus a significant change in land uses was imposed, with the widespread clearing of land for domestication of plants and animals at the heart of this change. The first discernible conservation measure, and perhaps the only one imple-
mented in colonial times, was taken in 1775, when the governor prohibited further burning of forests and fields in the province (Fournier Origgi 1991).

Throughout the colonial period, almost the entire population of Costa Rica lived in the Central Valley. In 1800, the population of Costa Rica was only about 53,000 (Table 3), still a low number albeit at a higher density in the relatively small area constituting the Central Valley (Fournier Origgi 1991). Everything beyond the Central Valley was considered the “limitless frontier”. Because of this, a frontier mentality was developed and has persisted -- the perception of abundant and cheap land, a wasteful mentality toward resources, the feeling of a right to as much land as necessary to support one's family, and slash and burn agricultural practices with little regard to the future (Augelli 1987). This legacy has persisted to the modern era, although the frontier is effectively gone (Augelli 1987). These points are supported by Umaña (1992), who also highlights the traditional Central American (including Costa Rican) mentality of the “enemy forest” and of value accruing only in productive use of the land.
Development of the new nation. In the years following independence, conservation was not a key issue; however, several limited conservative measures were taken. In 1828, the government established its obligation to safeguard and conserve common fields and forests. This concept was broadened in subsequent laws and decrees to include river water quality, the replanting of trees, and other matters of the common good (Vargas Ularte 1993). Fournier Origgi (1991) cautions that these were mostly paper actions with little attention given to enforcement. A landmark decree in 1846 declared an inalienable zone around Barva Volcano and its attending streams and springs. This was a precursor of many subsequent actions along these lines and indicated awareness of the need for rational management of forests and watersheds (Fournier Origgi 1991).

Few protectionist or conservationist actions were taken in the last half of the 20th century. The emphasis of the country and the government was on the expansion of coffee production and the onset of the development of the banana industry. Nevertheless, a few significant measures were taken. These included establishment of the National Museum, with scientific and natu-
eral history collections, and the National Institute of Geography, with its emphasis on mapping and meteorological observations. Both of these institutions were to be important contributors toward rational use of the environment (Fournier Origgi 1991). In 1884, the Law of Waters established a 50-meter protected zone on each side of all rivers while, in 1888, the earlier decree regarding Barva Volcano and its associated watersheds and waterways was reiterated and strengthened.

**Early-mid 20th century.** The first few decades of the 1900s was a period in which numerous environmental laws and decrees were enacted but not implemented or effectively enforced due to a variety of economic and political factors (Fournier Origgi 1991). Nevertheless, these measures demonstrate a growing knowledge of and concern for environmental issues. They included a law strengthening restrictions on the burning of fields and forests (1909), creation of a protected zone around Poás Volcano (1913), a law introducing reforestation (1923), and a series of laws and decrees regarding the protection of forests and uncultivated lands. An important development in this period was the establishment
of the National School of Agriculture (1926), where a group of professors began to give form to a national conservation movement.

Further laws were enacted in the 1930s regarding use of national forests and uncultivated lands, establishing and strengthening earlier regulations on their utilization. Protected zones were established or expanded around rivers, volcanos in the Central Valley, the Inter-American Highway, and international borders. While these measures were generally environmentally beneficial, it is important to note that they were geared as much or more to legally expanding agricultural frontiers as they were to environmental concerns (Vargas Ulate 1993).

The 1940s brought laws and other measures which addressed the regulation of hunting and fishing and updated water legislation. In 1945, a two-kilometer protected zone was declared along each side of roads under construction. Additionally, this decade marked the beginning of a significant international influence due to conferences, conventions and similar international legislation. The results of these activities, and Costa Rica’s participation in them, were important in the de-
velopment of conservation thought and action in the country (Fournier Origgi 1991; Vargas Ulate 1993).

In 1942, the Interamerican Institute of Agricultural Sciences (IIAS) was established in Turrialba. This forerunner of the prestigious Center for Tropical Agriculture Research and Education (CATIE) emphasized the rational use of tropical forests and sustainable agricultural practices. Another environmentally important governmental institution, the Forestry Section within the Ministry of Agriculture and Ranching (MAG) was established in the late 1940s.

A 1953 law on the conservation of soil and water directed, among other provisions, that environmental education programs be conducted by the Ministry of Education and the University of Costa Rica (UCR), thus reflecting the thinking of a budding conservationist movement. In 1955, Poás and Irazú Volcanos were named national parks (the latter being legally designated), although that term of conservation status meant little at the time. The first law on conservation of wildlife was passed in 1956, declaring the public interest in conserving wildlife and setting the stage for the creation of future national protected areas. In 1957, the
Forest Section of MAG was upgraded to full department status and wildlife administration was institutionalized within it. These well-intentioned and often well-constructed actions in the 1940s and 1950s reflect an increasing interest in the environment and the rational use of natural resources. Unfortunately, as Fournier Origgi (1991) points out, positive results and effectiveness were largely forestalled by high population growth, the concomitant need for opening up new agricultural lands, as well as the political turmoil of the late 1940s.

**Conservation Movement**

By the late 1950s, the stage was set for a new chapter in Costa Rica's conservation history -- the formation and meaningful operation of a vigorous environmental conservation movement. Over the next few decades, environmental actions accelerated in the country, thanks in large part to the bases already established (Fournier Origgi 1991). In many respects, what occurred in Costa Rica in relation to environmental conservation during this short timeframe outpaced much of the rest of the world, especially other developing countries,
and represented an exceptional accomplishment.

The level of knowledge, interest and efforts in regard to environmental and conservation issues increased dramatically with a rapidly expanding group of local environmentalists, particularly at the University of Costa Rica. This was stimulated by the research efforts of Costa Rican and foreign scientists as well as the acceleration of international influence vis-à-vis conferences, conventions and significant events in other countries, such as the United States. This period also marked the beginning of the establishment of formal protected areas for environmental conservation and the solidifying of institutional capabilities in many cases (Fournier Origgi 1991; Vargas Ulate 1993).

**The 1960s.** In the early 1960s, the Cabo Blanco Absolute Nature Reserve became the first biological reserve established in Costa Rica, even though it had no management capability until taken over by the Costa Rican Park Service in the 1970s, and Rio Macho was designated as the first forest reserve. Also during this time, vital privately sponsored research organizations, the Tropical Science Center (TSC) and the Organization for
Tropical Studies (OTS), were founded and have made significant contributions to environmental research and conservation efforts in Costa Rica and elsewhere. These precursors of the now numerous non-governmental organizations (NGOs) brought hundreds of top flight professors, students and other researchers to Costa Rica since the 1960s who have made major contributions to the country’s environmental position. Much of this interest was due to Costa Rica’s physical diversity, proximity, and tranquil political environment.

This decade also saw the establishment of the Department of General Ecology at the UCR and initiation of the program for National Parks and Wildlife at CATIE. New and strengthened legislation was enacted during this time addressing wildlife protection, deforestation, agrarian reform and soil erosion. These actions reflected the growing concern over natural resources and their utilization, resulting in better and more comprehensive legislation and an improved institutional capability for resource management (Courrau 1994; Fournier Origgi 1991). Examples include an upgraded Forest Service, creation of a National Committee of Renewable Natural Resources, and the Institute of
Lands and Colonization.

The 1960s concluded with the very important 1969 Forestry Law. This law clearly established the state's responsibility to ensure the protection, conservation, appropriate use and development of the country's natural resources (MacFarland, Morales and Barborak 1984; Salazar Cambronero 1991). It initiated the national program for establishing and managing protected areas and created the General Forestry Directorate (DGF) to administer it. Protected areas were to consist of protected zones, forest reserves, national parks, and biological reserves. The law also included the authority of the government to buy and expropriate private lands for the public good.

The 1970s. Several laws and decrees were enacted regarding water quality and utilization, environmental pollution, and public health during the 1970s, as well as a law which recognized wildlife conservation as being in the public interest. There was an increase in international platforms as well, reflecting the worldwide increase in environmental interest and concern. Costa Rica became an active participant and signatory
to a large number of international legal instruments regarding the environment. The country was also early to recognize the potential international benefits of an aggressive environmental agenda and began to develop a reputation as not only a concerned participant, but a world leader in environmental and conservation issues. The 1972 United Nations Conference on Human Environment and 1972 World Conference on National Parks were especially important influences, while several regional and national conferences provided further impetus to development of conservation thought and knowledge in Costa Rica (Courrau 1994; Fournier Origgi 1993; Rodríguez Cervantes 1993).

Development of the national park system in Costa Rica really dominated the environmental and conservation agenda of the 1970s. The Department of National Parks was initially established within the DGF and Mario Boza was appointed as its first Director. Boza and his colleague and successor, Alvaro Ugalde, are considered by many observers as the fathers of Costa Rica’s park system and two of the nation’s most important conservation figures (Wallace 1992). The first true national parks were created in 1970 and sixteen in
all were established during this decade. The department began with a skeleton staff and almost no budget, but by the end of the decade it had over 300 employees, a substantial budget, and a significant level of international donations (Wallace 1992). In 1977, the organization became the National Park Service, on an equal status with DGF and responsible for management of all national parks, monuments, and biological reserves in the country.

The Costa Rican parks system represents a remarkable accomplishment in a short period of time. In just a few years, it went a long way toward becoming a showcase of Costa Rican scenery and a repository of biodiversity (Wallace 1992). It achieved this level of success through a deliberate and persistent strategy to enact environmental legislation, procure necessary funds and personnel, develop conservation education programs, and obtain national and international recognition (Boza 1988). This period also marked the beginning of private reserves in the country. The Monteverde Cloud Forest Reserve and La Selva Biological Reserve, managed by TSC and OTS respectively, have become especially well-known and successful.
It is noted that reference has already been made to several parks and reserves in Costa Rica, and the following chapters will contain many more. Figure 10 provides a map depicting the major public and private protected areas of the country. It is included in Chapter 10 since that chapter deals specifically with protected areas.

Interest in and the success of the parks program fed on itself. There were a number of spin-off effects, including opening of new university programs to prepare professionals for careers in such fields as forestry, wildlife conservation, and natural resource management (Courrau 1994; Fournier Origgi 1991). In 1972, the Association for Conservation of Nature (ASCONA), the first conservation NGO in Costa Rica, was founded -- the forerunner of many such organizations to follow. Many new groups and individuals became incorporated into the fast-growing environmental conservation movement (Fournier Origgi 1991; MacFarland, Morales and Barbarak 1984).

An interesting statute, the Law of the Marine Terrestrial Zone, was enacted in 1977 and is the nation’s most important law for the management of the coastal
environment and its resources. It had the dual objectives of environmental protection and tourism development, as coastal tourism was already becoming an important activity. A 50-meter area inland from the mean high tide line was declared a protected public zone and another 150 meters were designated for restricted use. The law pertained to all Costa Rican coastlines except those around cities, ports, mangroves, estuaries, and national parks and refuges (Vargas Zeledón and Leiva Escalante 1993). Administrative responsibility for the law was given to the Institute of Tourism (ICT) and the law has since been managed primarily for tourism development in rural and undeveloped coastal areas. Nevertheless, it also provides a policy for rational use of shoreland (Sorensen 1990). This law represents an exception to the dichotomy between conservation and tourism development and, as such, is a forerunner of policies to be formulated years later.

It should be noted that although a great deal of action occurred during the 1970s in the conservation field, the decade failed to produce an integrated and comprehensive environmental/conservation policy. The Legislative Assembly commissioned a group to develop
such a policy, but the effort did not succeed in getting beyond the issue of industrial pollution (Fournier Origgi 1993).

**Early-mid 1980s.** The decade of the 1980s produced more legislation, decrees and regulations for environmental protection and conservation. Statutes enacted included a Law on Conservation of Wildlife and a new Forestry Law. A National System for Protection and Improvement of the Environment was established by decree, as was the National Service for Conservation of Soils. Additionally, several more parks and reserves were established during the first part of the 1980s. Another effort was made by the National Assembly to develop a national environmental code or policy, but once again it failed to reach political agreement (Fournier Origgi 1993).

Most of the large number of environmental and conservation NGOs which characterize Costa Rica were established during the 1980s. Advocacy groups, as well as organizations devoted to research and education, proliferated at the national and local levels (Fournier Origgi 1991). A great deal of research was conducted or
initiated under the auspices of these groups as well as by foreign or international organizations. Several professional and technical conservation journals also were established. Conservation education expanded greatly at the UCR and several other universities. Further, media began to significantly expand coverage of conservation news and issues, while the Ministry of Public Education greatly increased its promotion and support of environmental concerns (Fournier Origgi 1991). A number of meetings and conferences were conducted within Costa Rica and the international forum continued to be a major influence on the country’s thriving environmental and conservation activities.

Nevertheless, this was an extremely difficult period economically for the nation for the reasons described previously. The economic downturn hit the conservation establishment especially hard and, in large measure, precipitated consolidation and redirection of policies and practices (Wallace 1992). The nation’s conservation budget was reduced dramatically in the 1980s. Whereas in the 1970s there was sufficient general revenue for land acquisition, park creation, management, and staff expenses, the Park Service now had
to look elsewhere for funds (Salazar Cambronero; Wallace 1992). The National Parks Foundation was created in the early 1980s while the Neotropical Foundation was founded a few years later, primarily to raise funds for land acquisition. These organizations have played an important role in sustaining and expanding conservation activities, especially during difficult economic times (Fournier Origgi 1991). Donations and assistance from foreign and international organizations came to play a more prominent role in Costa Rica, as did several debt-for-nature swaps whereby debt owed to foreign creditors was discounted and paid with the agreement that the corresponding funds would be used for specific conservation purposes (Wallace 1992). This latter method of forgiving debt on an immediate, discounted basis has erased more than US$80 million from Costa Rica’s books, not a very significant amount in terms of the national debt, but it did provide needed financial resources for conservation purposes (Hopkins 1995).

A considerable number of national conservation units, more than three dozen in all, had already been established by 1980. These included some twenty national parks and reserves owned by the state, with the pri
mary purpose of protecting and conserving natural resources and biodiversity, and some eighteen extensive but less managed tracts of forest reserves and protected zones. The first parks had been expressly created to protect remaining habitat, largely as a reaction to rampant deforestation (Rovinski 1991).

The 1980s also brought a redirection of policy toward protected areas in favor of smaller units, wildlife refuges, and those areas not needing complete state land ownership. Protected Zones were created which were a mixture of public and private ownership. Also, a number of National Wildlife Refuges were established, some fully state-owned and some state-­private mixed. Two primary factors seem to have driven this new trend. In the first place, the economic situation demanded a less expensive system for protecting and managing the country's natural resources. Secondly, there was growing recognition of the need to incorporate socio-economic considerations, public-private cooperation, and community participation into the conservation equation. This thinking reflected the influences introduced by the 1982 Bali Conference, the Central American Conference on Management of Natural and Cultural Re-
sources, and other international and regional meetings (Courrau 1994; Morales and Cifuentes 1989).

Rodriguez Cervantes (1993) presents an interesting dependency argument in depicting a conspiracy on the part of developed countries to rob the economic benefits of biodiversity from poorer countries like Costa Rica, thereby forcing some of the domestic policy changes described above. While her claims of a deliberate capitalist conspiracy may be overly dramatic, international political and economic factors certainly have contributed to the redirection of conservation policies in Costa Rica.

The need for a shift in official thought toward protected areas was also dramatized by a controversial case in the mid-1980s, when the national government had to evict a large number of squatters and gold panners from Corcovado National Park on the Osa Peninsula. The lesson learned from this event was that natural areas cannot be effectively protected unless socio-economic needs of the surrounding population are adequately addressed (Hopkins 1995).

Additionally, there was a perceived need to consolidate and strengthen the national conservation sys-
tem that had been established. A number of administrative and institutional actions were taken toward this end. The most dramatic of these was the reorganization conducted during the Arias Administration leading to the establishment of the Ministry of Natural Resources, Energy and Mines (MIRENEM), incorporating management of all national protected areas under the same ministry. It also removed those activities from the MAG which had always been more interested in the development of resources than in their conservation or protection. This reorganization constituted an important policy and institutional change for natural resource management in Costa Rica (Courrau 1994; Salazar Cambronero 1991). It gave greater power and legitimacy to the effective management of natural resources, and fulfilled the need perceived by many experts for an integrated approach to resource management (Umaña and Brandon 1992).

**Tourism Development**

**Tourism in general.** Except for the occasional world traveler or scientist/natural historian interested in tropical places, tourism in Costa Rica is of relatively recent vintage. One of the primary initial sources of
tourism, starting in the late 1800s, was that of the fruit shipping industry with its allowance for passengers (Sánchez Bolaños and Segura Barahona 1994). This also led to the increasing attraction of Costa Rica for scientists and researchers interested in the country’s biodiversity of flora and fauna (Budowski 1992). Early governmental attempts to encourage tourism included a 1917 tax incentive and creation of the National Tourism Board in 1931. Still, the numbers of tourists to the country then were small and of little economic significance.

An important step in the development of tourism occurred in 1955 with the establishment of the Costa Rican Institute of Tourism (ICT). It was set up as a semi-autonomous state corporation with a primary objective of increasing tourism (Vargas Zeledón and Leiva Escalante 1993). Other legal and administrative actions followed, such as a law regulating the activities of travel agencies and decrees regulating tourist entry and documentation. Costa Rica also became a signatory to the international convention on tourism protocol of 1963.

A significant amount of legal and regulatory ac-
tivity occurred regarding tourism in the late 1970s and early 1980s. The 1977 law on the maritime terrestrial zone, described above, was enacted. Other actions addressed the tourism industry and tourist-oriented businesses in general, hotels and other tourist accommodations, tourist guides, and taxes. The 1985 Law on Incentives for Tourism Development was especially important to ensuring the support and survival of a national tourism industry by actively promoting the business of tourism and competing for tourists on an international basis (Sánchez Bolaños and Segura Barahona 1994; Vargas Zeledón and Leiva Escalante 1993). Additionally, some areas of the country, such as the Gulf of Papagayo, began to be developed by the private sector but with strong government support, specifically for tourism. Otherwise, infrastructure development and improvement for tourism was concentrated heavily in and around San José, reflecting the lack of an effective overall tourism strategy (Vargas Ulate 1993).

Tourism experienced a recession from the late 1970s through the mid-1980s due to such factors as adverse economic conditions, the world oil crisis and associated sharp increase in air fares, and conflicts in
neighboring Central American countries (Vargas Ulate 1993). Lasting through 1987, this period reflects little if any growth in tourist visitation or income. Indicative of this lull is the period 1982-1987 when tourism income to the country rose only slightly, from US$131 million to US$136 million (Costa Rica, ICT 1993; Mendoza 1986).

Emergence of ecotourism. A significant amount of tourism in Costa Rica has for some time been directly related to the country's environment and natural resources. This portion of the overall tourism industry was long dominated by the small numbers of scientists and natural historians interested in studying Costa Rica's rich and diverse natural attractions (Budowski 1992; Sánchez Bolaños and Segura Barahona 1994). These visits intensified in the 1960s and 1970s with increasing environmental interest and concern. The founding of OTS and establishment of some of the national protected areas in Costa Rica was also an important factor as these sites began to experience a growth in visitation, initially by scientists but increasingly from lay people as well (Budowski 1992; Wallace 1992).
The emergence and growth of this "ecotourism" occurred mostly without government recognition, much less planning and promotion, through the mid-1980s. A number of private enterprises, notably the national airline LACSA and private travel agencies such as Costa Rica Expeditions, Tikal Tours and Horizontes, led the way during this period of time (Budowski 1992; Rovinski 1991). The private organization, OTS, also played a very important role in placing Costa Rica on the naturalists' map, helping to bring thousands of nature tourists to the country (Rovinski 1991).

By the late 1980s, ecotourism was well-positioned for the dramatic growth it would experience in Costa Rica and elsewhere. Although emerging in part as an outgrowth of traditional tourism, it also had a strong relationship to and interest in environmental conservation. The budding field needed protected natural areas as the physical basis for its existence and attempted to promote conservation measures as a means of developing in a long-term, sustainable manner. This nexus and other interconnected factors relative to sustainable development in general, and Costa Rica in particular, were ready to express themselves and profoundly alter
the subsequent development and character of both conservation and (eco)tourism in the country. These important changes and their significance are the subject of the following chapter.
CHAPTER 7

THE MODERN ERA: A SUSTAINABLE DEVELOPMENT FRAMEWORK

The last chapter described the development of both conservation and tourism in Costa Rica. These evolved separately, with practically no commonality or interface between them. The late 1980s, however, was the beginning of what will be called the modern era. This relatively narrow timespan brought a number of critical issues to light, particularly relative to the status of conservation, but also to the state of the environment in a broader sense. At the same time, several other forces and developments, centered around the emerging concept of sustainable development, coalesced to provide a new context for environmental conservation. Sustainable development became the framework for this new approach, demonstrating the conjunction of interests between conservation and tourism. The emerging specialization of ecotourism, with its apparent integrating role and its dramatic growth in Costa Rica and elsewhere, became the standard-bearer for this approach.
**Turning Point**

By the late 1980s, Costa Rica had established an admirable body of environmental and conservation legislation and enabling administrative capability. A substantial number of laws and decrees were on the books. The country had established some 22 national parks and biological reserves and approximately 45 other protected areas of wildlife refuges, forest reserves and protected zones (CEDARENA 1994). These protected areas covered about 25% of the area of the country (Umaña and Brandon 1992). Additionally, as described in the previous chapter, Costa Rica had recently consolidated the management of protected areas into one ministry for the first time.

Costa Rica's commitment to environmental conservation and its system of national protected areas were gaining a significant amount of international attention and support. Professional articles and lay publications extolled the country's natural attractions and park system. The 1988 Conference of the World Conservation Union (IUCN) was held in Costa Rica and helped make the country a showcase for biological diversity, natural attractions and conservation (Courrau 1994). The Nobel
Peace Prize awarded to President Arias in 1988 was important as well, particularly in promoting the image and appeal of Costa Rica vis-a-vis its democracy, stability and peacefulness (Rovinski 1991). All of these positive factors also began to pay off economically, as the country entered the tourism boom period which will be examined in detail later in this chapter.

In spite of this seemingly rosy picture, a number of shortcomings and problems were becoming more and more apparent. Many of these were recognized by the government itself (Costa Rica, MIRENEM 1992). They included fragmentation and contradiction among laws and organizational jurisdiction, numerous and non-uniform protected area management categories, highly centralized management with little local or citizen participation, and substantial lack of management in the non-Park Service areas. Other problems were onerous and inefficient civil service requirements and financial administration, decrease in funding for conservation despite increased responsibilities, poor work conditions and opportunities for park staff, and a lack of analysis and evaluation of national conservation programs.

The Ministry of Natural Resources, Energy and Mines
(MIRENEM) also noted the small size, fragmentation and isolation of the protected areas themselves, as well as development pressures around them, which often defeated conservation objectives. A former Director of the Park Service also recognized these problems, calling particular attention to societal pressures for natural resource use and public participation (Ugalde 1989). Key and alarming indicators of these failings included the continuing high rate of deforestation, soil and watershed degradation, and species loss (Umaña and Brandon 1992; Wallace 1992).

Other observers point out many of the same, as well as additional, shortcomings and problems. Hein (1989) acknowledges expansion of environmental activities, but highlights the lack of a unifying concept and policy. The lack of implementation, execution and enforcement have also been pointed out as significant problems. Many development practices which enjoyed high governmental priority and support, such as coastal development and commercial logging, were criticized as greedy, wasteful and destructive of the environment and natural resources (Breces Castillo 1989). Annis (1992) also pinpoints development policies and practices, in
fact the entire development model, as a primary cause of environmental problems. Thrupp (1990) provides an insightful analysis of the situation, contending that strategies in place did not work because they addressed the wrong issues. The traditional conservation model, based on biological criteria with no consideration of social and economic interests, was particularly deficient. This issue will be examined in detail in the next chapter.

**Sustainable Development**

Against the backdrop described above, sustainable development was coming into its own. Chapter 1 reviewed the relevant literature, providing a description and discussion of this emerging concept in an overall contextual sense relative to this study. Sustainable development is examined here from the perspective of Costa Rica, where it became an overriding and integrating principle of public policy.

**International influences.** As has been seen, Costa Rica was effectively plugged into the international network in regard to conservation and environmental matters. The emergence and evolution of sustainable development
on the international scene had an increasingly important effect on events in Costa Rica and, beginning in 1990, the nation began to make a significant contribution to sustainable development as well.

The 1980 World Conservation Strategy and international fora, such as the 1982 Bali Conference and Central American Conference on Management of Natural and Cultural Resources, introduced the concept of sustainable development as a new approach to managing natural resources. The 1987 Brundtland Commission report really brought the concept to the forefront of international notice, and quickly caught the attention of Costa Rican conservation experts. Soon national and international conservation and development organizations began basing their policies upon sustainable development principles, especially the emphasis on confluence and integration of interests for lasting socio-economic improvement within the parameters of ecosystem maintenance.

While there appears to be an increasing consensus regarding this conjunction of social, economic and environmental interests, conservation and development agencies have somewhat different perspectives toward sustainable development. They are, quite naturally, ap-
proaching it from different directions. The conservation perspective, represented by the IUCN, considers development, especially that which improves the socio-economic conditions of poor people, to be essential for the effectiveness of conservation policies and programs (IUCN/UNEP/WWF 1991). Both people and ecosystems must be respected; development will be sustainable only if it improves and maintains both the quality of human life and the integrity of supporting natural systems (Carew-Reid et al. 1994).

The development perspective is held by the World Bank, Inter-American Development Bank, and the developmental assistance agencies of first world countries, such as the United States Agency for International Development (USAID). The World Bank recently has become much more balanced in its perspective, favoring a new environmentalism that recognizes economic development and environmental sustainability as partners (World Bank 1995). The institution has greatly increased its concern over the environmental impact of funded developmental projects and its support of environmentally based projects. Nevertheless, the World Bank still sees socio-economic improvement as the top priority and ar-
gues that environmental problems can and do undermine the goals of development (World Bank 1992). Environmental quality, such as potable water, is itself part of socio-economic improvement; furthermore, environmental degradation can undermine future advances. USAID also reflects this point of view in its operational approach to developmental assistance in countries like Costa Rica. Development is characterized as sustainable when it permanently enhances the capacity of a society to improve its quality of life (USAID 1994). Like the World Bank and other development agencies, however, USAID has adopted a far more environmentally friendly approach than in the past.

The nearly universal acceptance of sustainable development as the dominant environmental paradigm was exemplified by the 1992 Rio Earth Summit. The perspective of sustainable development emerging at this global conference is fairly balanced, representing in many respects a compromise between developed countries arguing for greater environmental concern and poorer countries more interested in development. Environmental interests were recognized and integrated with those of development to a greater degree than ever before in such a
worldwide forum. Nevertheless, it is apparent from a reading of the Conference's Declaration of Principles that economic or developmental interests got top billing here too (Earth Summit 1992). The primary focus at the Conference was the world's economy and how the environment affects it, particularly in a negative sense, and the adverse impact that environmental problems have on development.

**National developments.** Costa Rica, both from a conservation and development perspective, became an active proponent of the concept of sustainable development, due in part to its involvement with the above organizations. Evolving thought based on events and conditions within Costa Rica itself also contributed significantly to the formulation and support of a sustainable development model. The recognized failings of the traditional conservation approach and many of the actions that had been taken, as described above, were responsible for much of this change in direction. The experience with squatters and prospectors at the Corcovado National Park also had a very big impact on this decision.

It was becoming increasingly apparent that a new
approach was needed, one that would better achieve conservation objectives and contribute to resolving other, interrelated national problems, particularly those dealing with poverty and socio-economic development (Quesada Mateo 1992; Umaña 1992). It was becoming equally clear that a profound conceptual change in development policies and practices was required in order to incorporate principles of environmental and resource conservation (Bolaños Salas 1992). The new vision and guiding concept for integrating these elements, heretofore thought of as mutually incompatible, was sustainable development (Umaña and Brandon 1992). One of the foremost analysts on this subject in Costa Rica, Mora Castellano, describes sustainable development as a natural and inevitable result of sustainable yield, ecological, and preservation movements (Mora Castellano 1993). In this view, the concept has materialized as a reasonably balanced and accepted approach to socio-economic development in a sustainable manner and within ecologically sound parameters.

Sustainable development achieved one of its most complete and applied expressions anywhere in the world in Costa Rica through the formulation and publication
of the Conservation Strategy for Sustainable Development, or ECODES. This policy statement of the Costa Rican government was an attempt to implement a national conservation strategy, as IUCN had been advocating for some time. However, reflecting the strong influence of the 1987 Brundtland Commission report, it also represented an intentional effort to integrate sound natural resource management with the country's long-term development plans (Ashuvud 1991; Quesada Mateo 1992). Therefore, it established a deliberate national framework for sustainable development, clearly integrating development and conservation policies and programs to a degree that no country had done before.

ECODES will be discussed in depth in the next several chapters relative to conservation thought and policy, as will several other Costa Rican initiatives and programs based on sustainable development. It is appropriate to mention here, however, that the strategy was important in reflecting the evolving national and international attitudes on sustainable development, helping to shape the paradigm’s future evolution, and gaining widespread acceptance and support for the concept. Much of this was due to its appeal to a wide range of
interests. ECODES emphasized the convergence and integration of development and conservation interests within the framework of sustainable development, and did it without being either overly dogmatic or specific. It could be embraced by those who possessed the World Bank’s development focus and those whose concerns were more conservation-oriented. ECODES was discarded as an official strategy when the new administration assumed power in 1990. Nevertheless, its conceptual basis of sustainable development, its guiding principles, and many of its provisions have continued to form the basis for national policy.

Growth of Ecotourism in Costa Rica.

In the last chapter, the stage was set for ecotourism’s dramatic growth throughout the world. Nowhere was the boom of this global phenomenon more apparent than in Costa Rica. In many respects, Costa Rica actually led the way in relation to the worldwide development of ecotourism.

There are several reasons for the tremendous increase in ecotourism in Costa Rica beginning in the late 1980s. First, the country had gained a reputation,
through the international environmental scientific community and the fledgling ecotourism industry, for its natural attractions and high degree of biodiversity. Secondly, its system of national parks and other protected areas had begun to receive a great deal of international acclaim. Additionally, the status of Costa Rica as a democratic, peaceful and safe country in an otherwise unstable region made it an attractive travel destination. Finally, its proximity and accessibility to the North American market, especially that of the United States, gave the country a definite locational advantage. The private sector has continued to play a key role in the development of ecotourism in Costa Rica. Those organizations cited previously, along with some others, have greatly assisted the government’s increasing role and responsibility in this area.

The lack of growth of tourism in Costa Rica during the early and mid 1980s, noted earlier, changed dramatically after 1987 with nature-oriented tourism leading the way. Table 7 depicts the number of foreign visitors to the country and to national parks and reserves for the period 1987-1994 (Costa Rica, ICT 1995a; Costa Rica, MIDEPLAN 1995). It can be seen that, while over-
<table>
<thead>
<tr>
<th>YEAR</th>
<th>TOURISTS TO COSTA RICA</th>
<th>TOURISTS TO PARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1987</td>
<td>277,900</td>
<td>71,700</td>
</tr>
<tr>
<td>1988</td>
<td>329,400</td>
<td>124,700</td>
</tr>
<tr>
<td>1989</td>
<td>376,000</td>
<td>166,500</td>
</tr>
<tr>
<td>1990</td>
<td>435,000</td>
<td>213,000</td>
</tr>
<tr>
<td>1991</td>
<td>504,600</td>
<td>273,400</td>
</tr>
<tr>
<td>1992</td>
<td>610,100</td>
<td>338,100</td>
</tr>
<tr>
<td>1993</td>
<td>684,000</td>
<td>404,300</td>
</tr>
<tr>
<td>1994</td>
<td>761,500</td>
<td>378,300</td>
</tr>
</tbody>
</table>

Sources: Costa Rica, ICT 1995a; Costa Rica, MIDEPLAN 1995
all tourism experienced a 274% increase during the period 1987-1994, visitors to the national parks increased by 525% for that same period. Additionally, it should be noted that the figures for national park visitation include only those major protected areas which counted and documented such visitation. Smaller or less visited parks, other public protected areas, and the large number of private reserves have experienced similar increases in utilization. It is important to note that Table 5 enumerates only the foreign visitors to Costa Rica’s parks in order to provide a consistent comparison with visitors to the country. Costa Ricans also visit their parks and visitation by these nationals increased 50% during the period 1987-1994 (Costa Rica, MIDEPLAN 1995). However, due to the nature of this study and the significant difference between foreign and domestic protected area visitation trends, the focus here is on the foreign tourist experience.

Further, Table 7 also reflects the slight decrease in park visitation from 1993 to 1994 but it does not show the significantly greater decline which occurred the following year. A drastic increase in entrance fees for national protected areas enacted in 1994 had a dra-
matic effect on park visitation. This controversial policy will be discussed in more detail in Chapter 10.

Costa Rican Perspective on Ecotourism.

The literature review in Chapter 2 discussed ecotourism in some depth. It did not, however, go into detail relative to the philosophy and application of ecotourism in Costa Rica. The question of what ecotourism means in Costa Rica, in concept and in practice, is important to this study. Also of interest are the perspectives of experts and practicioners of ecotourism, both Costa Ricans and others in the country, regarding its efficacy. Archival data obtained in Costa Rica are central to examining this issue; however, data derived from the questionnaire and the interviews contribute significantly to the findings.

The questionnaire utilized in the research study (see Appendix A) solicited information from a range of professionals and experts in the fields of conservation and/or ecotourism in Costa Rica. The questionnaire particularly focused on the influences and effects of ecotourism on conservation policy and practice in that country. This survey instrument was described in great-
er detail in Chapter 3. Results of the 101 question-
naires completed are contained in Appendix B. A list of
organizations and individuals to whom the questionnaire
was distributed for completion is shown in Appendix C.
Additionally, in-depth personal interviews, which were
described in detail in Chapter 3, were conducted with a
cross-section of 25 individuals responding to the ques-
tionnaire. These focused, open-ended interviews provi-
ded data of greater breadth and depth than was possible
with the questionnaire. Appendix D contains the inter-
view guide utilized, while Appendix E includes the list
of people interviewed.

Within Costa Rica, ecotourism is perceived more or
less in accordance with the Ceballos-Lascurain defini-
tion: travel to natural areas in order to admire, study
and enjoy the environment and wildlife. Within this
broad definition, Budowski (1992) identifies two main
sub-groups of ecotourists -- scientific tourists who
travel for research or education and nature tourists
whose interest in nature is more personal than profes-
sional. Other definitions and categorizations within
Costa Rica do not differ much from these, which are
fairly middle-of-the-road perspectives of ecotourism.
Interviews and other discussions with a wide range of individuals in Costa Rica involved with ecotourism corroborate this notion, although a somewhat narrower definition was preferred by some people while a broad, inclusive definition was rarely expressed.

The second question in the questionnaire dealt with how respondents defined ecotourism, with the three choices representing narrow, mid-range and broad perspectives. As noted, responses to this question reflect a narrow to moderate perspective of ecotourism (the average was 1.44 on an ascending scale of 1-3), with only a very small percentage of respondents preferring the broad definitional choice:

<table>
<thead>
<tr>
<th>DEFINITION OF ECOTOURISM</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Narrow definition</td>
<td>59%</td>
</tr>
<tr>
<td>Mid-range definition</td>
<td>36%</td>
</tr>
<tr>
<td>Broad definition</td>
<td>5%</td>
</tr>
</tbody>
</table>

The only group of respondents to differ significantly from the overall pattern was those in the "Other" category, comprised mostly of development agency experts, which reflected a somewhat broader view of ecotourism with an average of 1.71. This overall definitional per-
spective furnished by the respondents is reasonably close to that acquired through interviews and the written literature, given that the Ceballos-Lascurain definition would fall somewhat below, or more narrow than, the mid-range definition of the questionnaire.

The proportion of visitors to Costa Rica who are considered to be "ecotourists" is also of relevance. Question #12 on the questionnaire requested the expert respondents' opinion as to what proportion of visitors to the country are ecotourists. Their responses were:

<table>
<thead>
<tr>
<th>ECOTOURISTS AS % OF VISITORS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 25%</td>
<td>26%</td>
</tr>
<tr>
<td>25-50%</td>
<td>43%</td>
</tr>
<tr>
<td>50-75%</td>
<td>20%</td>
</tr>
<tr>
<td>More than 75%</td>
<td>11%</td>
</tr>
</tbody>
</table>

The range of responses shown and the average of 2.14 on an ascending scale of 1-4 indicate the opinion that ecotourists constitute about half of all visitors to natural areas. This is only slightly lower than estimates based on other surveys and studies. For example, according to a government report, 54% of 1992 visitors considered themselves to be ecotourists (Costa Rica, ICT 1992). A 1993 study found that 62% of visitors cite
nature as the primary reason for their visit to Costa Rica (Campos and Lizano 1993). Another survey ascertained that 60% of visitors cite nature, the country's parks, biodiversity, and other natural attractions as the main reasons for their visit (UNIMER 1995). In the latter two studies, over 70% of the tourists actually visited at least one protected area in Costa Rica.

These findings indicate that a probable majority of visitors or tourists to Costa Rica can be considered ecotourists. This perception is borne out by interviews and other discussions with Costa Rican experts, professionals and practitioners involved with conservation and/or tourism. Most people with whom discussions were held use the terms tourism and ecotourism interchangeably, and many use only the term ecotourism when referring to tourism in the general sense. The term may not even have much meaning to those responsible for managing protected areas, as all visitors to the parks can be considered ecotourists (C. M. Rodriguez, interview, 1996). Some observers recognize the problems with the term itself and urge changing the emphasis to that of sustainable tourism, applicable to most tourist activities in Costa Rica (Roberts, interview, 1996). How-
ever, the terms are not interchangeable, since not all sustainable tourism need be to natural areas and not all ecotourism is sustainable. Further, the term sustainable tourism is limited in focus to tourism, as opposed to the multisectoral and integrated approach of sustainable development (Wall 1997).

All of this demonstrates a marked definitional accommodation to the application of ecotourism within the Costa Rican context. In other words, it is broader on the ground than it is in the mind. Contributing factors to this broad application include the definitional ambiguity of ecotourism; range of natural attractions in the country; length and breadth of experience with ecotourism; and heavy involvement of the private sector (especially private reserves, tourism agencies, and development groups). It is apparent that ecotourism has come to be the standard-bearer for tourism in general, and actually is tourism in the minds of many people.

The net value of ecotourism in Costa Rica appears to be perceived as very positive. The questionnaire responses reflect this point clearly. Of interest here is question #9 which asks for the respondents' opinion of the total impact of ecotourism on conservation:

167
It is noted from comments on the questionnaire and subsequent discussions that at least some of the "little/balanced impact" responses were intended in a positive sense. Additionally, question #15 asks whether ecotourism is considered likely to conserve natural resources in the long-term:

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Net positive impact</td>
<td>62%</td>
</tr>
<tr>
<td>Little/balanced impact</td>
<td>28%</td>
</tr>
<tr>
<td>Net negative impact</td>
<td>10%</td>
</tr>
</tbody>
</table>

The response to both of these questions is highly positive. The very low proportion of negative responses is also significant. The response from other government agencies and tourism agencies was the most positive on both questions, with 89% and 87% affirmative responses respectively. Private reserves were also more positive regarding question #9 (70%) and less negative on ques-
tion #15 (no negative responses) than was the overall response. Conversely, academic/research institutions were less positive (#9=50%; #15=70%) and more negative (#9=32%; #15=10%) on both questions. Environmental organizations were more negative on question #9 (25%) but still optimistic on question #15 (80%). Nevertheless, these latter two groups still reported a majority positive response to both of the questions.

Related to this discussion, opinions regarding the current level of ecotourism in Costa Rica were measured by Question #13. The results were as follows:

<table>
<thead>
<tr>
<th>LEVEL OF ECOTOURISM</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Too low</td>
<td>36%</td>
</tr>
<tr>
<td>Too high</td>
<td>9%</td>
</tr>
<tr>
<td>About right</td>
<td>55%</td>
</tr>
</tbody>
</table>

While most of the respondents felt comfortable with the current level of visitation, a sizeable portion apparently thinks more is warranted. All of the occupational groups had a low negative response (i.e., too much ecotourism). In fact, both groups often considered to have conflicting objectives in this regard, park management and tourism agencies, had no negative responses.
The literature, interviews, and other discussions also reflect a favorable opinion of ecotourism vis-à-vis conservation. The positive viewpoint is often qualified, however, by the need for proper planning, effective management, and staying within an area's carrying capacity (Budowski 1994; Budowski 1992; Rovinski 1991). The interviews, which provided more opportunity than the questionnaires for respondents to give detailed and specific information, often highlighted the importance of differentiating ecotourism from traditional tourism. A commonly expressed problem, particularly in the interviews, was the prevalence of traditional tourism with a new name but the same effects. It was termed "pseudo-ecotourism" by one environmentalist (Lahmann, interview, 1996). Additionally, overuse and misuse of the prefix "eco" was cited by a long-time private reserve owner as a significant problem in Costa Rica (Ewing, interview, 1996). A former national parks director remarked that achieving the right kind of ecotourism is of greater relevance than the actual level or numbers of ecotourists (J. M. Rodriguez, interview, 1996).

Mora Castellano (1994) and Vargas Mena (1991) have
been particularly forceful in calling for a greater degree of conceptualization and critical thought relative to ecotourism before it goes too far afield and requires a change of direction. The lack of a conceptual framework was cited in several discussions as the primary cause of faulty planning and implementation in too many cases, with correspondingly harmful ecological effects (Báez, interview, 1996; Villa, interview, 1996).

Nevertheless, the consensus of opinion regarding ecotourism in Costa Rica appears to be very positive, at least when it is really "ecotourism" and it is "done right". This type of development is increasingly seen as necessary for effective environmental conservation and is considered to be the development activity best suited to Costa Rica. Ecotourism has been cited as the strongest argument for the protection and development of the country's national park system (Boza 1993). It may be the most sustainable and non-destructive development activity at the present time for preserving wildlife in its natural state, presenting an economically justifiable case for tropical conservation that did not exist a short time ago (Damon and Vaughn 1995). Rovinski (1991) also identifies ecotourism as the war-
horse in the campaign to convince investors that conservation can be a profitable business. These perspectives further demonstrate the dominant role of ecotourism in the Costa Rican tourism industry and its importance to the country’s overall development.

**Conjunction of Interests**

The above discussion has shown how and why the concept of sustainable development evolved and gained widespread acceptance in Costa Rica. It has become the framework within which development activities and environmental conservation are expected to be formulated and implemented.

Tourism was cited in Chapter 5 as the leading industry in Costa Rica since 1994, and subsequent discussion has highlighted the importance of ecotourism in attaining that position. This current premier role of ecotourism in the scheme of development in Costa Rica means that it must interact closely with conservation, especially within the sustainable development framework. The interests of both development and conservation are now widely recognized as mutual. They need each other for either of them to succeed, as well as to
meet sustainable development goals. It is no surprise that ecotourism depends upon effective conservation, since ecotourism clearly cannot last long without a well-protected natural resource base. However, the notion that conservation is also dependent upon development, ecotourism in this case, represents a relatively new perspective.

The Barbier model discussed earlier, with its conjunction of economic, social and environmental interests for sustainable development, is also of particular relevance here (Barbier 1987). Ecotourism, as an economically-oriented activity in this scheme, has interacted with and exerted influence upon environmental conservation, changing it in a number of ways. In the modern era, perspectives on environmental thought and conservation policy in terms of strategy, statutes and administrative measures have evolved differently, and are different today, due to ecotourism. This change is also clearly manifested in a number of conservation measures and actions relative to the private sector. The interaction with and influence of ecotourism on these specific elements of conservation policy represents the subject of the next several chapters.
CHAPTER 8

INFLUENCE OF ECOTOURISM ON CONSERVATION THOUGHT

The Review of the Relevant Literature in Chapter 2, as well as Chapters 6 and 7, briefly mentioned conservation philosophy, attitudes and paradigms as precursors to and determinants of environmental conservation policy. This chapter provides more detail on the previous prevailing conservation model. It then focuses on changes that have taken place in Costa Rica with regard to attitudes and philosophy, and how those changes have affected conservation paradigms, including the prevailing model for protected areas. Environmental education and public awareness is an especially important element in this regard. The influences of ecotourism on all of these subjects, collectively referred to as conservation thought, are identified and discussed.

Traditional Conservation Paradigm

It has been pointed out that the traditional view toward the environment and natural resources among the general population in Costa Rica was one of a frontier
mentality of abundance and value only in productive use (Augelli 1987; Umaña and Brandon 1992). This perspective was shared by the large majority of public and private decision-makers as well. Nevertheless, a small group of professionals became increasingly knowledgeable and active in the early stages of the conservation movement previously described. This growing cadre was greatly influenced by international events and trends in the environmental field, and by the very large foreign scientific community that was actively engaged in Costa Rica (Hopkins 1995; Wallace 1992).

Conservation paradigms and the model for protected areas that developed prior to the modern era were determined greatly by the prevailing philosophy among the scientific community, as applied to the Costa Rican environmental situation. In this respect, the overriding concern was deforestation, and the impetus or reason for conservation action was saving the forests that remained (Rovinski 1991). This basis for conservation was subsequently broadened to protection and/or preservation of habitat and biodiversity, a rather more sophisticated framework but essentially the same idea.

When these perspectives led to the establishment
of protected natural areas, they inevitably translated into a particular conservation model. This model, based on the prevailing conservation paradigm, held that nature would take care of (and balance) itself if only people, who were not part of the natural ecosystems, were kept away (Pickett, Parker and Fiedler 1992). To paraphrase Moore (1991), protected areas were managed as if they were islands of ecological righteousness among an ocean of negative human effects. This biologically-oriented model formed the basis for initial conservation policy and protected areas in Costa Rica (Budowski, interview, 1996; Wallace 1992). Eliminating, or at least reducing, threats of human impact was viewed as the best way to achieve the goal of protecting and preserving the natural environment (Campos, interview, 1995; Cifuentes, interview, 1996). Janzen (1992) colorfully but aptly depicts protected areas that were created as natural castles, with the desirous elements safeguarded inside and the undesirable elements outside, in a virtual state of siege.

Conservation thought in Costa Rica, including environmental values, attitudes, and the model for protected areas, followed this pattern for some time. The
biological balance of nature conservation paradigm was the dominant basis for establishment of the early protected areas and remained so until the modern era began in the late 1980s.

Sustainable Development and Ecotourism

As sustainable development, spearheaded by ecotourism, evolved and attained its position of importance in Costa Rica, changes in conservation thought began to be more and more apparent. The influence of ecotourism on conservation attitudes, paradigms, and protected area models has been significant. It will be seen that some of this influence has been direct and readily apparent; however, less obvious indirect influences have been important as well. The rest of this chapter is organized around two general areas of influence. The first area is an overall increase in environmental consciousness and awareness of conservation needs and objectives in Costa Rica. The second is a change in conservation paradigms, both attitudinally and as manifested in the way protected areas are established, designed and managed.

Increase in environmental consciousness. One of the
most profound changes in Costa Rican society in the past 25 to 30 years is the development, albeit incomplete, of an environmental ethic. This is due in part to conservation actions taken and the favorable results which have accrued to the country, both environmentally and perceptually. It is also due in large measure to a vigorous, continuing campaign to educate people on environmental and conservation issues, a deliberate strategy that began in the early 1970s with establishment of the initial national parks (Boza 1993). Subsequently, other measures were taken in the education realm. Nature conservation studies were added to high school curricula. Most universities expanded or added courses and degree programs in environmental studies and conservation.

Education and other programs to enhance environmental awareness increased significantly during the late 1980s, and have continued at a high level. Government agencies have become much more active in explaining and promoting conservation to the public. These include the Ministry of Education; the Institute of Tourism (ICT); and the Ministry of Natural Resources, Energy and Mines (MIRENEM). The latter is now the Ministry
of Environment and Energy, or MINAE. Nongovernmental organizations such as the Tropical Science Center, the Organization for Tropical Studies, and the Neotropical Foundation, have also contributed greatly to conservation education.

Correspondingly, the publication of nature and conservation materials has mushroomed. These include professional books and journal articles but there is also a wide array of brochures, posters, postcards, and similar materials. While the subject matter is environmental, a significant amount of this propaganda has been produced by tourism agencies and others in the tourism industry. Much of the latter is aimed primarily at the foreign tourist market; nevertheless, it is seen and absorbed by the Costa Rican populace as well. Additionally, the national media has become an important factor in environmental education. This is especially true of newspapers, which have been very active in publishing articles, such as science supplements and Sunday magazines, on a regular, recurring basis. As a result of all this, the Costa Rican population and foreign visitors are now more aware and knowledgeable of environmental issues and the value of conservation.
Not all of the opinion in Costa Rica is positive in reference to the emergence of a conservation ethic. There are still a number of cases of political and economic exploitation of the environment, the seeking of personal gain while hiding behind a mask of concern for nature, which demonstrate a two-faced policy on conservation matters (Hunter 1994). An active conservationist in Costa Rica agrees, asserting that action often falls short of rhetoric and that conservation is not yet a part of the national consciousness (Vaughn, interview, 1995). Nevertheless, most of the evidence supports a greater degree of conservation awareness and concern among both decision-makers and the general population.

Role of ecotourism. It is clear that conservation education and awareness significantly increased during the same time that the concept of sustainable development became a primary focus and ecotourism began its dramatic growth. However, it is difficult to gauge the degree to which ecotourism has influenced development of this environmental consciousness. Some of the literature has credited ecotourism with improving environmental education and accelerating development of an envir-
onmental ethic, although much of it is couched in terms of potential rather than realized benefits (Budowski 1994; OTA 1993). The questionnaire results are instructive in this regard. Questions 3-7 of the questionnaire are a series of queries regarding impacts of ecotourism. The structure of responses is the same for these questions, with an ascending scale ranging from "1" for highly positive to "5" for highly negative. The characterization and interpretation of responses, including averages, follow this same terminology. Thus, average responses of 1.9 or 2.2 are characterized as moderately positive, since they are close to the value of 2 for that rating. Similarly, an average response of 1.3 is characterized as highly positive.

Question #4 of the questionnaire elicited the effect of ecotourism on attitudes toward nature and natural resources, with the following responses:

<table>
<thead>
<tr>
<th>EFFECTS OF ECOTOURISM ON ENVIRONMENTAL ATTITUDES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highly positive</td>
</tr>
<tr>
<td>Moderately positive</td>
</tr>
<tr>
<td>Insignificant</td>
</tr>
<tr>
<td>Moderately negative</td>
</tr>
<tr>
<td>Highly negative</td>
</tr>
</tbody>
</table>

182
The majority of respondents believe that ecotourism has a highly positive effect on attitudes, with fully 84% giving a positive response. The average response on an ascending scale of 1-5 was 1.62. All of the occupational groups were at least moderately positive, with the academic/research and other categories the lowest at 2.0 and 2.14 respectively. It is worth noting that the tourism agency category was uniformly highly positive, with an average response of 1.0.

Question #4 also asked for specific examples of the effects of ecotourism on attitudes (a summary of the examples specified in response to Questions 3-7 is shown in Appendix B, Part 2). The most often cited comments (31) for this question referred to an increase in environmental consciousness; e.g., ecotourism serves to demonstrate the need to conserve natural resources and promotes the desire to protect them. A significant number of comments (17) specified that ecotourism provides an economic valuation, alternative source of income, or sustainable utilization of resources for people who would otherwise use them unsustainably. This correlates well with the responses to Question #10 (a summary of responses to Questions 10-11 are shown in Appendix B,
Part 3), which asked for the most important positive effects of ecotourism on conservation overall. Of the positive effects cited, 43% cited an increased environmental consciousness, awareness, and respect for nature. Another 33% specified the economic valuation and justification for conservation fostered by ecotourism.

Several of the interviews also revealed an important role of ecotourism in the formulation of an environmental ethic in Costa Rica. A private reserve owner and former president of the country, Rodrigo Carrazo, pointed to the wide-spread change in attitude toward the environment on the part of the government and the public in general. Much of this has been due to ecotourism, considered to be a key factor in facilitating, rationalizing and communicating conservation of the country's natural resources (Carrazo, interview, 1996). The owner of the first tourism agency in the country to specialize in nature tourism, Costa Rica Expeditions, also highlighted the role of ecotourism in facilitating attitude change. It has furnished a tangible economic perspective to conservation, rather than having to rely on a more ephemeral altruistic motive (Kaye, interview, 1996). Ecotourism has been instrumental in furnishing a
viable economic alternative to other more destructive uses of natural resources, thereby positively influencing attitudinal change toward the environment and conservation measures to protect it (Segleau Erle, interview 1996). A strong testimony to this effect was made by a former director of the national parks, who stated that ecotourism has made people realize the importance of nature and natural resources (J. M. Rodriguez, interview, 1996). Another observer of the subject said that genuine ecotourism experiences have an enduring impact on previously traditional tourists, altering their attitudes and perspectives of environmental conservation (Vargas, interview, 1996).

Question #5 of the questionnaire dealt specifically with the effects of ecotourism on conservation education. The responses, although not as highly positive as on the previous question, were still very favorable:

<table>
<thead>
<tr>
<th>EFFECTS OF ECOTOURISM ON CONSERVATION EDUCATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highly positive</td>
</tr>
<tr>
<td>Moderately positive</td>
</tr>
<tr>
<td>Insignificant</td>
</tr>
<tr>
<td>Moderately negative</td>
</tr>
<tr>
<td>Highly negative</td>
</tr>
</tbody>
</table>

185
The average of 1.82 for the overall response did not vary significantly by occupational group. As with the previous question, specific examples were solicited. The most often mentioned comments (25) reflected increased environmental knowledge and consciousness, with more people identifying with conservation, especially in recent years. Several of these individuals specifically cited ecotourism's influence in conservation education programs and academic degrees in higher education. Another dozen examples pertained to demonstrating the economic value and benefit of conservation and the importance of rational use of resources vis-a-vis sustainable development. The responses to Question #10, described above, are also relevant here and substantiate the positive role of ecotourism in conservation education.

An interesting example of the role of ecotourism in higher education is the establishment in 1989 of a Master's Degree program specifically in that field. This popular program at the Latin American University for Science and Technology (ULACIT) provides a strong emphasis on environmental and conservation issues, and the linkage of tourism and conservation within a sus-
tainable development framework.

Tourism guidebooks are probably the greatest single source of information about Costa Rica to foreign visitors and they provide an excellent indication of ecotourism's increasing influence in environmental education. Two of the leading guidebooks illustrate this. Perhaps the most useful and popular one, *The New Key to Costa Rica*, contains substantial environmental information, descriptions of protected areas, and even a sustainable tourism rating of lodging (Blake and Becher 1997). *Costa Rica: A Natural Destination* is one of a recent series of "natural destination" guidebooks for countries with significant ecotourism (Sheck 1996). It is organized around the themes of the environment, public and private protected areas, and ecotourism. These guides and others have contributed significantly to development of an environmental and conservation consciousness to a wide audience.

A number of the interviews corroborated these data, highlighting the positive role of ecotourism in conservation education to the public. While attainment of a pervasive conservation ethic is not yet a reality in Costa Rica, significant progress has been made. Ed-
ucation has played a key role in bringing about this change, and ecotourism has contributed in no small way to facilitating and communicating the benefits of conservation (Lahmann, interview, 1996; Segleau Erle, interview, 1996). A specific illustration of this idea is conservation education for school-aged children undertaken by several of the tourism agencies actively involved in ecotourism. Such educational activities include providing informational materials on conservation, giving talks and presentations at schools, and taking youth groups on special trips to protected areas (Pratt, interview, 1996). A tourism agency owner and official of ICT’s Board of Governors pointed out that ecotourism has been instrumental in the training and development of many tour guides and natural history specialists in conservation principles, which has a significant spill-over effect on a large number of people (Roberts, interview, 1996).

Based on the above findings, it would appear that ecotourism has exerted an influence over conservation thought in Costa Rica in a number of ways. The influence has been particularly strong in regard to development of a conservation ethic; i.e., contributing to an
increased environmental awareness and knowledge, and the need for protection of the country’s natural resources. Equally important has been the provision of a tangible economic perspective -- the valuation of resource conservation and articulation of a sustainable alternative to traditional resource use. Ecotourism has therefore played a key role in the attitudinal change and increase in environmental consciousness in Costa Rica through rationalizing, facilitating and communicating conservation of nature and natural resources. This influence has been widespread, as the changes it has helped precipitate and sustain extend from top level decision-makers through the general population.

**Change in conservation paradigms.** As general attitudes toward the environment and conservation have changed, so too have professional attitudes in regard to conservation goals, principles, and its role in the larger society. These trends have helped to bring about a significant paradigm change in environmental conservation.

Rovinski’s (1991) discussion of the evolution of ecotourism in Costa Rica describes the fresh ideas for the country’s protected areas which emanated in large
part from the management staff of the newly created MIRENEM. The concept of sustainable development began to be touted as the way to solve the conservation versus development dilemma. As a result, using protected areas for economically beneficial but nondestructive activities, such as the fast-growing phenomenon of eco-tourism, became a priority. In a broader sense, it began to be realized that the problem of the parks and of conservation in general was not exclusively a biological problem. A socio-economic context emerged, in which social, political and economic considerations began to be recognized and addressed (Wallace 1992). Continuing and serious environmental problems, national and international occurrences, and further evolution of the sustainable development concept lent emphasis to these deliberations. The state-of-siege model began to give way to a conservation-through-use model, recognizing that the most effective means of saving tropical biodiversity is to use it sustainably (Janzen 1992).

A significant number of the people interviewed articulated these attitudinal changes in the way in which conservation is perceived, as well as the resulting paradigm changes. The biological focus of conservation
before the modern era was ineffective because it came at the expense of social and economic needs of local peoples. The focus was accordingly broadened to be more inclusive and participatory, to address social and economic concerns of the poor, to include community development components and other economic alternatives to traditional resource use, and to give local people a stake in conservation (Lahmann, interview, 1996). Ecotourism was cited as one of the key means of alternative, sustainable economic development. The linkage between conservation and development in its broad sense means that local people need to be involved in, and benefit from, actions taken in order for conservation to work. Ecotourism, when planned and managed properly, is perhaps the best means to achieve this end (Boza, interview, 1996; Budowski, interview, 1996). In addition to social and economic pressures, political realities were specifically cited in terms of demands for greater citizen participation and different forms of resource uses, including tourism and other recreational activities (Campos, interview, 1995). A key official in MINAE put it well in commenting that the conservation and protection of natural resources is first and fore-
most for the benefit of society (C. M. Rodriguez, interview, 1996).

ECODES. The National Conservation Strategy for Sustainable Development in Costa Rica (ECODES) was also an important factor in changing conservation thought. While the strategy was itself in part a product of the trend toward sustainable development, it also did a great deal to shape the subsequent evolution and acceptance of that concept. ECODES explicitly linked conservation and development, within the framework of sustainable development, for the benefit of society in Costa Rica (Quesada Mateo 1990). It provided a clear statement of the new conservation paradigm, demonstrating a strongly inclusive, comprehensive and holistic approach. This is reflected vividly in its nine objectives, which are oriented toward sustainable development. Only two of the objectives, maintenance of ecological processes and preservation of genetic diversity, are devoted solely to conservation. The strategy includes a number of sectors and development components envisioned to interact sustainably with its conservation goals.

Ecotourism is accorded a position of high prior-
ity in the national strategy. It is clearly intended to be a major force in the changing approach to natural resource conservation. Just as clear in this strategy is recognition of the economic role and importance of ecotourism. Its economic impact, and even greater economic potential, is described at length, with natural resources constituting the principle variable and environmental well-being the primary limiting factor (Quesada Mateo 1990). In this way, ecotourism has become a driving force in making conservation serve the goals of development so that development can, in turn, contribute to making conservation more effective.

ECODES did receive some criticism, especially in terms of its utilitarian focus and philosophical inadequacies. Mora Castellano (1991) referred to the lack of a sound conceptual basis in ECODES as its feet of clay. Hein (1993) also criticized this conceptual deficiency and emphasized the need for more relevance to modern and emerging theory. It should be noted, however, that this was the most conceptualized and pertinent expression of sustainable development yet to be formulated. ECODES influenced a large number of people in Costa Rica, especially intellectuals and political decision-
makers, contributing significantly to changing the nation's conservation attitudes and paradigms.

**Protected areas.** Natural protected areas in the country are beginning to take on a different character due to these paradigm changes as well. With the biological conservation model, any unit of landscape is conservable and can serve as an appropriate protected area (Pickett, Parker and Fiedler 1992). It is only necessary to keep people out and let nature take care of itself in attaining and maintaining a balanced, stable environment. It follows that protected areas in Costa Rica tended to be dissociated units without regard to scale and managed for the protection of closed, self-regulating systems.

As the paradigm became broader than an exclusively biological dimension, to include a socio-economic context, the protected area model came to reflect a "flux in nature" rather than "balance of nature" character (Pickett, Parker and Fiedler 1992). From a biological perspective, it was increasingly recognized that ecological systems are open rather than closed, dynamic rather than stable, and contextually process-oriented.
instead of having a structured end point. Kusler (1991) differs in some details, but his depiction of the trend away from the traditional preservation model to a sustainable management model closely follows in concept the paradigm shift described above. Perhaps most importantly, it is now realized that people are a part of the ecological equation, not apart from it. Human activity is recognized as integral to ecosystem functioning (Perrings et al. 1995; Pickett, Parker and Fiedler 1992). Thus, protected areas are increasingly seen as an integral part of the socio-economic fabric of the region in which they are located (Moore 1991).

The lesson here in terms of protected areas is that preservation of biotic diversity is unlikely to ever be more than a short-term answer to a complex problem. Protected areas and maintenance of biodiversity will fail unless sustainable economic activities are integrated with the functions and processes of ecosystems (Perrings et al. 1995). This new perspective, combined with the socio-economic considerations, is leading to different protected area models. More emphasis is now being placed on conservation systems rather than units, with protected areas connected and inter-

195
acting through establishment of corridors and buffers, and the zoning of parks and reserves for multiple, sustainable use (ecotourism being the primary one). Also, more participation is expected of local communities in the planning, management and benefits of these areas.

It is apparent that the new conservation paradigm and models, unlike the traditional ones, are closely associated with and support the concept of sustainable development. Ecotourism, as an important means of sustainable development in Costa Rica, benefits from this association. However, it has also contributed to it by facilitating and accelerating the change in conservation attitudes and paradigms as the interviews cited earlier in this chapter relative to ecotourism’s influence substantiate. The conservation model in which people comprise an integral part and which is designed and managed for sustainable development is due in part to the influence of ecotourism -- its alternative economic valuation and its track record to date in providing monetary benefits and environmental protection. Additionally, in the perception of policy-makers, the environmentally informed, and the general public, ecotourism has enormous future potential. Accordingly, the
influence of ecotourism in changing conservation paradigms has not only been significant to date, but is likely to continue in the future, at least as long as this kind of sustainable development activity continues to be important to the country’s economy.

The manner in which changes in environmental philosophy, attitudes and paradigms have manifested themselves in terms of conservation policy and administration of protected areas will be discussed further in the next two chapters. The National System of Conservation Areas or SINAC, for example, is the institutional successor to the National Park Service and other administrative bodies managing protected areas. It integrates administration of all the country’s national protected areas into one organization, but for the first time with substantial decentralization to implement and manage the new conservation approach. Other important policy matters, such as environmental statutes/decrees, institutional changes, establishment and revision of park fees, and the remarkable proliferation of private reserves will also be identified and discussed, as will the ways in which ecotourism has influenced them.
CHAPTER 9

INFLUENCE OF ECOTOURISM ON CONSERVATION POLICY

The previous chapter examined the influence of ecotourism on conservation attitudes and paradigms, factors which are typically requisites to the development and implementation of policy. The focus of this chapter is on conservation policy itself -- those national strategies, laws, decrees and similar administrative actions, and institutional changes that have taken place in the modern era. It will be seen that conservation policies are formulated dissimilarly and have far different characteristics now than before the modern era. The influence of ecotourism, as the key component and driving force of sustainable development, on the formulation and character of conservation policy is of particular interest.

National Environmental Policy.

In describing the development of the environmental movement in Costa Rica and its corresponding conservation policies in Chapter 6, the failure to formulate an
overall national policy, or strategy, was highlighted. Most of the actions taken were done in a piecemeal, incremental fashion as circumstances permitted or could be taken advantage of by a small group of committed professionals. Some important actions were accomplished in this manner. However, the lack of an overall conceptual framework prevented a comprehensive and integrated approach that could have resulted in more effective policies and programs.

Conservation strategy. It was not until the late 1980s that events and evolving conservation thought coalesced to bring about a significant change in national policy. The National Conservation Strategy for Sustainable Development (ECODES) represented a watershed change, providing for the first time in Costa Rica’s history an overall environmental policy with at least some conceptual basis and comprehensive design. The last chapter gave a conceptual perspective to this national strategy, examining it in terms of conservation attitudes and paradigms. This was an important side of ECODES; nevertheless, it was equally important to treat the strategy as more than just an abstract, philosophical
construct (Quesada Mateo 1992).

In more concrete and tangible terms, the ECODES strategy was crafted to constitute a functional frame of reference for the development of policies and programs. It provided a holistic, systematic and integrated guide for policy formulation and implementation over the long-term (Quesada Mateo 1990). All of the pertinent social, economic, and environmental variables of Costa Rica were integrated into one document that articulated policy guidelines and priorities. It accomplished this within the framework of sustainable development, the unifying concept needed for such a national strategy. The important influence of sustainable development and its "war-horse", ecotourism, on the production of ECODES was described in some detail in the previous chapter. This influence, it is important to note, applies from a policy perspective as well as that of conservation thought in a more abstract context.

ECODES, as an official document expressing national policy, did not survive much beyond the tenure of the administration that produced it. The rival political party that won the 1990 election did not implement the strategy, at least in any formal or official sense.
Nevertheless, the principles of ECODES and the concept behind them did not go away. The widespread acceptance and impact of the strategy's substance continued to exert a profound influence on both conservation and development policy. Sustainable development, led by the phenomenal growth of ecotourism in the early 1990s, became firmly entrenched as the context and framework for these policies.

The focus and emphasis changed somewhat, however, depending upon which political party was in power. For the period of time that the Social Christian Unity Party (PUSC) held power, 1990-1994, a more conservative and business-oriented perspective prevailed. A developmental, economic bias was apparent within the overall sustainable development framework. Ecotourism was viewed by the policy and decision makers in a broad sense and more as a means of economic growth than environmental protection, and the line between ecotourism and traditional tourism was blurred even more than usual (Ewing, interview, 1996). While policy differences between the two main parties are not great, this perspective of ecotourism (and sustainable development in general) did result in an economic bias of sorts. Further,
the lapse of ECODES in a formal sense left Costa Rica once again without an official environmental or conservation strategy.

**National Development Plan.** Environmental activity accelerated after the 1994 election when the National Liberation Party (PLN) returned to power. However, administrative action relative to developing a specific conservation strategy, or reviving the previous one, did not materialize. Instead, an overall strategy has been subsumed within the framework of sustainable development, articulated now by the National Development Plan, 1994-1998. It is significant that the national environmental policy and conservation strategy of Costa Rica are contained in a development plan written and administered by the Ministry of Planning and Economic Policy (MIDEPLAN).

The National Development Plan clearly establishes its central theme and framework as promoting the process of sustainable development based on the rational use of resources (Costa Rica, MIDEPLAN 1994a). Further, conservation and productive management of conservation areas are seen as two sides of the same coin. It is ap-
parent from the provisions of the plan that "productive management" is synonymous with ecotourism. The growth of the tourism sector is beneficial and protected areas should be managed in such a way as to encourage, satisfy and expand visitation. This increase in ecotourism will promote the environmental sustainability that constitutes the basis for the overall development of the country (Costa Rica, MIDEPLAN 1994). Ecotourism has had a significant role, therefore, in the formulation and character of the current conservation strategy.

*Organic Law of the Environment.* While a comprehensive national environmental policy and conservation strategy have not yet been re-established administratively, legislative action has been more successful. The Organic Law of the Environment was passed in late 1995 by the Costa Rican Legislative Assembly. The overall objective of this hallmark statute is to provide the necessary means to achieve a healthy and ecologically balanced environment, in order to attain a better standard of living for all Costa Ricans (Costa Rica, Asamblea Legislativa 1995). The concept of sustainable development, particularly rational and sustainable utilization of
the country's natural resources, is central to achievement of this objective.

The law establishes a high level National Environmental Council to develop and recommend policies, with a permanent secretariat to perform investigations, evaluations, and compliance functions. Regional Environmental Councils are also mandated in order to foster decentralization and greater participation of various groups and individuals. Other new institutions include an Administrative Environmental Tribunal to adjudicate complaints of environmental wrong-doing and a Controller of the Environment within the Ministry of Environment and Energy (MINAE) to monitor proper application of the law's objectives. Provisions are included to require a greater degree of public and private education and research on the conservation and sustainable use of natural resources. The requirements and procedures for land planning and environmental impact assessment also constitute important parts of the law. Additionally, it provides legislative authority for the various types of protected areas, their creation and objectives, and the establishment of MINAE to manage them (Costa Rica, Asamblea Legislativa, 1995).
The Organic Law of the Environment has received some criticism for its lack of specificity in many regards, and for its shotgun approach to responsibility (Castro Córdoba 1995; Vargas 1995). The latter appears to be warranted. This jurisdictional approach is fairly typical in Costa Rica, posing problems to the effective administration of important national programs. The former criticism is misplaced, however, since the law is not intended to be program-specific but to serve as an overall policy framework. Its effectiveness in this regard is yet to be determined, but it does at least provide a comprehensive national environmental policy, as well as a conservation strategy of some conceptual and legal basis.

The influence of ecotourism on the Organic Law is difficult to determine. Sustainable development constitutes the central basis for the overall objective, and is integral to most of the provisions of the law. Ecotourism itself, however, is not specifically mentioned in the statute. While it is believed that the success and potential of ecotourism was likely a factor in the formulation and content of the law, this influence must be considered inferential in terms of ecotourism's key
role in sustainable development. This is particularly true in Costa Rica, where the economic and environmental value of ecotourism is as well known by politicians as by the functional professionals.

National System of Conservation Areas (SINAC)

In addition to developing a national strategy, the officials of the Ministry of Natural Resources, Energy and Mines (MIRENEM) also took the lead in changing the organizational structure for managing protected areas. All of the factors that have been mentioned previously relative to the emerging concept of sustainable development, evolving conservation thought, and problems associated with the current system prompted the agency to recommend a significant change in the way of doing business.

Evolution of SINAC. As early as the late 1980s, MIRENEM proposed further integrating management of protected areas and decentralizing much of the decision-making power. At the heart of this proposal was the intended creation of nine Regional Conservation Units (URCs), often referred to as "megaparks" (Umaña and Brandon 1992). The regions would integrate administration of
geographically-related protected areas without regard to management category; achieve better coordination between the Park Service, Forestry Department and Wildlife Department; regionalize decision-making and administrative aspects, thereby reducing responsibility and authority of the central office; and require participation of local and regional groups and communities in the planning and management of protected areas (Courrau 1994; Umana and Brandon 1992). Sustainable development was an important underpinning of the proposal, along with decentralization, community participation, changing conservation paradigms, and organizational concerns. One of the key objectives of the recommendation was to provide opportunities for outdoor recreation in such a way that the areas serve as attractions for tourism development based on the country’s natural and cultural features (Courrau 1994).

The proposed approach came to be known as the National System of Conservation Areas, or SINAC. A conservation area was conceptualized as a group of contiguous and nearby protected areas with state-owned cores of high protection surrounded by zones, mainly privately owned, of multiple and sustainable use. Citizen and
community participation was required for the purpose of improving coordination and regional development (Costa Rica, MIRENEM 1993). Although highly touted, the reorganization ran into some serious political and bureaucratic problems. These included jurisdictional disputes between MIRENEM and MIDEPLAN regarding economic planning aspects of the proposal and turf fights between the Park Service and other involved directorates, helping to forestall approval and implementation of the plan (Courreau 1994; Umaña and Brandon 1992). Nevertheless, the proposal remained alive and was even submitted, unsuccessfully, for legislative approval.

The National Park Service did administratively implement some of the provisions of the proposal on their own. Decree #20122 authorized conservation areas for the protection of biodiversity and sustainable production of goods and services (Costa Rica, MIRENEM 1991). SINAC's stated mission in its strategic planning document is to conserve and guarantee the biodiversity of Costa Rica for sustainable development of the country (Costa Rica, MIRENEM 1993c). Another implementing document emphasizes the role and influence of tourism in the SINAC approach (Costa Rica, MIRENEM 1992). Tourism
and ecodevelopment comprise two of the half dozen basic programs of all the conservation areas. Efficient planning and managing for ecotourism, including installation of appropriate infrastructure, is mandated as a priority in order to contribute to resource conservation, rural development, and financing of the system. Ecotourism is regarded as the key factor, thereby exerting significant influence in the conceptual design of SINAC and its management for sustainable development in the conservation areas. Further, in 1994 the overall program was renamed the National Integrated System of Conservation and Sustainable Development, with bio-regions referred to as conservation and sustainable development areas (Costa Rica, MIRENEM 1994a). Corresponding decrees were issued for each of the ten regions. These measures served to further solidify the underlying basis of sustainable development on the concept and evolution of the approach.

**Full implementation.** After being bandied about for some seven years, with periods of partial and inconsistent application, SINAC was finally implemented officially and fully in 1995. This was accompanied by the action,
which was legally approved by the Organic Law, to reorganize MIRENEM. The new ministry of MINAE finally integrated administration of all national protected areas within one organization -- the National System of Conservation Areas. SINAC was placed organizationally as a General Department, at the level directly below the ministry. All of the management activities previously conducted separately among the several protected area organizations would now be done together. Conservation areas were established for Guanacaste, Arenal, Tortuguero, Amistad, Osa, Tempisque, Pacífico Central, Cordillera Volcánica Central and Isla del Coco (Costa Rica, MIRENEM 1995b). The Amistad Conservation Area has since been divided into two areas, one for the Atlantic side and one for the Pacific side, due to its size and watershed directional differentiation.

The ten conservation areas are operated in an integrated manner also, and have been given substantial delegated authority from the central office of SINAC. Some have gone further than others in assuming and executing this authority, as they have in implementing the requirement for active local and regional private sector participation. Some of the same types of overlap-
ping and/or superfluous institutional and jurisdictional conditions that characterize other programs in Costa Rica may pose problems for this one; e.g., numerous committees and other bodies, central and regional office responsibility, etc. Approximately 110 national protected areas, ranging from one in Isla del Coco to 27 in Tempisque, and a large number and variety of private reserves are included in these conservation areas. These private protected areas, discussed in greater detail in the next chapter, constitute a very important component of the conservation area bio-regions.

It is noteworthy that the most active, advanced, and economically viable conservation areas are those with the most popular parks/reserves and correspondingly high levels of tourism. Guanacaste is a special case, since it has exercised a significant degree of independence and authority for some time, in addition to being a high-level tourism area. These areas are more "high-profile", receiving a greater degree of public attention, publicity, research activity, and support from non-governmental organizations (NGOs). The effect tends to be cumulative, a case of success breeding success.
SINAC is not without problems. The concept itself is rather antithetical in Latin America, where a decentralized and participatory approach to managing public programs is unusual (Vargas, interview, 1996). Neither the government nor the citizenry are accustomed to it and must adapt, not only to a different system, but to a completely different philosophical basis. There also is still some of the inevitable resistance to change within the government and even the private sector. Additionally, SINAC has encountered some degree of opposition from employees asked to move from San José to the new regional offices. The capital city is the location of choice for most Costa Ricans, and the "hinterlands" are viewed by many as social deprivation.

The system will certainly require a period of time and patience, as well as program refinements as needed, if it is not to go the way of many other new programs filled with good intentions. SINAC appears to be well-based conceptually and is environmentally and politically in tune with the times. It also has, after a long and arduous battle for implementation, a wide base of support in both the public and private sectors, with substantial bipartisan political support and growing
acceptance by most of the numerous vested interests.

**Other Legal and Administrative Action.**

Other measures have been taken in Costa Rica during the past several years relative to, and reflecting the impact of, sustainable development and ecotourism. These are divided here into policy changes by statute or administrative action and those of an institutional nature.

**Policy changes.** The Council of Sustainable Development was created in 1993, with a cross-section of public and private members, to promote compliance with the accords adopted by the 1992 Rio Summit (Costa Rica, MIRENEM 1993a). Also, the National System for Sustainable Development (SINADES) was established in 1994 (Costa Rica, MIRENEM-MIDEPLAN 1994). The latter was soon to be overtaken by and consolidated with other measures. However, the successor actions possessed the same underlying basis of sustainable development.

Statutes passed and enacted over the past several years dealing with natural resource management and conservation all bear the imprint of sustainable development. An example of this is the 1996 Forestry Law, in
which sustainable development is again clearly established as the conceptual framework (Costa Rica, Asamblea Legislativa 1996b). This is seen in the law’s objectives, as well as the many provisions dealing with conservation and rational use of the renewable forest resource. In addition to policies for national forests, and forested areas in other public protected areas, the law also establishes policies for privately-owned forested areas. The case of private incentives will be discussed in this regard in the following chapter.

In 1995, the Institute of Tourism (ICT) published a comprehensive strategic plan for sustainable tourism development (Costa Rica, ICT 1995). The strategy, obviously based on sustainable development, relies heavily on ecotourism as the primary means of achieving sustainability in the Costa Rican tourism industry. Further, ICT is currently in the process of developing a master plan specifically for ecotourism (Sanchez, interview 1996). The former plan has established, if there was any doubt previously, ICT’s de facto role as the office of primary responsibility for ecotourism. The latter plan will certainly solidify that role. The direction, authorities and responsibilities in docu-
ments such as these have an important influence on the overall make-up of public policies and programs. Other public and private agencies have, to a significant degree, accepted ICT's lead in this field, enabling eco-tourism to influence a number of other policy areas.

Costa Rica has also taken a leading role internationally relative to sustainable development. ECODES itself has had an important international impact and has served as a model for a number of other countries' national conservation strategies, particularly in its sustainable development approach. Costa Rica's participation in conferences dealing with development and/or conservation has been increasingly oriented toward sustainable development in recent years. The country was an active participant in the 1992 Rio Summit and its sustainable development focus. It has subsequently ratified conventions resulting from that global conference. Costa Rica has been active in the Central American Commission of Environment and Development (CCAD) established in 1989, as well as numerous regional summits and the resulting agreements addressing a variety of common and integrated concerns (Mack 1994). Examples include the Convention for Conservation of Biodiversity
and Protection of Wild Areas in Central America, ratifi-
fied by the Legislative Assembly in 1994 (Costa Rica,
Asamblea Legislative 1994), and the Regional Convention
for Management and Conservation of Natural Forest Eco-
systems and Development of Forest Plantations, ratified
in 1996 (Costa Rica, Asamblea Legislative 1996). Sus-
tainable development forms the explicit, underlying
basis for these and other conventions and agreements.

Costa Rica and its president have also taken the
lead role in creating the Central American Alliance for
Sustainable Development. This high-level, visible or-
ganization recognizes that the rational use of natural
resources is a fundamental principle for guiding form-
ulation of development strategies, and it promotes na-
tional and regional policies and programs within the
basic framework of sustainable development (Incer 1995;
Mack 1994). Despite its broad parameters, the focus of
the Alliance is clearly ecological, calling for greater
efforts regarding protected areas and also endangered
species (Lara, Barry and Simonson 1995). More specific
actions are targeted at improvement in managing water
resources, classification of seriously depleted soils
in the region, elimination of leaded gasoline, and re-
duction of pollution through programs of environmental education. These international measures, in which Costa Rica has taken an increasingly leading position, have tended to exhibit a boomerang effect in coming back to form the basis for further national action.

Institutional changes. Sustainable development has instigated a number of governmental and NGO-related institutional changes in Costa Rica. Ecotourism has been the specific or leading cause in some of these. The addition in the early 1990s of a Natural Resources Section within ICT is a case in point. This section is staffed with natural scientists (mainly biologists) with expertise on, and committed to, environmental and natural resource conservation. The growth and importance of ecotourism in the country was the primary reason for establishment of the section (Sanchez, interview, 1996). It has played a key role in development of tourism policies within ICT, that ministry's assumption of governmental responsibility for ecotourism, and subsequent influence on other governmental policies and programs relative to environmental issues.

The Costa Rican National Chamber of Tourism

218
(CANATUR) was created in the early 1990s as an outgrowth of the rapidly expanding tourism industry. It has become closely associated with ecotourism, especially in its role as an interface between the tourism industry and the government. This was formalized in a sense with establishment of the Tripartite Commission, composed of MIRENEM, ICT and CANATUR. This organization has improved the co-operation and coordination between the public and private sectors, and among ministries within the government itself. It has also played an important role in promoting and recommending policies regarding sustainable tourism/ecotourism, environmental conservation, and protected areas (Roberts, interview, 1996; Sanchez, interview, 1996). Ecotourism has been the primary driving force behind this functional and integrative role. It has become the common denominator in the relationship between tourism (or development in a more general sense) and conservation.

A number of NGOs, based on and devoted to sustainable development, have sprung up in recent years. Those involved in nation-wide issues include the Association of Development and Ecology, Association of Ecodevelopment, and Association for Conservation and Management
of Tropical Forests, or COMBOS (FECON 1994). The latter organization has been active in such issues as buying land for subsequent donation to the state for protected area creation or expansion. It is also involved in negotiating ecological easements on private lands (discussed in more detail in the next chapter), and an innovative program to mitigate the effects of carbon dioxide emissions by having developed countries contribute to tropical forest conservation efforts.

NGOs also include a number of local and regional organizations with a sustainable development basis (FECON 1994). Two of these are the San Miguel Association of Conservation and Development and the Association for Conservation and Development of the Hills of Escazú. The Talamanca Association of Ecotourism and Conservation (ATEC), established due to ecotourism and its growing influence on conservation, is very active in the southeastern region of the country. One of the most active and effective newly-created NGOs in this regard is the Foundation for Development of the Central Volcanic Cordillera (FUNDECOR). This organization provides technical assistance and funding within the Central Volcanic Cordillera Conservation Area for managing
protected areas, promoting sustainable production and use of surrounding buffer zone forests and farm lands, and engaging nearby communities in park operations and maintenance (USAID 1995). One of its specific programs is an ecotourism and environmental education program, including field trip, for important national and foreign personages. Again, sustainable development, with ecotourism as a key component, forms the basis for the existence and functions of FUNDECOR.

Questionnaire and Interview Perspectives

Question #3 of the questionnaire asked respondents to indicate the effect of ecotourism on conservation policy. The results were as follows:

<table>
<thead>
<tr>
<th>EFFECTS OF ECOTOURISM ON CONSERVATION POLICY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highly positive</td>
</tr>
<tr>
<td>Moderately positive</td>
</tr>
<tr>
<td>Insignificant</td>
</tr>
<tr>
<td>Moderately negative</td>
</tr>
<tr>
<td>Highly negative</td>
</tr>
</tbody>
</table>

This response is moderately positive overall, with an average of 2.0, and only an 11% negative response. The only occupational group to differ significantly from
the norm was tourism agencies, which had a very positive average response of 1.47. Examples of ecotourism’s influence in conservation policy specifically mentioned by respondents were in the area of fostering more and better regulation of natural resources and public support for more legislation (15); and providing an economic justification for conservation and promoting more rational use of resources (14). This also correlates well with the response to Question #10. Of the most important positive effects of ecotourism on conservation policy mentioned, 33% pertained to the economic valuation and justification for conservation and the influence it has on developing more and better conservation policies.

Most of the persons interviewed expressed the view that ecotourism contributes to both the development and character of conservation policy. A commonly expressed opinion was that ecotourism provides an economic valuation and justification for conservation that did not previously exist. It was pointed out that ecotourism has promoted a consensus of sorts toward conservation because it represents a sustainable alternative for economic development, thereby facilitating the formula-
tion and approval of national policy (Roberts, interview, 1996; C. M. Rodríguez, interview, 1996).

The interviews also produced a few observations of a more qualified nature. According to one, ecotourism has sometimes had a confusing effect, with the result of policies being avoided or delayed (Budowski, interview, 1996). The criticism expressed in the previous chapter relative to conservation thought also applies here to conservation policy (Vaughn, interview, 1995). Another person interviewed pointed out that, while substantial policy exists on paper, it is not matched by implementation and enforcement. Policy often does not reflect political realities and suffers from lack of will and resources (Báez, interview, 1996). However, it was believed by most of those interviewed that policy is becoming more relevant to the real-world situation in Costa Rica, due largely to sustainable development and the change in conservation thought. This is now causing better, more realistic policies to be formulated, and should improve the likelihood of these policies being translated into practice and results.

This chapter has dealt with conservation policy
and the influence exerted upon it by sustainable development, particularly ecotourism. While focusing on conservation strategy, laws, administrative measures and institutions, a close relationship to the previous chapter on conservation thought is apparent. That relationship is evident with the following chapter as well, involving conservation policy but specifically in regard to protected areas. A separate chapter is warranted due to this focus and several key issues of interest and ecotourism influence specific to protected areas. It also demonstrates the presence and role of the private sector in the conservation area, and how public policies have been developed and brought to bear on incorporating private reserves and other privately-owned lands into the national conservation scheme.
CHAPTER 10
PUBLIC AND PRIVATE PROTECTED AREAS

The last two chapters have focused upon environmental conservation thought and policy in Costa Rica, and the influence of ecotourism on their formulation and implementation. The discussion was conducted within an overall philosophical and policy sense in terms of the national milieu. For example, Chapter 8 included a discussion of protected area paradigms, but within the context of general conservation thought. Furthermore, previous chapters have dealt mainly with public protected areas, in both an overall sense and more particularly to Costa Rica.

This chapter deals specifically with the subject of protected areas, those natural places which are under some type of conservation management status. It includes public and private protected areas, as well as those of mixed ownership. The country has a large number of protected areas which are privately owned in whole or in part. As was the case with the previous two
chapters, the influences of ecotourism, in this case, its influence on establishment and administration of protected areas, is of particular interest. The author visited five of the regional headquarters of the National System of Conservation Areas (SINAC) and twenty four individual protected areas, seventeen public and seven private ones, over a period of approximately two months. A complete list and timetable of protected areas visited is shown in Appendix G. Further discussions with park officials and owners, as well as personal observation, supplemented data from archival and survey sources in regard to this part of the research.

Public Protected Areas

Chapter 6 described the establishment of protected areas in Costa Rica up to the modern era. It was seen that the decade of the 1970s emphasized creation of national, wholly state-owned parks and reserves for the primary purpose of resource protection. Due to changing conservation thought and financial difficulties, the following decade was characterized by smaller and mixed ownership units. Approximately 26 national conservation units were created in the 1980s, the majority of which
were wildlife reserves and protected zones, a trend which carried over into the early years of the present decade. However, 34 conservation units were created in 1994 and 1995, fully 74% of the total number established during the first six years of the 1990s. Wildlife reserves, including wetlands, have comprised more than half of the protected areas established over the last several years. Wetlands are a recently authorized type of conservation unit, administratively combined with and managed like wildlife reserves (Costa Rica, MIRENEM 1993b). One dozen of these were created within several months after the category was authorized in late 1993.

As of January 1996, there were approximately 110 public protected areas in Costa Rica (Table 8). These figures are based on a report of the Center for Environmental and Natural Resource Law (CEDARENA 1994) through March 1994, and a number of laws, directives, and informal publications of the Ministry of Natural Resources, Energy and Mines (MIRENEM) since then. The conservation units shown in the table include those which are wholly state-owned (primarily national parks, biological reserves and forests), as well as those of mixed public and private ownership and managed by the
Table 8. TYPES OF PUBLIC PROTECTED AREAS IN COSTA RICA

<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>JAN 1980</th>
<th>JAN 1990</th>
<th>JAN 1996</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Parks</td>
<td>14</td>
<td>17</td>
<td>24</td>
</tr>
<tr>
<td>Biological Reserves</td>
<td>6</td>
<td>8</td>
<td>11</td>
</tr>
<tr>
<td>Wildlife Reserves and Wetlands</td>
<td>0</td>
<td>9</td>
<td>34</td>
</tr>
<tr>
<td>Forest Reserves</td>
<td>9</td>
<td>10</td>
<td>13</td>
</tr>
<tr>
<td>Protected Zones</td>
<td>9</td>
<td>20</td>
<td>28</td>
</tr>
<tr>
<td>TOTAL</td>
<td>38</td>
<td>64</td>
<td>110</td>
</tr>
</tbody>
</table>
government (primarily wildlife reserves and protected zones). A substantial proportion of the country now consists of territory in some type of protected status. Based on figures of several years ago and the recent additions to Costa Rica’s national conservation system, it is estimated that national parks and biological reserves cover approximately 14% of the country and the less-managed protected areas another 16%. Table 9 provides an inventory of the major public protected areas; i.e., national parks, monuments and reserves. Additionally, Figure 10 provides a map depicting the distribution and location of Costa Rica’s major public and private protected areas.

**Purpose and utilization.** For reasons previously discussed, protected areas established during the modern era reflect a different character than earlier ones. They have tended to follow the evolving lines of environmental thought and emerging conservation paradigms. Guanacaste National Park is a case in point. Its creation was based on a combination of the desire to protect a significant area of dry and mixed tropical forest in the Guanacaste region and the perceived need to
<table>
<thead>
<tr>
<th>Protected Area</th>
<th>Province</th>
<th>Area (ha)*</th>
<th>Major Life Zones</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alberto Manuel Brenes Biological Reserve</td>
<td>Alajuela</td>
<td>7700</td>
<td>Lower Montane Wet/Rainforest</td>
<td>1993</td>
</tr>
<tr>
<td>Arenal National Park</td>
<td>Puntarenas</td>
<td>12,000</td>
<td>Lower Montane Wet/Rainforest</td>
<td>1991</td>
</tr>
<tr>
<td>Ballena National Marine Park</td>
<td>Puntarenas</td>
<td>100</td>
<td>Tropical Moist Forest</td>
<td>1990</td>
</tr>
<tr>
<td>Barbilla Biological Reserve</td>
<td>Limón</td>
<td>5400</td>
<td>Pre/Lower Montane Moist/Wet Forest</td>
<td>1994</td>
</tr>
<tr>
<td>Barra Honda National Park</td>
<td>Guanacaste</td>
<td>2300</td>
<td>Tropical Dry Forest</td>
<td>1974</td>
</tr>
<tr>
<td>Braulio Carillo National Park</td>
<td>Heredia, San José, Limón</td>
<td>47,500</td>
<td>Tropical Wet Forest; Pre/Lower Montane Rainforest</td>
<td>1978</td>
</tr>
<tr>
<td>Cabo Blanco Absolute Nature Reserve</td>
<td>Puntarenas</td>
<td>1200</td>
<td>Tropical Moist Forest</td>
<td>1963</td>
</tr>
<tr>
<td>Cahuita National Park</td>
<td>Limón</td>
<td>1800</td>
<td>Tropical Moist Forest</td>
<td>1978</td>
</tr>
<tr>
<td>Carara Biological Reserve</td>
<td>Puntarenas</td>
<td>4800</td>
<td>Tropical Moist/Wet Forest; Premontane Rainforest</td>
<td>1982</td>
</tr>
<tr>
<td>Chirripó National Park</td>
<td>Cartago, San José, Limón</td>
<td>50,200</td>
<td>Montane Wet Forest; Subalpine Rain Paramo</td>
<td>1975</td>
</tr>
<tr>
<td>Copey Biological Reserve</td>
<td>San José</td>
<td>2000</td>
<td>Lower Montane Wet/Rainforest</td>
<td>1994</td>
</tr>
<tr>
<td>Corcovado National Park</td>
<td>Puntarenas</td>
<td>41,700</td>
<td>Tropical/Premontane Wet Forest</td>
<td>1975</td>
</tr>
<tr>
<td>Guanacaste National Park</td>
<td>Guanacaste</td>
<td>39,000</td>
<td>Tropical Dry/Moist/Wet Forest</td>
<td>1991</td>
</tr>
<tr>
<td>Protected Area</td>
<td>Province</td>
<td>Area (ha)*</td>
<td>Major Life Zones</td>
<td>Date</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>--------------</td>
<td>------------</td>
<td>-----------------------------------</td>
<td>-------</td>
</tr>
<tr>
<td>Guayabo National Monument</td>
<td>Cartago</td>
<td>300</td>
<td>Pre/Lower Montane Rainforest</td>
<td>1980</td>
</tr>
<tr>
<td>Hitoy-Cerere Biological Reserve</td>
<td>Limón</td>
<td>9200</td>
<td>Tropical Moist/Wet Forest</td>
<td>1978</td>
</tr>
<tr>
<td>Isla del Caño Biological Reserve</td>
<td>---</td>
<td>200</td>
<td>Tropical Dry Forest</td>
<td>1976</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2700</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Isla del Coco National Park</td>
<td>---</td>
<td>2400</td>
<td>Premontane Rainforest</td>
<td>1978</td>
</tr>
<tr>
<td></td>
<td></td>
<td>97,300</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Isla Guayabo Biological Reserve</td>
<td>Puntarenas</td>
<td>150</td>
<td>Tropical Dry Forest</td>
<td>1973</td>
</tr>
<tr>
<td>Isla Negritos</td>
<td></td>
<td></td>
<td>Premontane Moist Forest</td>
<td>&quot;</td>
</tr>
<tr>
<td>Isla Pájaros</td>
<td></td>
<td></td>
<td>Tropical Dry Forest</td>
<td>1976</td>
</tr>
<tr>
<td>Juan Castro Blanco National Park</td>
<td>Alajuela</td>
<td>14,300</td>
<td>Lower Montane Wet/Rainforest</td>
<td>1992</td>
</tr>
<tr>
<td>La Amistad National Park</td>
<td>Puntarenas</td>
<td>194,000</td>
<td>Tropical/Premontane Wet Forest;</td>
<td>1982</td>
</tr>
<tr>
<td></td>
<td>Alejuela</td>
<td></td>
<td>Subalpine Rain Paramo</td>
<td></td>
</tr>
<tr>
<td>Las Baulas National Marine Park</td>
<td>Guanacaste</td>
<td>400</td>
<td>Tropical Dry Forest</td>
<td>1991</td>
</tr>
<tr>
<td>Lomas Barbudal Biological Reserve</td>
<td>Guanacaste</td>
<td>2300</td>
<td>Tropical Dry Forest; Premontane</td>
<td>1986</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Moist Forest</td>
<td></td>
</tr>
<tr>
<td>Manuel Antonio National Park</td>
<td>Puntarenas</td>
<td>700</td>
<td>Tropical Wet Forest</td>
<td>1978</td>
</tr>
<tr>
<td></td>
<td></td>
<td>55,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Palo Verde National Park</td>
<td>Guanacaste</td>
<td>16,800</td>
<td>Tropical Dry Forest</td>
<td>1980</td>
</tr>
<tr>
<td>Piedras Blancas National Park</td>
<td>Puntarenas</td>
<td>14,100</td>
<td>Tropical/Premontane Wet Forest</td>
<td>1994</td>
</tr>
<tr>
<td>Protected Area</td>
<td>Province</td>
<td>Area (ha)*</td>
<td>Major Life Zones</td>
<td>Date</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>----------------</td>
<td>---------------</td>
<td>------------------------------------------------------------</td>
<td>-------</td>
</tr>
<tr>
<td>Rincón de la Vieja National Park</td>
<td>Alajuela</td>
<td>14,100</td>
<td>Tropical Moist Forest; Pre/Lower Montane/Wet/Rainforest</td>
<td>1978</td>
</tr>
<tr>
<td></td>
<td>Guanacaste</td>
<td>38,000 76,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Santa Rosa National Park</td>
<td>Guanacaste</td>
<td>6100</td>
<td>Pre/Lower Montane Wet/Rainforest</td>
<td>1992</td>
</tr>
<tr>
<td>Tapanti National Park</td>
<td>Cartago</td>
<td>12,900</td>
<td>Pre/Lower Montane Moist/Wet Forest</td>
<td>1995</td>
</tr>
<tr>
<td>Tenorio National Park</td>
<td>Alajuela</td>
<td>23,900 52,200</td>
<td>Tropical Wet Forest</td>
<td>1970</td>
</tr>
<tr>
<td></td>
<td>Guanacaste</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tortuguero National Park</td>
<td>Limón</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Volcán Irazú National Park</td>
<td>Cartago</td>
<td>2300</td>
<td>Montane Wet/Rainforest</td>
<td>1955</td>
</tr>
<tr>
<td></td>
<td>San José</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Volcán Poás National Park</td>
<td>Alajuela</td>
<td>6500</td>
<td>Lower Montane and Montane Wet/Rainforest</td>
<td>1970</td>
</tr>
<tr>
<td>Volcán Turrialba National Park</td>
<td>Cartago</td>
<td>1600</td>
<td>Lower Montane and Montane Wet/Rainforest</td>
<td>1995</td>
</tr>
</tbody>
</table>

* Where two figures are shown, the first is terrestrial area and the second is marine area.
Figure 10. Major Protected Areas
manage it in a new, socially-oriented manner (Wallace 1992). This latter consideration was a product of the emerging paradigms of conservation and the still-fresh memories of the Corcovado National Park events.

The Guanacaste National Park was established in 1991, partly funded by a debt for nature swap. It well illustrates the transition from the old, mainly protective style of management to the new model of decentralization, multiple use, and community involvement. Local participation in the park’s planning and management processes have gone a long way toward eliciting support for conservation among the surrounding populations (Hopkins 1995). The economic alternative to traditional resource use now provided by ecotourism -- such as park management staff, tour guides, lodges, restaurants, gift shops, and similar activities -- has been a key element in this process. Arenal National Park, established soon afterwards, has had corresponding experiences. Ecotourism especially has demonstrated a considerable increase and importance to this park since the 1995 eruption of Arenal Volcano and its continuing lava flows. It is contributing significantly to the economy of the Arenal region and is, therefore, a key factor in
the early success and effectiveness of this particular protected area.

Administration and management of existing protected areas have seen a number of changes over the past several years, largely as the result of ecotourism. Some of this has been mentioned previously. In a more specific sense, a recent series of decrees has established regulations over the public use of parks and reserves. These have attempted to strike some balance between the increasing use of the protected areas by visitors and the continuing need to protect the natural resource base. The regulations have typically prescribed areas of accessibility in the parks, type of activity permitted, trail use, and similar considerations. One recent decree prescribed allowable carrying capacity in the heavily visited Carara Biological Reserve and Manuel Antonio, Volcán Poás, Volcán Irazú, and Tortuguero National Parks (Costa Rica, MIRENEM 1994). It is even specific for some of these protected areas to days of the week, trails and beaches.

Question #6 of the questionnaire asked respondents to indicate the effect of ecotourism on establishment of protected areas, with the following results:
While the average of 1.9 and a very low negative response indicate a moderate to highly positive overall response, it is noted that the question included both public and private protected areas. The latter elicited more positive feedback on the questionnaire written comments and the interviews. Consequently, the response is considered to be somewhat less positive in regard to public protected areas. Responses for the private reserves and tourism agencies were more positive than the overall average. A fairly significant number of examples given (15) related to a positive role for ecotourism in influencing the establishment of new protected areas and in beneficial system changes such as SINAC.

Opinions expressed in several of the interviews support the questionnaire findings relative to the influence of ecotourism on the establishment of protected areas. For example, ecotourism was cited as one of the
key factors, along with watershed protection and tropical research, in justifying new or expanded protected areas in recent years (Boza, interview, 1996). Its potential in financially supporting these parks and contributing to the economy in a broader sense were commonly given reasons in this regard.

Question #7 pertained to the effects of ecotourism on the administration of protected areas, with the following results:

<table>
<thead>
<tr>
<th>EFFECTS OF ECOTOURISM ON PROTECTED AREA ADMINISTRATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highly positive</td>
</tr>
<tr>
<td>Moderately positive</td>
</tr>
<tr>
<td>Insignificant</td>
</tr>
<tr>
<td>Moderately negative</td>
</tr>
<tr>
<td>Highly positive</td>
</tr>
</tbody>
</table>

The overall 2.28 average reflects a moderately positive response, albeit rather weakly. Private reserves, due probably to a more direct effect of tourist receipts, provided a more positive response than the average.

Ecotourism is also seen as an increasingly important factor in the manner in which protected areas are designed and managed, especially in terms of such considerations as park facilities, educational programs,
and hiking trails (C. M. Rodríguez, interview, 1996). Personal observation from the author’s visits to many of the protected areas revealed a number of cases to support this opinion. Ecotourism provided the primary impetus and much of the money for a new, modern visitor center at Volcán Poás National Park. The visitor center includes extensive exhibits and interpretive displays, particularly on volcanism, and a restaurant and gift shop. New visitor centers were in progress at several other parks at the time of this research, such as Volcán Irazú and Cabo Blanco. Still others are on the drawing board, driven mainly by the influence of ecotourism in terms of revenues and protected area usage.

Other influences of ecotourism were observed in the protected areas. These included more and better maintained trails, viewing sites, and parking areas. A significant amount of educational materials and programs have been developed recently to support and promote further ecotourism. Many park pamphlets and trail guides have been published. The Guanacaste Conservation Area has even developed a comprehensive pamphlet of all of the protected areas in its region. The number of park officials and guides with multi-lingual capability
has increased significantly in the last few years as well. Most of the conservation area offices have established an ecotourism program with a director in charge of it; some of the individual parks and reserves have done the same.

**Entry fees.** The issue of fees charged to enter and use national protected areas in Costa Rica is an interesting case. It further demonstrates the influence of ecotourism on conservation policy, specifically in relation to the administration of protected areas.

The entry fee for protected areas administered by the National Park Service had for some time been set at 200 colones (about $1.25) for both Costa Ricans and foreigners. An apparent combination of financial pressures and the need to reduce visitation at some parks led MIRENEM to increase the fee for foreign visitors, with little advance warning and to a higher level than advised. In September 1994, the fee for foreigners was raised to $15 while retaining the lower fee for residents (Costa Rica, MIRENEM, 1994). The policy was modified slightly the following year for early purchase or multiple park visits (Costa Rica, MIRENEM, 1995).
Park visitation by foreigners dropped immediately and sharply following the increase in entry fees. The last four months of 1994 saw a significant decrease. Then, foreign visitors to parks decreased by one third the following year. Although earnings from the higher fee resulted in more money than before, it came nowhere close to what had been projected. Further, visitation dropped at virtually all of the parks, not just those targeted by the entry fee increase. Beset by complaints from all sides, the Ministry of Environment and Energy (MINAE) decreased the fee to $6 in the Spring of 1996.

The management objectives were ostensibly to generate revenues for the parks to at least pay for the ecotourism experience and to influence visitation patterns. It is apparent, however, that the primary objective of the increase was to maximize profit through the significant rise in tourism receipts. This is brought out clearly in comments to the questionnaire's Question #7, as well as in several of the interviews (Kaye, interview, 1996; Roberts, interview, 1996). MIRENEM increased the fee to twice the figure recommended by the tourism industry and advisory bodies, based on a perception of what the foreign visitor would be willing to
pay. That perception turned out to be wrong, and the fee was subsequently decreased, again probably more of a change than warranted. In both cases, ecotourism appears to have been the key agent of causing the change. Further, while the fee was changed initially in part to influence ecotourism, it was ultimately ecotourism that exerted far stronger influence on the fee policy.

Private Protected Areas

The prevalence and importance of private protected areas in Costa Rica has been alluded to a number of times. Private reserves have the potential to provide a significant complement to national conservation strategies. They add to the amount of land being protected and often increase the conservation effectiveness of public areas as well, due to their contiguous or nearby location. Boza (interview 1996) cites a double benefit of private reserves, in that they increase the area under protected status and also fill in the gaps between established protected areas, making the whole system more effective. Furthermore, private reserves are generally operated as businesses and an owner has a strong incentive to protect the resource base upon which the
enterprise depends (Alderman 1994). This section describes in detail the growth, characteristics and dynamics of this component of the private sector and its relationship with ecotourism.

**Evolution and character.** Only a handful of private reserves or protected areas existed in Costa Rica prior to the late 1980s. Notable among these were La Selva Biological Station and Monteverde Cloud Forest Preserve, owned by research organizations, and a few individually owned areas such as Hacienda Barú and Rara Avis. The economic and political climate in the country has been amenable to such private ventures for some time; however, there was little market for them before the modern era.

The increasing concern for environmental issues and the sharp growth in nature-based tourism, and an even greater perceived potential, precipitated the creation of a large number of private protected areas in the late 1980s and early 1990s. It is difficult to ascertain the current number, as no source of data exists. Examination of several informal sources reveals the existence of over 90 such protected areas. Also, it
is estimated by the president of the recently established Costa Rican Association of Private Reserves that private protected areas may comprise up to several percent of the national territory (Bien, interview, 1995). Table 10 provides an inventory of the major private protected areas in the country, including reserves over 500 hectares in area and those of other significance such as research or ecotourism. Information shown for private reserves corresponds to that in Table 9 for the major public protected areas.

These private protected areas vary widely in terms of ownership. Some are corporately or institutionally owned, such as La Selva, owned by the Organization for Tropical Studies (OTS); Monteverde, owned by the Tropical Science Center (TSC); and La Marta Wildlife Refuge, owned by the Latin American University for Science and Technology (ULACIT). A few are community owned, such as the Santa Elena Rainforest Reserve, and several are being run by cooperatives. A number of recent areas have been established by tourism agencies. Most of the private protected areas, however, are owned and operated by individuals or families. Many of the reserves are little more than a small lodging facility, a few hec-
<table>
<thead>
<tr>
<th>Protected Area</th>
<th>Province</th>
<th>Area (ha)</th>
<th>Major Life Zones</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr. Archie Carr Wildlife Refuge -- established as research station in 1959 (owned by research organization)</td>
<td>Limón</td>
<td>100</td>
<td>Tropical Wet Forest</td>
<td>1994</td>
</tr>
<tr>
<td>Hacienda Barú (owned by individual)</td>
<td>Puntarenas</td>
<td>240</td>
<td>Tropical/Premontane Moist Forest</td>
<td>1976</td>
</tr>
<tr>
<td>La Marta Wildlife Refuge (owned by university)</td>
<td>Cartago</td>
<td>1500</td>
<td>Pre/Lower Montane Wet/Rainforest</td>
<td>1993</td>
</tr>
<tr>
<td>La Pacifica Biological Reserve (owned by corporation)</td>
<td>Guanacaste</td>
<td>200</td>
<td>Tropical Dry/Moist Forest</td>
<td>Unk</td>
</tr>
<tr>
<td>La Selva Biological Station (owned by research organization)</td>
<td>Heredia</td>
<td>1600</td>
<td>Tropical/Premontane Wet Forest</td>
<td>1972</td>
</tr>
<tr>
<td>Las Cruces Biological Station -- established as botanical garden in 1963 (owned by research organization)</td>
<td>Puntarenas</td>
<td>240</td>
<td>Premontane Wet/Rainforest</td>
<td>1973</td>
</tr>
<tr>
<td>Los Angeles Cloud Forest Preserve (owned by individual)</td>
<td>Alajuela</td>
<td>2000</td>
<td>Lower Montane Rainforest</td>
<td>1991</td>
</tr>
<tr>
<td>Marenco Biological Reserve (owned by corporation)</td>
<td>Puntarenas</td>
<td>600</td>
<td>Tropical Wet Forest</td>
<td>Unk</td>
</tr>
<tr>
<td>Monteverde Cloud Forest Preserve (owned by research organization)</td>
<td>Alajuela</td>
<td>10,000</td>
<td>Lower Montane Wet/Rainforest</td>
<td>1972</td>
</tr>
<tr>
<td>Monteverde Cloud Forest Preserve (owned by research organization)</td>
<td>Puntarenas</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rara Avis (owned by individual)</td>
<td>Heredia</td>
<td>1500</td>
<td>Tropical Wet and Premontane Rainforest</td>
<td>1985</td>
</tr>
<tr>
<td>Santa Elena Rainforest Reserve (owned by community)</td>
<td>Guanacaste</td>
<td>310</td>
<td>Lower Montane Wet/Rainforest</td>
<td>1991</td>
</tr>
</tbody>
</table>
tares of forest, and a trail. At the other end of the spectrum are the several large and well-managed professional areas, which rival or exceed the best of the public parks. For example, Monteverde consists of approximately 10,000 hectares, making it larger than many of Costa Rica’s national parks. The remainder fall somewhere between these extremes, with varying purpose, size, and degree of resource protection. For the large majority of them, the common denominator appears to be ecotourism for economic benefit. This will be covered more fully in a separate section later in this chapter.

Government policy. Private protected areas in Costa Rica have received a considerable amount of government support. Some of this, of course, is due to the country’s relatively strong tradition of democracy and free enterprise. It has also been partly due to the financial inability of the government to buy increasingly expensive land. Additionally, there is no constitutional or statutory prohibition against using private lands for conservation purposes; i.e., it does not legally have to be state land. Nevertheless, much of the government’s support is conscious and deliberate, attemp-
ting to foster private protected areas and incorporate them into a comprehensive national conservation scheme.

Reference has previously been made to wildlife reserves which may be publicly or privately owned, or a mixture of both. This flexibility has enabled Costa Rica to create more of these reserves than would have otherwise been possible. Now an additional legal instrument has been authorized to encourage more private wildlife reserves. The 1993 Law of Wildlife Conservation provides for private reserves which meet the designation criteria to be declared National Wildlife Reserves (private), with the affected area remaining in private ownership but being exempt from land taxes (Costa Rica, Asamblea Legislativa, 1993). Other benefits accrue to the designees, such as inclusion in the public record and a proposed National Registry as a state-sponsored protected area, in terms of additional publicity from both a conservation and tourism perspective. In return, the land is managed in accordance with a management plan negotiated between MINAE and the owner. The latter is typically obligated to comply with the government's land use and conservation policies, including restrictions on developing the property.
In the several years since enactment of this law, eleven reserves have been designated and several more have applied. An example of one that has been approved is Hacienda Barú, a 340-hectare area of widely varying habitats and great biodiversity on the mid-Pacific coast of the country. It was designated in 1995 after a long and arduous application process. However, the owner considers the new status and future benefits, economic and conservation, to be well worth the trouble (Ewing, interview, 1996).

Another legal instrument to encourage private protected areas is the recently enacted Forestry Law. This law applies specifically to leaving land currently forested under cover, reforesting or regenerating land previously cleared, and developing forest plantations or agroforestry projects as a means to increase forestation in the country. It provides incentives such as land tax exemption and a certificate which may be used for other tax and monetary considerations (Costa Rica, Asamblea Legislativa, 1996b). It is anticipated that this legislation will serve not only to forestall the continuing albeit declining deforestation in Costa Rica, but also to provide a significant incentive to
restore some of the country's forest cover.

Another incentive for placing private lands in protected status is that of ecological easements or "servidumbres" (Atmetilla 1995; Mack 1994). This instrument is an agreement negotiated between two or more parties to place an area of land in protected status or to prohibit certain forms of development on that land, in return for some benefit to the owner such as monetary recompense. The agreement may be time-limited, but it often prescribes continuance of the servidumbre as a condition of inheritance or sale. This instrument has the advantages of being less expensive than land purchase, voluntarily accepted by the land owner, and flexible in terms of conditions of use and length of the agreement.

Servidumbres are increasing in use in Costa Rica, especially to protect wildlife habitat near already established parks or reserves. For example, an easement was negotiated by TSC and The Nature Conservancy with the owner of an expanse of lower elevation forest adjacent to Monteverde to facilitate altitudinal migration of the quetzal and other species (Mack 1994). The high cost of land in this area made the servidumbre
very cost effective. Another similar easement has recently been concluded on the Osa Peninsula, adjacent to Corcovado National Park and serving to extend the effective range of that protected area. A third was negotiated by MIRENEM with the railroad that traverses Braulio Carillo National Park, to prohibit activities along the railroad line that would adversely affect tourism. Still other agreements are in the negotiation and planning process, including some that can serve as biological corridors and buffers to established protected areas, and others to set aside extensive hiking trails and scenic attractions (for the purpose of ecotourism) outside of formal protected areas (Atmetilla 1995).

The possibility also exists to use servidumbres for the mitigation and compensation of environmental impact. This is similar to the concept of transferable development rights, in which land owners forego their rights to develop land in environmentally sensitive areas in return for transferring those rights to property in development areas (Panayotou 1995). This conservation mechanism has not yet been used in Costa Rica, but would appear to have potential there.
SINAC itself, in concept and practice, provides perhaps the best possible framework for private protected areas and their incorporation into a comprehensive national conservation scheme. Much will depend upon how effectively SINAC and its principles are carried out. There is some concern over the significant degree of private protected areas and the perceived lack of adequate state control for the public good. Nevertheless, the present course has been decidedly taken, and at least now it has a contextual framework (SINAC) essential to its success.

**Ecotourism in private reserves.** The influence of ecotourism on the establishment and administration of private protected areas is more obvious and direct than it is on their public counterparts. The primary reasons for this are the purpose of the protected areas and how they stay in existence. For the large majority of private reserves, ecotourism is an important factor in this formation and the key factor in their remaining in existence.

One recent study highlights the importance of ecotourism in this regard (Alderman 1994). It found that
ecotourism is an active component in 87% of private reserves, either exclusively or in combination with other activities such as resource extraction or education and research. Even many reserves that were initially established for conservation and research are turning increasingly to ecotourism for financial reasons. These findings appear to be validated, perhaps even understated, in Costa Rica, where ecotourism has become such an important force and where private protected areas have become so numerous.

The responses to Question #6 on the questionnaire included a number of examples in reference to the positive influence ecotourism has had on establishment of public protected areas, as previously mentioned. However, many more comments (22) were made regarding the influence of ecotourism on starting private reserves. It was considered the key or one of the key influences in this regard, with many of the respondents citing income from tourism as the motivating factor. Further, a number of respondents identified the influence of ecotourism in the private sector's decisions as stronger and more direct than in the public sector.

Many of the individuals interviewed, as well as
through other discussions, also cited the positive influence of ecotourism on the establishment and administration of private protected areas. A number of these persons pointed to the proliferation of such areas beginning in the late 1980s, with many individuals or families seeking to cash in on the ecotourism boom, or at least help to financially support their efforts to set aside land in a protected status. Respondents, for the most part, readily acknowledged the commercial basis for establishment of these reserves, but considered it acceptable in view of results achieved in conserving natural resources, or at least in forestalling more destructive development activities (J. M. Rodríguez, interview, 1996).

One of the reserves established recently is the Los Angeles Cloud Forest Reserve on the eastern side of the Tilarán Cordillera. It was created in 1991 by an ex-president of Costa Rica, Rodrigo Carrazo. He did this in order to conserve an area of close to 2000 hectares, most of which is cloud forest. The key factor from the beginning in financing and maintaining the reserve was ecotourism (Carrazo, interview, 1996). The idea has worked reasonably well -- income from ecotour-
ism (entry fees and hotel) covers a substantial proportion of the reserve's expenses, thereby supporting conservation by providing a sustainable economic alternative. This reserve, as are others such as those managed by OTS and TSC, also serves as a showcase for environmental education for groups ranging from school children to high-level political figures.

Some other private protected areas that were established earlier are coming to rely increasingly on ecotourism for administration and maintenance. For example, Hacienda Barú was begun over twenty years ago but tourism receipts have never made the private reserve self-sustaining. Nevertheless, activities and facilities have steadily expanded, and will expand even more in order to promote ecotourism further (Ewing, interview, 1996). The same is true of the Rara Avis private reserve, adjacent to Braulio Carillo National Park. Created as an experiment to provide an economic alternative to deforestation and perhaps to even generate a profit from rainforest conservation, the private reserve and the local community rely heavily upon ecotourism (Bien, interview, 1995). A small protected area begun primarily as a botanical garden, Las Cusingas,
about sixty kilometers east of San José, is also promoting more ecotourism in order to support additional conservation and environmental education activities (Segleau Erle, interview, 1996).

Monteverde Cloud Forest Preserve is the flagship of the Costa Rican private protected areas. It was established 25 years ago, with a much smaller area than it has today, for preservation and research. Over the years, it has grown in size and function, with ecotourism increasing steadily to the current level of 40,000 to 50,000 visitors a year (Aylward et al. 1996). Many people visit Costa Rica specifically to see Monteverde. Tourism receipts now constitute the bulk of the preserve's revenues, a situation enhanced by a rational fee structure policy which the government would do well to emulate. Tourism carried out on a small portion of Monteverde supports the conservation of all 10,000 hectares of the preserve and provides significant economic benefits to surrounding communities (Aylward et al. 1996).

The Santa Elena Rainforest Reserve is an interesting example of a community-owned private protected area heavily influenced by ecotourism. Near Monteverde and
with an extensive cloud forest area, this reserve was begun in 1991 on a parcel of land leased to the Santa Elena High School by the Costa Rican government. The community and Youth Challenge International, aided by numerous donations, set up the reserve specifically to generate revenues through ecotourism for the benefit of the school and community (Wearing 1993). This whole effort is based on the premise that the community’s involvement and commitment to conservation in the reserve will reap benefits to the community in terms of better educational facilities and job opportunities. All of this has been made possible by ecotourism.

A new type of private protected area that seems to be increasing in popularity is that of associations or cooperatives, either by themselves or in combination with other private instruments such as servidumbres (Atmetlla 1995). There are currently at least six cooperatives in Costa Rica designed to increase cultural awareness of tourists to the country and promote sustainable development, specifically by means of ecotourism projects (Halloran 1996). For example, one cooperative, formerly used to mine gold in the Osa Peninsula, now dedicates its time to forest protection and organic
agriculture, with tourists participating in such tasks as planting trees and harvesting crops. Others, spread throughout Costa Rica, focus on rebuilding and protecting wetlands, mangroves, and dry tropical forests -- again, with the active participation of ecotourists. A national consortium (COOPERANA) of these cooperatives also has been created to unite small ecotourism projects run by communal groups, associations and micro-businesses into a national network. The consortium is especially valuable in assisting with the organization, marketing and commercialization of ecotourism projects operated by the cooperatives and similar groups.

This chapter has focused on public and private protected areas and the influence that ecotourism has exerted on their establishment and administration. This influence has been demonstrated to be considerable, although in some ways indirect, for the public areas. It has been a stronger and more direct influence in regard to the private reserves. It seems clear that ecotourism has been a major factor in the overall national conservation system of Costa Rica.
CHAPTER 11

COMPOSITE ANALYSIS

Chapter 7 described the sustainable development framework for environmental conservation in Costa Rica, operational since the late 1980s, which has resulted from the confluence of interests between tourism and environmental conservation. Ecotourism was established as the standard-bearer for the new sustainable development approach. The following three chapters discussed data and findings relative to ecotourism's influence on conservation thought, national conservation policies, and protected areas.

The present chapter synthesizes the findings of these previous chapters, analyzing the overall influence of ecotourism on conservation within the context of sustainable development. This contextual structure provides the conceptual framework necessary to discuss and analyze the research findings, and then to formulate meaningful conclusions in an integrated and cohesive manner.

257
Sustainable Development and Ecotourism

By the late 1980s, it had become clear that a new approach to conservation was needed in Costa Rica, as past actions were not working as intended. A different set of policies and programs were sought which would contribute to more effective achievement of conservation objectives, as well as other related matters of public concern. At the same time, significant change in development policies were seen as needed in order to incorporate environmental concerns. Conservation and development, long held to be competing and incompatible interests, became seen as two sides of the same coin, not only mutually compatible but actually dependent on each other. The concept for integrating these elements and providing a framework for more effective policy was sustainable development.

A number of national and international forces contributed to the formulation and support of a sustainable development model in Costa Rica. These factors, discussed in detail in Chapter 7, resulted in a more balanced approach to both conservation and development. It became a widely accepted framework within which more effective policies could be formulated and implemented.
for socio-economic development in a sustainable manner and within ecological parameters. This comprehensive and integrative approach has significantly changed public policy toward environmental conservation and development, including tourism, which were previously accomplished incrementally and separately from each other. Sustainable development has unquestionably become the vision and conceptual guide for these public policy issues in the country.

Nowhere is the nature and growth of the emerging field of ecotourism better demonstrated than in Costa Rica. It developed and has flourished there, achieving a position of pre-eminence to both developmental and conservation interests. The phenomenal rise of ecotourism in many ways was responsible for the evolution and acceptance of sustainable development as a conceptual framework for public policy.

Philosophically, ecotourism is thought of or defined in a relatively narrow, exclusive sense in Costa Rica. It is applied more broadly, however, ranging from research or education projects focused on conservation to nature-based recreational activities with little apparent conservation benefit. Most visitors to Costa
Rica are considered to be ecotourists; the terms tourism and ecotourism are generally used interchangeably and ecotourism is even frequently used in the generic sense. The consensus of opinion regarding ecotourism is very positive in the country; its value vis-a-vis conservation is perceived as high by almost everybody concerned.

The application of ecotourism in a broad, inclusive manner and its widely favorable acceptance is important to sustainable development, particularly as it applies to environmental conservation. In many respects, ecotourism has not only become synonymous with tourism in general and dominant within that industry, but it has also become the standard-bearer for sustainable development more generally. This is especially true in Costa Rica, where ecotourism is so extensive and so important to both the economy and the environment. It is perceived as the development activity best suited to the country, and increasingly accepted by a wide range of parties as necessary for effective conservation of nature and natural resources. When officials and experts in Costa Rica speak of sustainable development, they are often really referring to eco-
tourism. While sustainable development is certainly a broader concept, ecotourism nevertheless plays a key role, and is often the most important factor, in regard to the issue of socio-economic development. As such, it must interact, and in fact has interacted, closely with the formulation and implementation of conservation policy. Its influence, both directly in its own right and indirectly as the primary instrument of sustainable development, has been significant in the modern era.

**Influence of Ecotourism on Conservation**

The previous several chapters described the data and findings in regard to the influence of ecotourism on conservation thought, national conservation policy, and public and private protected areas. This section will present the important findings relative to each of these areas, so that they may be effectively tied together and subjected to scrutiny.

**Conservation thought.** Until the last few decades, environmental values and attitudes in Costa Rica were dominated by the frontier mentality of resource abundance and disdain for conservative actions. Further, the prevailing conservation paradigms followed the bio-
logical, balance of nature line of thought and corresponding protected area models. A variety of archival sources, interviews and questionnaire responses demonstrate some recent changes in the way many Costa Ricans think about the environment and natural resources, as well as an important paradigm shift relative to conservation and protected areas.

A key development in Costa Rica in recent years has been the growth of an environmental ethic, a significant increase in awareness and knowledge of environmental issues in general, and a belief in the need to conserve the country’s natural resources. The substantial amount of environmental education and publicity has been an important aspect of this development. Costa Rica’s natural resources and their conservation have become part of its world image and a matter of national pride. These now contribute to the national psyche in much the same way as the nation’s democratic and peaceful reputation. Ecotourism has exerted a marked influence in this regard. In particular, it has furnished an economic perspective and rationale to environmental conservation through better valuation of resources and articulation of a sustainable alternative to more de-
Structive resource uses. Ecotourism has done a great deal to rationalize, facilitate and communicate conservation of nature and natural resources. The country's environmental consciousness would be significantly less developed without the important, widespread influence that ecotourism has provided to the national psyche.

Ecotourism has made an important contribution to the changes in the dominant conservation paradigm and protected area models as well. It has done this mainly through its position as the standard-bearer and the best known and accepted element of sustainable development. Ecotourism's economic and environmental success to date provide the most easily understood and accepted example of what sustainable development is all about. It has facilitated and accelerated changes, within the framework of sustainable development, in how conservation measures and protected area establishment and management are accomplished. The gradual shift away from the biological, balance of nature perspective of conservation to a more holistic and socio-economically relevant one represents a paradigm change of great import. It is resulting in conservation policies and protected areas that are different not only in terms of
their relevance to Costa Rican society, but to their probable effectiveness as well. This further reflects the significant role of sustainable development, with ecotourism leading the way. With the success of ecotourism to date and its perceived potential for future success, there is a strong likelihood of its continuing influence on conservation thought. This may lead to a more complete formulation of an environmental or conservation ethic in Costa Rica and a more comprehensive application of the new, still evolving conservation paradigm and protected area models.

Conservation policy. National strategies, statutes, decrees, institutional changes, and other administrative actions constitute what is described here as conservation policy. All of these elements of conservation have a different character than before the modern era, due in part to the influence of sustainable development and especially ecotourism.

The National Conservation Strategy for Sustainable Development (ECODES) provided the first articulation of a national environmental or conservation strategy in Costa Rica. It did not last long in an official policy
sense, but it has had a lasting and important impact on subsequent policy by providing a meaningful and generally accepted conceptual basis. The following administration, while not continuing ECODES as such, nevertheless adopted its underlying principle, that of sustainable development. The National Development Plan of 1994 further solidified the position of sustainable development as the basis and framework for policies relative to the rational use of resources. An explicit national conservation strategy, however, is obfuscated within this overall framework. The 1995 Organic Law of the Environment continues and codifies the theme of sustainable development, providing a comprehensive national environmental policy and conservation strategy with a conceptual and legal basis.

The implementation of the National System of Conservation Areas (SINAC) has changed administration of protected areas dramatically. It provides a very clear manifestation of the change in conservation paradigms alluded to in the previous section. In addition to consolidating administrative jurisdiction for all protected areas, SINAC embodies the principles of the new approach to conservation -- holism, integration, decen-
ralization, and public participation. Other related legal and administrative measures have been taken. Most statutes enacted in the past several years relative to resource management and conservation are clearly within the framework of sustainable development. The same is true of numerous administrative decrees and strategic plans, governmental institutional changes, establishment and functions of many non-governmental organizations (NGOs), and the country’s involvement with a number of international organizations and conventions.

Ecotourism, with its tremendous growth beginning in the late 1980s and its perceived potential for both economic development and conservation, was the driving force behind many of the above changes, and an indirect factor in others. These determinations are based on a significant amount of data collected from many sources. Archival data were extensive and formed the primary source of information and perspective, particularly those data relative to laws, decrees, planning documents, and other official material. Data from the questionnaire and interviews were also important and contributed significantly to the research findings.

Ecotourism’s contribution to ECODES and the Na-
The overriding influence of sustainable development is obvious throughout the formulation and final result of the strategic documents. In addition to its role as the standard-bearer for tourism and a key component of sustainable development, the direct role of ecotourism is specifically manifested in several places in the plans. Its influence relative to the Organic Law is not so clear, however, as ecotourism is not mentioned in that statute or its preliminary reports. Nevertheless, sustainable development, with ecotourism as a key component, forms the basis for that law.

Much of the rationale for SINAC was sustainable development, including ecotourism. The latter is identified specifically as a key factor in several instances in the conceptual design and formulation of SINAC. Ecotourism is an important and highly visible factor relative to ongoing management of the conservation areas under the new organization, as areas with high levels of visitation are the most active and economically viable. Most of these have created ecotourism programs and staffs, and are beginning to work more closely with involved private organizations, to promote additional
tourism facilities and programs within their areas. It has been especially true in the Guanacaste and Central Cordillera Conservation Areas, and is being replicated in the other areas as well.

Ecotourism, both indirectly as the driving force of sustainable development and more specifically in its own right, has been influential in many other legal and administrative measures, including associated private sector actions. This influence perhaps is seen most clearly in the reorganization of the Institute of Tourism (ICT) and its strategic plans for sustainable tourism and ecotourism, and the functions of the National Chamber of Tourism (CANATUR), the Tripartite Commission, and many of the NGOs that have been founded in recent years.

Data derived from the questionnaire and interviews support and amplify the above findings. An overall positive effect of ecotourism on conservation policy was clearly expressed by respondents. Most of them stated the view that ecotourism contributes to the formulation and character of conservation policy and has been a major influence in altering that policy for the better. This is due primarily to the success that ecotourism
has had in fostering public support, as well as that of policy-makers, for regulation of natural resources and in providing an economic justification for conservation and more rational use of resources. There is now more of a consensus toward conservation because of this sustainable economic alternative, thereby facilitating more and better conservation policies. Ecotourism has therefore led to more comprehensive, effective and relevant public policy.

**Protected areas**. Almost half of the public protected areas in Costa Rica have been established during the modern era, especially in the mid-1990s. Most of these reflect the new, emerging approach to conservation previously described. Guanacaste and Arenal National Parks are examples of this, demonstrating the model of decentralization, multiple use, and community participation. Ecotourism was cited in several instances as one of the key reasons in justifying the creation of new public protected areas in recent years. It has played a significant role in such newly established areas as Guanacaste and Arenal National Parks. The principles of sustainable development formed the foundation for these
protected areas in accordance with the new conservation approach, and ecotourism was the single strongest planning factor for their economic viability.

Administration and management of the parks and reserves have also changed significantly over the past decade. Existing areas have been enlarged or modified to conform with the changing paradigms. SINAC, with its national network of protected areas reflecting the same model principles as above, is the primary example in this regard. A number of decrees governing public use and carrying capacity have been promulgated. Visitor centers, parking areas, additional trails, publicity materials, and education programs represent some of the new or improved facilities and services. Ecotourism has been an important influence in these changes, reflecting the policy to better utilize the country's protected areas to promote tourism, for both economic and environmental purposes. The issue of substantially raising and then lowering entry fees in protected areas illustrates this impact from real and perceived perspectives. It provides a highly visible case in point, as well as a valuable learning experience, of ecotourism's actual and potential influence on park administration.
Private protected areas comprise an increasingly important component of the overall conservation system within Costa Rica, having grown rapidly during the modern era. They include small family "eco-lodges", private forests, extensive individually owned reserves, community cooperatives, and large institutionally owned reserves. It has been government policy to encourage and support these private sector initiatives through designation of national wildlife reserves of private and mixed ownership, land tax reductions or exemptions, other monetary certificates, and the use of easements or "servidumbres". SINAC itself appears to provide an effective framework for incorporating all of these public and private protected areas into a comprehensive and coordinated conservation network.

Ecotourism provides a more direct and stronger influence on private protected areas than it does on public areas. In fact, the common denominator for most private reserves appears to be ecotourism, either from inception of the protected area as its economic motivation or since that time as an economic necessity. A substantial amount of evidence, including data from the interviews and questionnaires, point to ecotourism as a
key factor in the establishment and management of private protected areas. The commercial basis for these areas, provided by tourism profits, is seen as contributing significantly to natural resource conservation.

The Los Angeles Cloud Forest Reserve is an example of a private protected area established with ecotourism as a key consideration from its beginning; in fact, it would not have been created without the promise of significant tourism receipts. The community owned and operated Santa Elena Rainforest Reserve and several recently established cooperatives are others which have attempted to cash in on ecotourism while contributing to conservation. A number of reserves which were not originally begun with ecotourism in mind have increasingly turned to this means of financial support to remain in business or expand their operations. Monteverde Cloud Forest Preserve and the Rara Avis and Hacienda Barú reserves are examples of this trend. In all of these cases, ecotourism is an important factor in the creation and/or management of the protected areas and the positive contribution which they make to environmental conservation in Costa Rica.
Synthesis and Analysis

Overall influence of ecotourism. A consolidation of the influences of ecotourism on conservation thought, national policy, and protected areas, based on the findings described in Chapters 8-10 and synthesized in the previous section, leads to a composite useful for discussion and analysis (Table 11). The degree of influence, indicated as an adjective rating, is shown for each of the seven components or key indicators of conservation discussed during the last several chapters. The rating of "moderate" signifies that ecotourism has been a direct contributing factor, among others, or an indirect factor of some importance, in the development and character of conservation policy. A rating of "significant" indicates that ecotourism has been a major factor in determining the direction and nature of conservation policy. A "strong" rating means that ecotourism has been such a key factor, and perhaps the overriding consideration, that the policy or other result would not have occurred without it.

The influence of ecotourism on environmental attitudes in general in Costa Rica is considered to be significant. The economic rationale and justification for
Table 11. INFLUENCE OF ECOTOURISM

<table>
<thead>
<tr>
<th>Component of Conservation</th>
<th>Degree of Influence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental attitudes</td>
<td>Significant</td>
</tr>
<tr>
<td>Conservation paradigms and protected area models</td>
<td>Moderate</td>
</tr>
<tr>
<td>Conservation strategy</td>
<td>Significant</td>
</tr>
<tr>
<td>Legal and administrative action</td>
<td>Significant</td>
</tr>
<tr>
<td>Institutional changes</td>
<td>Significant</td>
</tr>
<tr>
<td>Establishment and administration of public protected areas</td>
<td>Significant</td>
</tr>
<tr>
<td>Establishment and administration of private protected areas</td>
<td>Strong</td>
</tr>
</tbody>
</table>
conservation has played a particularly important role in developing an environmental consciousness and fostering greater conservation measures. Ecotourism has also had an influence on the changes in conservation paradigms and protected area models in Costa Rica. However, its influence in this regard is not as direct nor as strong. Ecotourism's key role in sustainable development provides primarily an indirect and inferential influence in this regard. Consequently, its degree of influence is rated only as moderate in Table 11.

The table depicts several components of national conservation policy. For that of conservation strategy, ecotourism is considered to have had a significant influence, although this rating may be somewhat high. Direct influence is evident in ECODES and the National Development Plan. Otherwise, it has been largely indirect in nature, even though ecotourism is an important part of sustainable development and the latter concept has formed the framework for formulation of a national strategy. In addition, many other factors have contributed to conservation strategy, especially the Organic Law. The influence on legal and administrative action is considered to be of significant degree in the table.
Although an indirect factor in some of these actions, ecotourism's direct influence is evident in a number of cases including SINAC, ICT's strategic plans, and other laws and decrees. The same degree of influence is true of institutional changes, particularly governmental reorganizations to support ecotourism and the role and functions of many NGOs. For both of these latter categories of conservation policy, the "significant" influence of ecotourism is close to warranting a higher rating.

In regard to the influence of ecotourism on establishment and administration of protected areas in Costa Rica, a difference is seen between those of public and private ownership. There is a significant degree of influence relative to public protected areas. Some of this is indirect, exerting its influence through the concept of sustainable development, especially in regard to establishment of new parks and reserves. Ecotourism's direct influence is seen more clearly in administration and management of these areas. Regulations on public use and carrying capacity, expansion of services and facilities, and the park entry fee experience are examples of this. The influence of ecotourism is
perhaps most strongly exerted in regard to private protected areas. It has been a key factor, and often the primary consideration, in establishment of these areas due to economic motivation. Additionally, the continued operation and management of private reserves depends increasingly on ecotourism revenues. Several examples of this influence were cited in the previous section.

It can be concluded from Table 11 and the accompanying analysis that, in an overall sense, ecotourism has exerted significant influence on conservation policy in Costa Rica. In most cases, this impact has been direct and apparent. In some cases, however, the impact has been more indirect and expressed through ecotourism's role as the standard-bearer for sustainable development. The data were either lacking or did not support a greater role of ecotourism in some areas of this research study. Nevertheless, it is considered likely that ecotourism has exerted more influence than the research data can empirically substantiate. This assertion is based on the indirect but pervasive role of ecotourism that was often found, as well as many indications of impact that could not be verified with empirical data. In any event, it appears that ecotourism
has been, and will continue to be, a major factor in the different approach to conservation policy that has taken place during the country’s modern environmental era and, consequently, in the resulting different character of that policy.

**Contribution to sustainable development.** The primary objective of this research was to examine the influence of ecotourism on conservation policy. Sustainable development, at least from a conceptual perspective, provided the context and framework within which to conduct this examination. However, the contribution of ecotourism and conservation policy to achieving the principles and goals of sustainable development is also an important matter of concern.

Figure 11 provides a model depicting the relevant patterns of influence among ecotourism, conservation and sustainable development. This also illustrates the contribution of ecotourism and conservation to achievement of sustainable development principles and goals. Ecotourism is seen influencing conservation policy directly, as well as indirectly through the concept of sustainable development. These patterns, shown by solid
Figure 11. Patterns of Influence: Ecotourism, Conservation and Sustainable Development
black arrows in the model, were primary concerns of this research. Reciprocal influences of conservation policy and the concept of sustainable development on ecotourism and that of conservation policy on sustainable development were not a part of the study. Neither was the issue of conservation practice, the myriad of programs resulting from policy which are interrelated with sustainable development, conservation policy and ecotourism. These relationships are represented in the model by dotted arrows. The contribution of ecotourism and conservation policy to achievement of sustainable development principles and goals is depicted by solid white arrows while the contribution of conservation practice, again not part of the study, is represented by dotted arrow.

While the achievement of sustainable development principles and goals was not measured in this study, it is believed that a number of changes in the approach to conservation in Costa Rica will contribute to that end. Formulation of an environmental ethic, within the area of attitudes, is a prerequisite to sustainable development. Directly and indirectly, ecotourism has been an important factor in changing traditional attitudes to-
ward nature and natural resources, ushering in a new approach to conservation policy more likely to lead to sustainable development. The same is true in regard to discarding, or at least evolving away from, traditional paradigms. Adoption of the new conservation paradigms and protected area models, influenced indirectly by ecotourism but heavily by the concept of sustainable development, will help achieve the desired results.

It has been demonstrated that ecotourism has also been an important factor in changing the character of national conservation policies. These strategies, legal and administrative actions, and institutional changes are largely based on sustainable development and designed specifically for its achievement. Such measures as the Organic Law of the Environment and SINAC appear to be especially key to the new approach, although time is needed to evaluate their effectiveness.

The extensive number and types of protected areas in Costa Rica, gradually becoming a national conservation system, are also critical to realizing sustainable development. The influence of ecotourism appears to be strongest in this area, particularly in regard to private reserves. The purposes and objectives for which
they are being established and how they are managed are now explicitly aimed at sustainable development. The emphasis now on a holistic and integrated approach, decentralized management, multiple use, community participation, and similar precepts are clear evidence of this. The current approach is certainly better geared toward sustainable development principles and goals than the approach used previously, and it seems more likely to achieve them. Again, time is needed to evaluate the effectiveness of this approach.

Public policy in regard to natural resource management in Costa Rica is increasingly being accomplished within the framework of sustainable development. A synthesis between conservation and development has not been achieved; however, the framework provides a basis and starting point. The situation of Costa Rica as a developing country, with an impressive stock of natural resources subject to overuse and depletion, leads to the choice of sustainable development as a logical national strategy. Within that context, conservation, already a significant part of the national consciousness, is becoming more oriented toward sustained use of natural resources. Finally, ecotourism has become an im-
portant economic and environmental force in the country, largely because the conditions were right for its success. The approach and direction of public policy relative to natural resources is clear. It would certainly appear to make sense for Costa Rica to pursue a sustainable development strategy by focusing on the significant conjunction of interests between conservation and tourism.

Two related issues merit some further discussion, albeit cautionary in nature, within the Costa Rican context. First, much of the influence of ecotourism is due to its economic perspective, furnishing an economic alternative and rationale in favor of environmental conservation. While acknowledging this important role, it is believed that too much reliance on economic values can place conservation at great risk if circumstances change. A more complete development of an environmental or conservation ethic will help to counteract this. It is noted that ecotourism has had a moderate degree of influence here as well, which will likely continue, in increasing the national environmental consciousness. Secondly, the existence of a large number of private protected areas and their growing contribu-
tion to national conservation has been discussed in some detail. Political and economic conditions in Costa Rica have favored development of this private sector "industry". Within the framework of sustainable development, particularly as manifested by SINAC and some of the other official regulatory measures, private protected areas make a positive contribution to national conservation. Care must be exercised to ensure that this framework continues and that adequate integration, both in policy and in practice, keeps the public and private sectors working toward the same ends. If they do not, it will be very difficult for the country to achieve sustainable development principles and goals.

Implementation remains a key wild card. Good policy does not always, perhaps not often, get implemented well. Many forces contribute to this -- social, economic and political factors which interact and conspire to defeat public policy. They are not necessarily intentional and pernicious, although some are, but they are real and must be dealt with if any degree of policy effectiveness is to be achieved. Reference is again made to Figure 11 and inclusion of conservation practice as an important contributor, positive or negative, to the
achievement of sustainable development goals and principles. Reference should also be made to Figure 1 in the introductory chapter. The influencing factors depicted in that model, although simply stated, are relevant in this context. All of these factors influence the effectiveness of sustainable development from the aspect of conservation policy, which has been the particular focus of this study. However, they are also important influencing factors, both positive and negative, in terms of the application of that policy.

This commentary has made the case that ecotourism has significantly influenced the direction and character of conservation policy in Costa Rica, resulting in a greater likelihood of achieving sustainable development. While the formulation of appropriate policy is an important precursor to effective action, in the final analysis it will be implementation of that policy and on-the-ground conservation practice that determines effectiveness. There are some indications that implementation of these policies is having the desired effect. An increase in citizen/community participation, especially in the recently established parks and more progressive conservation areas, appears to have led to
greater support for the protected areas and improved conservation. An expanding network of public, private and mixed-ownership protected areas, including buffer zones and corridors, is resulting in more and better conservation. The same is already proving to be true of the several "servidumbres" to date. However, it is too early to make any widespread assessment of conservation policy in the modern era in terms of its applied effectiveness. As stated previously, more time and continuing evaluation is required.

**Land Values.**

During the course of this research, the subject of land values, particularly the comparative value of forested and cleared land, arose a number of times. Some observers, such as Bien (interview 1995), stated that forested land has increased in value significantly more than cleared land over the past few years, to the point that it even exceeds the value of cleared land in some cases. Some of this can be simply explained, if true, by the economics of scarcity or diminishing resources. However, an attempt was made to at least partially explore the proposition, due to its possible relationship
with the primary objectives of this research project. Specifically, it might provide additional support for increased conservation, particularly as private protected areas, and identify further influences of ecotourism in this regard.

Data collection relative to this subject turned out to be extremely difficult. The only good way to determine land values was through analysis of land sale/purchase records maintained by the Housing Ministry’s Department of Valuation and several NGOs involved in buying land for conservation purposes. The data were very scattered and incomplete, especially for transactions of more than a few years ago. Few data at all existed prior to the late 1980s. Characteristics of the land, such as type of forest cover, crops grown, or quality of pastureland, could not be easily determined. It was evident that land such as pasture varied widely in value due to such factors as location, area, infrastructure and accessibility. On the other hand, forested land varied mainly by quality of cover; e.g., primary versus secondary forest.

Nevertheless, a small data sample from several sources was collected and analyzed. These data suggest,
based on sales transactions relative to forest and pastureland, that forested land has increased in value at almost twice the rate of pastureland over the past 5-7 years. This is a very preliminary finding due to the small sample size and the methodological problems mentioned above. It deserves further study. Additionally, it was impossible to inject the variable of ecotourism into the equation. It would be necessary to test for this also, perhaps by comparing areas of high tourism with those of little or no tourism, in order to determine possible influences of ecotourism on land values.
CHAPTER 12
SUMMARY AND CONCLUSIONS

This concluding chapter briefly summarizes the doctoral dissertation, from the introductory statement of the research problem to presentation of the findings and data analysis. The chapter also contains some concluding remarks relative to the significance of this research, degree of transferability and applicability of the findings to other developing countries, and additional research needed in this field of study.

Summary of the Dissertation

Sustainable development, or complementary socio-economic growth and natural resource conservation for long-term use, has become the leading resource management strategy among developing countries. Ecotourism is one of the primary means being utilized in these countries to achieve sustainable development, both to promote resource conservation and to contribute to socio-economic improvements. The purpose of the research was to examine the nature and pattern of the influence of
ecotourism, within the context of sustainable development, on conservation policy. The initial premise was that ecotourism has exerted a considerable degree of influence on the conservation of nature and natural resources in developing countries, and has contributed to the principles and goals of sustainable development.

Costa Rica was chosen as the study area due to its significant experience in both environmental conservation, especially its national parks system, and the rapidly growing field of ecotourism. After a substantial amount of literature review, seven months of field study was conducted in Costa Rica. The research methodology involved administration of a survey questionnaire, interviews and other discussions with a wide range of officials; further and extensive literature and archival research; and site visits to a number of public and private protected areas in the country.

Costa Rica has a high degree of diversity and complexity of climates, surface features, and biota. Its tectonic and volcanic history, combined with the location and isthmian nature of the country, have led to this variety of physical characteristics. Despite its relatively small size, it is one of the most bio-
logically diverse countries in the world. This physical landscape, however, has been affected and altered by human activity over a long period of time, particularly in recent years. A significant amount of environmental degradation, resource overuse, and pollution has taken place. Deforestation and loss of biodiversity have been subjects of particular concern.

Costa Rica's population of approximately 3.6 million has grown rapidly in recent years and will continue to grow in the near term despite a significant decrease in the birth rate. The people are more homogeneous culturally than in the other Central American countries, with a decidedly Hispanic orientation, and have a strong self-image and national pride. Politically and economically, Costa Rica is best classified as a social democracy, but within an overall framework of private enterprise and stable institutions. It has one of the higher standards of living in the region, although a significant portion of the population lives in serious poverty. The democratic tradition of the country has kept it relatively stable and peaceful in an otherwise turbulent region, and contributed to national social and economic growth.
Environmental conservation in Costa Rica became a national force from the 1960s onward. Legislative and administrative action led to significant conservation measures, and the country’s system of national parks and other protected areas gained an international reputation. Instituted primarily by a small group of professionals, conservation was guided by the principle of preservation, or saving and protecting what was left of the country’s natural resources. Tourism developed and evolved separately, even though it was always largely dependent upon the physical landscape. This industry, especially the emerging sub-field of ecotourism, came to play an increasingly important role in the national economy.

Beginning in the late 1980s, several forces coalesced to foster a new approach to conservation in Costa Rica. Sustainable development, an emerging concept that demonstrated the conjunction of interests between conservation and tourism, became the context and framework for this new approach. The rapidly growing specialization of ecotourism began to dominate the overall tourism industry in Costa Rica and has become the standard-bearer for sustainable development. It has taken on an
identity of its own, widely recognized as a significant force for both socio-economic development and environmental conservation. Ecotourism, which is so dependent upon the natural resource base, provides an economic alternative to destructive resource use and justification for conservation that did not previously exist. It is perceived as, and may actually be, the type of use or development necessary for effective resource conservation. This confluence of interests between tourism and conservation, within the context of sustainable development, has significantly changed the formulation and character of conservation policy in Costa Rica.

The research findings indicate a significant degree of influence of ecotourism over conservation policy, reflected by an overall rating of "significant" in the previous chapter. Some of the impact has been indirect or inferential due to the role of ecotourism as the primary component of sustainable development. However, much of the influence has been direct and more evident, such as toward environmental attitudes where the economic rationale has been particularly important in contributing to development of an environmental consciousness. Significant influence is evident also in
regard to national conservation policy, especially in regard to legal, administrative and institutional actions. The National Conservation Strategy for Sustainable Development (ECODES), the National System of Conservation Areas (SINAC), other key measures, and the role of many non-governmental organizations (NGOs) clearly attest to this impact. Ecotourism has been a particularly strong factor in the establishment and administration of protected areas, especially the large and increasing number of private reserves. Additionally, it is likely that ecotourism has exerted more influence than the research data substantiate due to the indirect but pervasive impact that was often found and many indications of impact that could not be verified empirically. Overall, it appears that ecotourism has been a major factor in the different approach to conservation policy taken in recent years.

This different approach to conservation in Costa Rica in the modern era, with ecotourism furnishing a great deal of the impetus, contributes significantly to sustainable development principles and goals. Formulation of an environmental ethic and the transition away from traditional conservation paradigms toward a more
holistic and integrated model are more likely to lead to sustainable development. The different character of national conservation policies is also much more likely to achieve these ends, as is the new model and national conservation system of protected areas. Conservation has become considerably more oriented toward sustainable development; that is, the sustained use of natural resources, rather than the traditional biologically-focused preservation model which proved to be ineffective. Ecotourism, with its dramatic growth and mutual dependence vis-a-vis environmental conservation, has had a significant influence on this change in conservation approach. It will likely continue to exert considerable influence on conservation policy due to its present and projected economic and environmental importance. In short, sustainable development appears to be well served by this conjunction of interests between tourism and conservation.

Concluding Remarks

This research has dealt with the influence of ecotourism on conservation policy, within the context of sustainable development, in the developing country of
Costa Rica. This area of study has not received much research attention and, consequently, there is a dearth of relevant material in the professional literature. This deficiency is apparent in both a conceptual and an applied context. It is believed that the research, by demonstrating how ecotourism impacts conservation policy, adds to the body of knowledge in this field. This has importance on a theoretical basis alone; however, it may be even more important on an applied basis, particularly for the developing countries of the world for which ecotourism is a factor. The effectiveness of public policy relative to natural resource management will be enhanced with better, more complete knowledge of the pertinent relationships between ecotourism and conservation. This should improve the likelihood of achieving sustainable development principles and goals.

The degree and manner of ecotourism's influence on conservation thought, national policies, and protected areas has been the primary focus of this study. The research findings are significant to the formulation and implementation of public policy in Costa Rica. Several other findings are believed to be significant in this regard. One is the emergence, evolution and application
of the concept of sustainable development. It has been instituted and widely accepted as the underlying basis and framework for managing natural resources, as well as other programs which impact those resources. It has brought conservation and development enterprises such as tourism together for their mutual benefit. This has had a dramatic effect on the formulation and character of conservation policy in particular, reorienting it deliberately and specifically to sustainable development. Another finding of importance concerns the significant number, variety and role of private protected areas in Costa Rica. They are making a marked contribution to conservation in the country, becoming increasingly integrated into a comprehensive national system and furthering sustainable development. Ecotourism has been demonstrated as a key factor in both the sustainable development framework and in fostering private protected areas.

The question of applicability or transferability of the research findings to other developing countries, as intended, is an important one. Costa Rica certainly has some characteristics which set it apart from many other less developed countries. It has a tradition of democ-
racy and political stability not characteristic of most countries, within or outside of its region. It also has attained a higher level of socio-economic standing than many other developing countries, as reflected by a number of social and economic measures. These attributes have given Costa Rica an advantage in several respects relative to this research study. In particular, eco-tourism has flourished in considerable measure because of the country's reputation for stability and safety. Additionally, the prominent role of the private sector in development of the ecotourism industry and protected areas has been possible because of the country's tradition of democracy and private enterprise.

Nevertheless, Costa Rica possesses far more similarities than differences to other developing nations. Its social and economic indicators are commensurate with some other less developed countries, and not much above many others. Further, it shares many unfavorable socio-economic conditions with these other countries. These include poor distribution of land ownership and tenure, inefficient patterns of land use, and a history of inappropriate economic development practices. A substantial portion of the country's population lives in
poverty. These conditions are typical of the Central American region, as well as the rest of Latin America. Despite the fact that its conservation measures have been in place for many years, Costa Rica also suffers from a deteriorating natural resource base. In regard to the political milieu, while Costa Rica’s situation has been different than that of many countries, it appears to be drawing closer in recent years. Most countries within Latin America, for example, have taken significant strides toward democratic institutions and free market economies. The overall point is that Costa Rica is not an atypical developing country, as sometimes portrayed.

A number of other developing countries also have taken some significant conservation actions in recent years, including establishment of protected areas. Many of these countries subscribe to sustainable development, although few have formalized and institutionalized it to the degree that Costa Rica has. Similarly, ecotourism is becoming or already is an important activity in several less developed countries. Guatemala and Belize are two other Central American nations where sustainable development and ecotourism have attained
some importance. With characteristics in most respects similar to Costa Rica, and others becoming more similar, conditions appear to be favorable to the development of analogous relationships between ecotourism and conservation. In this respect, the findings presented here are quite probably transferable to most developing countries. Furthermore, Costa Rica may serve as a model for other countries in formulating public policy and managing their programs. In fact, if the sustainable development-oriented approach to resource management taken by Costa Rica is effective, then it certainly should be a model to be emulated elsewhere.

Several countries in Latin America visited by the author within the past several years provide good examples of the transferability of this study's research findings. All are characterized by rich and diverse physical and biotic resources in danger of degradation and/or loss. Guatemala and Belize, mentioned above, have important ecotourism industries and have begun to institutionalize sustainable development principles and goals. In South America, Ecuador is currently in a similar position. Belize, in particular, is similar to Costa Rica in many economic and political respects. It
also has some experience with private reserves, such as the well-known Community Baboon Sanctuary. Honduras and Peru, also visited recently, are not as advanced in terms of an ecotourism industry or sustainable development. Honduras has had some experience with tourism (scuba diving) in its Bay Islands. Peru's tourism experience has been primarily associated with the cultural site of Machu Picchu. Both of these countries, however, have recently established a number of protected areas and promoted ecotourism. Both have the potential for more ecotourism and could benefit significantly from Costa Rica's experience.

The Introduction (Chapter 1) and Review of the Relevant Literature (Chapter 2) initially identified several areas in need of additional research. These related primarily to the focus of this research study; i.e., the relationship of ecotourism to the environment in a broad context, and its relationship to conservation policy in particular. The study has helped to correct that deficiency. However, more research is clearly needed, especially relative to the relationship of private protected areas to ecotourism and conservation. The issue of land values highlighted in Chapter 11 is
closely related to this subject due to its focus on comparative economic valuation. Some empirical research in this area would be very useful. Additional research, preferably on a case study basis, also would be helpful in order to supplement (or dispute) this study. The role of ecotourism in changing conservation thought, paradigms and policies would seem to lend itself particularly well to further study.

The bounds and limitations of this study, outlined in Chapter 1, identify other areas in need of research. Figure 11 in the previous chapter also indicates several of these areas. The relationships which were not a part of this study, depicted by dotted arrows in the model, lack empirical research for the most part. For example, reciprocal effects of sustainable development and conservation on ecotourism have not been studied. The impact of ecotourism on conservation practice (environmental effects) also needs a substantial amount of further study, as does its impact on economies and cultures. Additionally, it was explained earlier that this research focused on ecotourism from the perspective of foreign rather than national protected area visitation. Ecotourism by Costa Ricans is increasing in that country.
and will likely become an important factor; accordingly, this area should receive research attention. It is also noted that this study has focused on a relatively short period of time, mainly from the late 1980s to the mid 1990s, and that the situation relative to ecotourism is still evolving. It is important that research in this field of study continues in order to obtain a longer, more complete perspective. This must include study of the application and implementation of conservation policy, the importance of which was highlighted in the previous chapter.

Most importantly, the relationships and contribution of ecotourism and conservation (both policy and practice) to the achievement of sustainable development are increasingly becoming critical issues to developing countries throughout the world. They are already critical to some. Research geared toward ascertaining these patterns and roles should receive a high priority. It could mean the difference in whether or not many developing countries choose to pursue policies in support of sustainable development, the direction and character those policies take, and their effectiveness in meeting or contributing to national goals.
GLOSSARY

Altitudinal Zonation. Influence of altitude on weather and climate, particularly air temperature. In the Central American tropics, altitude is the primary temperature variable, resulting in different discernible zones including the hot lowlands (Tierra Caliente), then temperate (Tierra Templada), cold (Tierra Fria), and frozen (Tierra Helada) zones with increasing altitude.

ASCONA. Association for Conservation of Nature. Founded in 1972, it was the first environmental nongovernmental organization (NGO) in Costa Rica.

ATEC. Talamanca Association of Ecotourism and Conservation. An NGO specific to the Talamanca region, it is especially active in the southeastern part of Costa Rica.

Balance of Nature. Traditional paradigm of nature which emphasizes the stable point equilibrium of ecological systems, through community succession and attainment of a climax state. The systems are considered to be structurally or functionally complete and self-regulating.

Big Mac Factor. Author's name for one of the leading causes of deforestation in Central America, that of demand for cheap beef for the fast food industry of the developed countries (e.g., MacDonalds and its 'Big Mac'). Also called Hamburgerization of the Forest, Hamburgerization of Central America, and the Hamburger Connection.

Biodiversity. Variety and variability among living organisms and the ecological complexes in which they occur. Encompasses diversity within and among species, and among the ecological systems within a given area.
Biological Reserve. Protected area management category. A relatively unaltered protected area containing particularly vulnerable species or ecosystems which require a fairly high degree of protection and minimal interference. Costa Rica has 14 biological and natural reserves.

Biotemperature. One of the major factors used to determine life zones in the Holdridge Life Zone System. It is the average temperature at which vegetative growth takes place relative to the annual period, the range occurring between 0 degrees and 32 degrees Celsius.

Brundtland Commission. The commonly used name for the World Commission on Environment and Development (WCED), chaired by Norway’s Gro Harlem Brundtland. The Commission’s report was published in 1987 as Our Common Future.

CANATUR. Cámara Nacional de Turismo, or National Chamber of Tourism. Established in the early 1990s, performs a variety of functions including serving as a link between ICT and the tourism industry.

Canton. Municipality in Costa Rica with a municipal council and executive to administer rather limited functions and services. Similar to a county in the United States. The country has 81 cantons.

Capacity of Land Use. A methodology used to determine practicable types and degrees of utilization for different kinds of land. Typically classifies land based on its capacity (i.e., capabilities and limitations) for various uses.

Carrying Capacity. The ability of ecological communities or systems to maintain their integrity and productivity. More specifically relative to human use, the maximum number of people that a particular part of the environment (such as a protected area) can support indefinitely.

CATIE. Centro Agronómico Tropical para Investigaciones y Enseñanza, or Center for Tropical Agriculture.
Research and Education, in Turrialba, Costa Rica. One of the leading institutions of its kind in the world. Originally established as the Interamerican Institute of Agricultural Sciences in 1942.

Central America. For the purposes of this research, the countries of Panama, Costa Rica, Nicaragua, El Salvador, Honduras, Guatemala and Belize.

Central American Alliance for Sustainable Development. An organization created in the mid-1990s, consisting of all of the Central American countries. It promotes national and regional policies and programs to achieve sustainable development. Costa Rica and its president have taken an leading role in this organization.

Central Valley. The area of Costa Rica, in the center of the country between the two primary cordilleras, of approximately 800-1500 meters elevation. This valley combines good climate and soil conditions to support the majority of the Costa Rican population.

Cloud Forest. Rainforest existing in some areas of mid to higher elevations with conditions of almost continuous cloud cover and constant precipitation mainly mist. The extremely humid conditions and competition for light results in a profusion of epiphytes, more than half of forest biomass.

COMBOS. Association for Conservation and Management of Tropical Forests. An NGO actively engaged in the sustainable development of Costa Rica’s forests.

Conservation. Management of human utilization of the physical environment, its natural areas and resources, to ensure that such use is sustainable. Encompasses protection, maintenance, rehabilitation, restoration and enhancement of ecosystems and their populations, and preservation of some ecosystem components where necessary, to provide sustainable utilization.

Conservation Area. Sometimes used in a broad sense to
denote a public or private protected area. The term is primarily used here to refer to the ten regional units in Costa Rica for conservation management; consists of those protected areas and resources whose ecology and geography permit integral administration and optimal community participation for sustainable development.

Conservation Paradigm. A model of environmental conservation, such as for protected areas, that represents a particular set of values, beliefs and attitudes. This model generally reflects the ruling or prevailing thought of a society toward conservation of nature and natural resources.

Conservation Philosophy. Set of broad theories, or system of beliefs, values and techniques applicable to the environment or conservation of nature and natural resources. Also used here for ecological paradigms and their implications for conservation.

COOPERANA. A consortium of Costa Rican cooperatives which deal with ecotourism projects. This national network assists with organizing, marketing and commercializing projects operated by the cooperatives and similar groups.

Cordillera. One of several mountain ranges in Costa Rica, extending in a generally northwest-southeast direction. One of dominant landforms of significant importance to the country.

Costa Rica Expeditions. One of Costa Rica's largest tourism agencies; the first to become actively involved in ecotourism.

Debt-for-Nature Swap. An instrument for conservation in developing countries whereby some foreign debt is redeemed at a discounted price in return for specific conservation measures. Approximately $80 million of Costa Rican debt has been redeemed in this manner, and has funded several conservation measures and projects.

Development. Increasing the capacity to meet human
needs and improve the quality of human life; actions that bring resources into productive use to expand or realize potential.

Developing Country. A nation with a low standard of living, level of socio-economic indicators, and degree to which resources have been brought into productive use, relative to other nations. Also called less developed, underdeveloped, and third world countries.

ECODES. Costa Rica’s National Conservation Strategy for Sustainable Development. It was published in 1990 as a response to IUCN’s call for formulation of national strategies for conservation, but broadened and enveloped within a sustainable development framework.

Ecological Niche. Habitat and total functional role of an organism in its environment; that is, its relationship to all biotic and abiotic factors. Includes what it eats, who its predators are, and what activities it carries out.

Economic Valuation. Use or nonuse benefit allocated to a particular resource; the process of allocating economic value, particularly in an environmental context where valuation has not traditionally occurred.

Ecoregion. Geographically distinct assemblage of natural communities that share a large majority of species, ecological dynamics, and similar environmental conditions, and which require ecological interaction for survival. Basic unit in a biogeographic classification system for conservation assessment which also includes major habitat types, major ecosystem types and bio-regions.

Ecosystem. Community of organisms functioning together in an interdependent relationship with the environment which they occupy. Examples include a rainforest ecosystem or a coral reef ecosystem.

Ecotourism. An increasingly popular and common type of
non-traditional, nature-based, environmentally friendly tourism; travel in the natural environment that promotes conservation.

Environment. Surroundings of an organism including the physical and cultural conditions that affect the status and development of that organism.

Environmental Economics. Application of the principles, models and analysis of economics to the environment and natural resources. Particular emphasis is placed upon valuation/allocation of benefits and costs and economic efficiency in an environmentally sustainable market context. Has particular importance to conservation of nature and natural resources.

Environmental (or Conservation) Ethic. The collective values and beliefs of a particular society toward the environment. The term generally connotes a belief in the interrelationship between all natural things, and a feeling of respect for nature and natural resources.

Flux of Nature. Emerging paradigm of ecology which emphasizes process rather than end point; natural systems are open and contextual, a shifting mosaic of fluxes in and out of the system.

Forest Plantation. As the term is used in Costa Rica, land of at least one hectare in area and cultivated with one or more species of forest trees for production of wood.

Forest Reserve. A usually extensive forested area of known productive capacity, nationally managed for timber production within the parameters of sustainable yield and sustainability of other forest values.

Frontier Legacy. The notion of unused land and its resources as a frontier of abundance, one which can be exploited without limit or restriction and which has value only in its use. The legacy lives on after the frontier is gone.
FUNDECOR. Foundation for Development of the Central Volcanic Cordillera. A recently established NGO that promotes sustainable development in the area of the Central Cordillera. Works closely with the SINAC Central Volcanic Cordillera Conservation Area.

Horizontes. One of the leading tourism agencies in Costa Rica; actively and almost exclusively engaged in ecotourism.

Human-Environment Tradition. One of the four primary traditions or themes of geography, identified as the man-land tradition by Pattison in 1964, in which geographers are concerned with the relationships between people and their physical and cultural surroundings. Other traditions are spatial, area studies, and earth science.

ICT. Instituto de Costarricense Turismo, or Institute of Costa Rican Tourism. The ministry-level government organization with overall responsibility for tourism (including ecotourism).

InBio. Instituto de Biodiversidad, or Costa Rica Biodiversity Institute. Private research organization (albeit with substantial government support) established in 1990 to ascertain and inventory the country's biotic resources. Merck Pharmaceuticals has contracted with the institute for rights to marketable discoveries in return for financial research/conservation support.

Infrastructure. The underlying foundation for a system or enterprise. In the context of this research, refers to the structures, facilities, services, etc. required/desired for (eco)tourism.

Intertropical Convergence Zone (ITCZ). Zone of low pressure and calms along the Equator, where air carried by the trade winds from both sides of the Equator converges and is forced to rise. Significant factor in Costa Rica climate patterns, especially on the Pacific side of the country.
IUCN. International Union for Conservation of Nature and Natural Resources, now the World Conservation Union. One of the leading and largest international conservation organizations.

Latifundia. Class of landholding size begun in Central America by Spanish colonists; large landholdings of haciendas, plantations or estates devoted to commercial production. Usually extensively orient-ed monocrop agriculture or ranching on the better quality and most productive land.

Latin America. A region of the Americas of variable size, depending upon the purpose and context of regionalizing. It includes at least those former colonies of Spain, and sometimes Portugal and France, in the Americas. At its widest extent, it comprises all of South and Central America, Mexico and the Caribbean.

Legislative Assembly. Costa Rica’s unicameral national legislative body, consisting of 57 Deputies elected for four-year terms. Deputies cannot serve consecutive terms.

Life Zone. Ecological classification system developed by Holdridge. Natural set of associations in which vegetation, animal activities, climate, land physiography, geological formation and soil are all interrelated in a distinct manner. Divisions are based on the major climatic factors of heat, precipitation and moisture.

MAG. Ministerio de Agricultura y Ganaderia, or Ministry of Agriculture and Ranching.

Meseta Central. The two relatively flat sections of the Central Valley of Costa Rica, in which population is especially concentrated. The term is used in-changeably with Central Valley in everyday speech.

MIDEPLAN. Ministerio de Planificación y Económico Pol-ítico, or Ministry of Planning and Economic Policy. Responsible for national planning and economic development policy-making.
MINAE. Ministerio de Ambiente y Energía, or Ministry of Environment and Energy. Formerly MIRENEM.

MIRENEM. Ministerio de Recursos Naturales, Energía y Minas, or Ministry of Natural Resources, Energy and Mines.

Microclimate. Distinct set of climatic conditions in a local or limited regional area; differs significantly from the general climate pattern due to competing climate regimes, terrain features, etc.

Minifundia. The opposite of latifundia; class of peasant-owned small landholdings as well as communal, leased and sharecropped lands. Tends to be land of lower quality and intensively farmed for subsistence crops.

Modern Era. The period of time in Costa Rica, from the late 1980s to the present, in which a conjunction of interests between conservation and tourism has taken place. Sustainable development (led by the emerging field of ecotourism) has furnished the framework for this, resulting in significant changes in conservation policy.

Multiple Use. Concept of different, sometimes competing, uses or types of utilization of the resources and facilities of a protected area. Recognizes legitimate human uses of an area; often leads to zoning and different management categories.


National Development Plan. The national strategy and document formulated by MIDEPLAN for the development of Costa Rica. Founded on the basis of sustainable development, it also includes the national environmental policy and conservation strategy.
(from an administrative or Executive Branch perspective).

National Park. Protected area management category. A relatively extensive area not substantially altered by human activities which protects species of national or international interest, areas of scenic beauty, and sites of historical, cultural and scientific importance. Allows controlled multiple use, but prohibits extraction of resources. Costa Rica has 24 national parks and monuments.

National Parks Foundation. Organization founded in the early 1980s for the primary purpose of raising funds for protected area land acquisition.

National Wildlife Refuge. Protected area management category. An area for protection of particular species or populations of biota, usually resident or migratory fauna which are of regional, national or international interest. The area does not have to be totally natural and may be owned publically, privately, or a mixture of both.

Natural Resource. Physically occurring item; i.e., an element, material or organism existing in nature; that may be useful/necessary to human maintenance or well-being.

Natural Resource Management. Planning, direction and control of policies and programs for the utilization of natural resources. Also used here as a subfield or subset of the human-environment tradition of geographic inquiry.

Neotropical Foundation. Organization founded in the mid 1980s for the primary purpose of raising funds for protected area land acquisition. It has subsequently become one of the leading environmental conservation education and research organizations as well.

NGO. Non-governmental organization. Broadly, any organization that is not part of federal or local government. In this research project, refers primari-
ly to environmental research and conservation, as well as some development agencies.

Organic Law of the Environment. Statute enacted in 1995 which is now the legal framework for Costa Rica’s environmental policy. It provides a legal and conceptual basis for environmental and conservation policies, programs and actions.

OTS. Organization for Tropical Studies. One of the first and leading environmental NGOs in Costa Rica, a consortium of research universities with interest in tropical studies. Manages several biological research stations, including the well-known La Selva Biological Station.

Precarismo. Practice of squatting, typically by landless peasants, on public land or land owned by someone else but unused. Prevalent in Costa Rica, where the law has traditionally favored those who put land to productive use.

PLN. Partido de Liberación Nacional, or National Liberation Party. The political party established in 1951 by José Figueres; it has been dominant in Costa Rican politics since then. The more liberal of the two primary parties.

Preservation. Non-use of a natural resource in order to maintain it in its present condition or in a natural, unaltered state.

Protected Area. A site or area dedicated mainly to the protection and enjoyment of natural or cultural heritage, or to maintenance of biodiversity and ecological life-support systems. Consists of several management categories based on protected area characteristics, its management objectives, and types and degree of utilization of the area.

Protected Zone. Protected area management category. Area of forest or forested land critical to soil protection, maintenance or regulation of hydrologic regimes, or as regulatory agents of the climate or environment.
Province. Primary governmental sub-division of Costa Rica. The seven provinces have little political or administrative jurisdiction; their primary role is to serve as electoral districts for the national Legislative Assembly.

PUSC. Partido Unidad Social Cristiana, or Social Christian Unity Party. One of the two primary political parties in Costa Rica, and the more conservative of the two. Formed in the early 1980s as a coalition of previous opposition groups to the PLN.

Rio Earth Summit. The commonly used name for the United Nations Conference on Environment and Development, held in Rio de Janeiro in 1992. Attended by leaders of most of the countries in the world, the summit resulted in a legitimization and institutionalization of sustainable development as a national strategy in most developing countries.

Servidumbre. An interest in land owned by another person that entitles its holder, in return for some type of payment to the owner, to a specific use, non-use or enjoyment. Increasingly being used for conservation purposes, whereby usually the government or an NGO pays a landowner to use or not use his land in certain ways.

Shifting Cultivation. A traditional farming practice in which a section of forest is cleared and burned to enrich the soil, the land is farmed until yields fall, then abandoned for another section. The cycle is repeated when previously used sections have sufficiently regrown. Also called swidden or slash-and-burn agriculture.

SINAC. Systema Nacional de Areas de Conservación, or National System of Conservation Areas. Recently created system of regional conservation areas in Costa Rica.

Social Democracy. A political system in which many industries and services are owned/operated by the state in order to promote social objectives. The system is democratically derived and maintained,
but is managed publically rather than through pri-
ivate enterprise. Also referred to as social wel-
fare state.

SPN. Servicio de Parques Nacionales, or National Parks
Service in Costa Rica. No longer a separate orga-
nization, its functions have been incorporated
into SINAC.

Sustainable Development. Improving the quality of human
life while living within the ability of supporting
ecosystems to maintain their integrity and produc-
tivity.

Tectonic Plates. Large, rigid sections of the earth's
crust which move relative to one another. The in-
teraction and processes of folding and faulting,
usually at or near plate boundaries, are respon-
sible for much the volcanic and seismic activity and
mountain-building in the world. Particularly im-
portant in the Central American region, where sev-
eral plates converge.

Tikal Tours. One of the leading tourism agencies in
Costa Rica; became actively engaged in the early
stages of ecotourism.

Tourism. The phenomena and relationships arising out of
journeys and temporary stays of people traveling
primarily for leisure or recreational purposes.
Stay is of at least one night duration away from
the place of permanent residence.

Tripartite Commission. Organization established in the
early 1990s as a coordinative and policy recomen-
ding body. Membership consists of MINAE, ICT and
CANATUR. Has become particularly involved and im-
portant in the area of ecotourism.

Tropical Rainforest. A forest of the permanently wet
tropics, where every month is wet or there are
only short dry periods. Lowland, premontane and
montane rainforest formations exist in Costa Rica,
although in dwindling quantity due to deforesta-
tion.
TSC. Tropical Science Center. The initial, and one of the most important, environmental organizations in Costa Rica. Particularly associated with the life zone approach to environmental/ecological studies. Manages the Monteverde Cloud Forest Reserve.

UCR. Universidad de Costa Rica, or University of Costa Rica. Founded in 1940. Located in the San José suburb of San Pedro, is the largest and leading university of higher education in the country.

ULACIT. Universidad Latino América de Ciencias y Tecnología, or Latin American University of Science and Technology. Located in San José, it has a strong undergraduate program in tourism and recently established a Masters Degree program in Ecotourism.

UNA. Universidad Nacional Autonomía, or National Autonomous University. Located in Heredia, it provided administrative support for the research.

USAID. The United States Agency for International Development. It provides a significant amount of financial aid and technical assistance to developing countries.

Watershed. Area bounded peripherally by streams dividing and draining ultimately to a particular water course or body of water. The area of land drained by a common network of streams or tributaries of a major river.
APPENDIX A

SURVEY QUESTIONNAIRE

IMPACT OF ECOTOURISM ON CONSERVATION

This questionnaire is part of a research project on the effects of ecotourism on conservation policy and practice in Costa Rica. Please answer the following questions by circling the appropriate response, and furnish written responses where requested.

1. For which of the following types of organizations do you work?
   (a) National park/reserve  (e) Environmental organization
   (b) Other government agency  (f) Tourism agency
   (c) Private reserve  (g) Other ____________________________
   (d) Academic/research institution

2. Which of the following concepts best describes ecotourism in natural areas?
   (a) Travel motivated by nature; positive contribution to conservation; minimal ecological impact
   (b) More general travel including natural areas; based on recreation but environmentally-conscious; plus (a)
   (c) Any recreational or casual travel in natural areas; plus (a) and (b)

For Questions 3-8, rate the effects or impact of ecotourism using the following scale:
   (a) Strong positive effects
   (b) Some positive effects
   (c) No significant effects
   (d) Some negative effects
   (e) Strong negative effects

   NOTE: Please give specific examples for your responses in the space provided with each question

3. What are the effects of ecotourism on conservation policy (laws, regulations, strategies, etc)?
   (a)  (b)  (c)  (d)  (e)
4. What are the effects of ecotourism on your attitude with respect to nature and natural resources (need for conserving resources, use vs preservation, etc)?
   (a) (b) (c) (d) (e) 

5. What are the effects of ecotourism on conservation education (public awareness, support for conservation, etc)?
   (a) (b) (c) (d) (e) 

6. What are the effects of ecotourism on establishment of protected areas (number, type, situation, etc)?
   (a) (b) (c) (d) (e) 

7. What are the effects of ecotourism on administration of these areas (budget, employees, maintenance capability, etc)?
   (a) (b) (c) (d) (e) 

8. What are the effects of ecotourism on the ecology/environment of visited areas (habitat protection, soil and water quality, etc)?
   (a) (b) (c) (d) (e) 

9. Based on your responses to questions 3-8, how would you rate the overall impact of ecotourism on conservation?
   (a) Net positive  
   (b) Net negative  
   (c) Not significant/approximately balanced 

10. What are the main positive effects of ecotourism on conservation?
11. What are the main negative effects of ecotourism on conservation?

12. What portion of the visitors to natural areas are "ecotourists"?
   (a) Less than 25%
   (b) 25% - 50%
   (c) 50% - 75%
   (d) More than 75%

13. Do you think the present level of ecotourism in Costa Rica is
   (a) too low
   (b) too high
   (c) about right

14. How effective is ecotourism in serving the interests of conservation and development?
   (a) serves conservation more
   (b) serves development more
   (c) serves both about the same
   (d) does not serve either

15. Does ecotourism help to conserve natural resources in the long-term?
   (a) yes
   (b) no
   (c) who knows?

******************************************************************************

You may return the questionnaire in the envelope provided.
Thank you very much for your participation in this survey.

******************************************************************************
APPENDIX B

QUESTIONNAIRE RESULTS

1. Overall objective responses for questions 1-9 and 12-15 (the alpha responses have been converted to numeric values for computational purposes)

<table>
<thead>
<tr>
<th>Q-1</th>
<th>Q-2</th>
<th>Q-3</th>
<th>Q-4</th>
<th>Q-5</th>
<th>Q-6</th>
<th>Q-7</th>
<th>Q-8</th>
<th>Q-9</th>
<th>Q-12</th>
<th>Q-13</th>
<th>Q-14</th>
<th>Q-15</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>d</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>b</td>
<td>1</td>
<td>5</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>b</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>b</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>-</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>5</td>
<td>b</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>6</td>
<td>b</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>d</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>5</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>8</td>
<td>d</td>
<td>1</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>9</td>
<td>e</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>10</td>
<td>e</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>11</td>
<td>d</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>12</td>
<td>d</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>13</td>
<td>d</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>14</td>
<td>d</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>15</td>
<td>d</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>16</td>
<td>d</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>17</td>
<td>b</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>18</td>
<td>b</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>-</td>
<td>4</td>
<td>1</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>19</td>
<td>b</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>20</td>
<td>b</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>21</td>
<td>e</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>22</td>
<td>d</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>23</td>
<td>d</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>5</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>24</td>
<td>f</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>25</td>
<td>c</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>4</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>26</td>
<td>e</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>27</td>
<td>c</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>28</td>
<td>e</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>29</td>
<td>a</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>30</td>
<td>d</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>31</td>
<td>e</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>32</td>
<td>a</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>33</td>
<td>a</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>34</td>
<td>e</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>35</td>
<td>e</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>-</td>
<td>1</td>
<td>4</td>
<td>1</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>36</td>
<td>a</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>37</td>
<td>e</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>38</td>
<td>a</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>39</td>
<td>g</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td>4</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>40</td>
<td>d</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>-</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>41</td>
<td>a</td>
<td>1</td>
<td>1</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>-</td>
<td>3</td>
<td>3</td>
<td>1</td>
</tr>
</tbody>
</table>
2. Specific examples given by respondents for questions 3-7

Question #3: Effects of ecotourism on conservation policies

Has fostered more and better regulation of resources; facilitated passage of conservation legislation, administrative policies and management plans (15)

Has introduced an economic value and justification to conservation; perceived as source of income to Costa Rica (10)

Has promoted sustainable development; brings development and conservation together for better and more judicious use of resources (4)

Question #4: Effects of ecotourism on attitudes toward conservation

Has raised consciousness regarding the environment and the need to protect and conserve resources (31)

Provides economic valuation and alternative source of income, including poor people in and around protected areas (13)

Demonstrates that resources can be utilized in a rational and sustainable manner (4)

Question #5: Effects of ecotourism on conservation education

Has increased public knowledge and consciousness; more people identify with the environment (22)

Demonstrates that development depends on conservation; importance and rational use of resources (7)

Demonstrates value and economic benefit of conservation to local communities, tourists and general population (4)

Has fostered education programs by the government, NGOs, tourism agencies and schools; additional degree programs in universities (3)
Question #6: Effects of ecotourism on establishment of protected areas

Has been a key factor in establishment of private and community protected areas (22)

Has fostered new public protected areas and system modifications (e.g., SINAC, buffer zones, etc.) to facilitate and take advantage of ecotourism (15)

Question #7: Effects of ecotourism on administration of protected areas

Has supported higher budget, more employees, park maintenance, more/better infrastructure (30)

(NOTE: Six of these comments were in a negative sense; i.e., the effects have been at the expense of conservation)

Has resulted in better planning for tourism; more conservation education programs (7)

Has been a key factor in setting and revising park fees (3)

---

NOTE: Question #8 was initially part of this research; however, the issue of the impact of ecotourism on the environment was subsequently deleted from the study. Therefore, no summary and analysis is provided for that question.

Additionally, no summary of Question #9 is shown here, since it does not request specific examples from the respondents but only an overall objective rating of the impact of ecotourism on conservation.
3. Most important effects of ecotourism on conservation (questions 10-11)

**Question #10: Most important positive effects**

A. Promotes environmental education and awareness, consciousness; helps teach respect for nature; motivates care for nature and natural resources (56)

B. Provides economic valuation and justification for conservation; generates incentives and resources to promote policy, research, establishment and maintenance of protected areas (43)

C. Provides economic benefits to local communities; motivates local people's acceptance and commitment (14)

D. Other (17)

Breakdown by line of work of respondents:

<table>
<thead>
<tr>
<th>LINE OF WORK</th>
<th>NUMBER OF RESPONSES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
</tr>
<tr>
<td>State protected area</td>
<td>13</td>
</tr>
<tr>
<td>Other government</td>
<td>3</td>
</tr>
<tr>
<td>Private reserve</td>
<td>4</td>
</tr>
<tr>
<td>Academic/research</td>
<td>13</td>
</tr>
<tr>
<td>Environmental orgn</td>
<td>8</td>
</tr>
<tr>
<td>Tourism agency</td>
<td>10</td>
</tr>
<tr>
<td>Other</td>
<td>5</td>
</tr>
<tr>
<td>TOTAL</td>
<td>56</td>
</tr>
</tbody>
</table>

* Number of responses exceeds number of questionnaires completed since the respondents could identify more than one positive effect
Question #11: Most important negative effects

A. Deleterious impact to the environment and natural resources; i.e., pollution, overuse, alteration, damage, destruction (62)

B. Pseudo-ecotourism; insufficient planning and controls; inadequate management and infrastructure to handle increased visitation; lack of tourism industry support (34)

C. Deleterious impact on local communities; e.g., lack of economic benefits, cultural change, etc. (16)

D. Other (5)

Breakdown by line of work of respondents:

<table>
<thead>
<tr>
<th>LINE OF WORK</th>
<th>NUMBER OF RESPONSES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
</tr>
<tr>
<td>State protected area</td>
<td>14</td>
</tr>
<tr>
<td>Other government</td>
<td>7</td>
</tr>
<tr>
<td>Private reserve</td>
<td>7</td>
</tr>
<tr>
<td>Academic/research</td>
<td>12</td>
</tr>
<tr>
<td>Environmental orgn</td>
<td>11</td>
</tr>
<tr>
<td>Tourism agency</td>
<td>4</td>
</tr>
<tr>
<td>Other</td>
<td>7</td>
</tr>
<tr>
<td>TOTAL</td>
<td>62</td>
</tr>
</tbody>
</table>

* Number of responses exceeds number of questionnaires completed since the respondents could identify more than one negative effect.
APPENDIX C

DISTRIBUTION OF QUESTIONNAIRES

1. Ministry of Environment and Energy

   Environmental Controller
   National System of Conservation Areas

   Distributed: 38
   Completed: 22

2. Other Government Agencies

   Costa Rican Institute of Tourism
   Ministry of Planning and Economic Policy
   Ministry of Public Works and Transport (Institute of Geography)

   Distributed: 12
   Completed: 9

3. Academic Institutions

   Latin American University for Science and Technology
   (Department of Tourism)
   Latin University (Department of Biology, Department of Tourism)
   National University (Regional Wildlife Management Program for Mesoamerica and the Caribbean, School of Environmental Sciences, School of Geographic Sciences, School of Political Science)
   State University at a Distance (Department of Natural Sciences)
   University of Costa Rica (Department of Geography, School of Biology, School of Law)

   Distributed: 26
   Completed: 15
4. Research Institutions

Center for Environmental Studies
Center for Tropical Agriculture Research and Education (CATIE)
Costa Rican Institute of Biodiversity (InBio)
Organization for Tropical Studies (OTS)
Tropical Science Center (TSC)

Distributed: 10
Completed: 6

5. Private Reserves

Albergue Montaña Maguil
Arenal Observatory
Buena Vista Lodge
Eco-Era
Hacienda Barú
Hacienda el Rodeo
Hacienda La Pacífica
Hotel Villa Blanca/Los Angeles Cloud Forest
La Amistad Lodge
La Laguna del Lagarto Lodge
La Marta Wildlife Refuge
Lapa Rios Resort
La Providencia
Las Cruces Biological Station
Las Cusingas
La Selva Biological Station
Mareno Biological Station
Monteverde Cloud Forest Preserve
Punta Leona
Rainbow Adventures
Rancho Naturalista
Rara Avis
Refugio Curú
Rincón de la Vieja
Santa Elena Forest Preserve
Selva Verde Lodge
Teléferico

Distributed: 27
Completed: 11
6. **Travel/Tourism Agencies**

Adventure Tours  
Aero Viajes, S.A.  
Asociación Costarricense de Agencias de Viajes  
Blanco Travel  
Calypso Tours  
Central American Tours  
Cielo Azul, S.A.  
Corcovado Adventures  
Costa Rica Expeditions  
Costa Rica Nature Escape  
Costa Rica Sun Tours  
Cotur  
Ecole Travel  
Ecoscape Nature Tours  
Geotur  
Guanacaste Tours  
Horizontes de Costa Rica  
Ilan-Ilan  
Infotur Vacation  
J.M. Tours  
Jorge Leon e Hijos  
Munditur  
Otec Tours  
Panamericana  
Ríos Tropicales  
San Jose Travel  
Senderos de Costa Rica  
Sol Tropical Tours  
Swiss Travel  
Tam, S.A.  
Tikal  
Turavia  
Viajes Colon

Distributed: 33  
Completed: 15

7. **Environmental Organizations**

Ambio Foundation  
Association ANAI  
Association for Conservation and Development of the  
Escazú Hills (CODECE)
Association for Conservation and Management of Tropical Forests (COMBOS)
Association for Conservation of Nature (ASCONA)
Association for Conservation of the Natural Resources of Costa Rica (ACORENA)
Association for Protection of Trees (ARBOFILIA)
Association of Volunteers for Service in Protected Areas (ASVO)
Center for Environmental and Natural Resource Law (CEDARENA)
Costa Rica Federation for Environmental Conservation (FECON)
Costa Rica Foundation for Conservation of Nature (AHORA)
Ecological Association of Costa Rica (AECO)
Foundation for Environmental Education (FUNDEA)
Gran Carara Foundation
Iriria Tsochok Foundation
Monteverde Conservation League
Monteverde Institute
National Parks Foundation
Neotropical Foundation
Preservationist Association of Wild Flora y Fauna (APREFLOFAS)
San Ramon Association for Conservation of the Environment (ARCA)
Talamanca Association of Ecotourism and Conservation (ATEC)
YISKI Group

Distributed: 23
Completed: 7

8. Other Non-Governmental Organizations

Association of Development and Ecology
Association of Ecodevelopment
Costa Rica Development Corporation (CODESA)
Department of Responsible Tourism (ICAS)
Foundation for Development of the Central Volcanic Cordillera (FUNDDECOR)
Foundation for Ecotourism
Foundation for Sustainable Ecodevelopment for Costa Rica and Central America (FEDESCA)
Foundation of the Americas for Tourism and Regional Development (FUNATUR)
National Chamber of Tourism (CANATUR)
Natural Tropical Resources Consultants
Research Corporation for Socio-environmental Development (CIDESA)
Review of Tourist Professionals
The New Key to Costa Rica Guidebook
Tourism and Conservation Consultants
Volunteers in Research, Development and Environment (VIDA)

Distributed: 17
Completed: 7

9. International Organizations

Canada International Development Agency
Caribbean Conservation Corporation
Conservation International
Denmark International Development Agency
Fundación Verde Centroamérica
Germany International Development Agency
Inter-American Development Bank
Norway International Development Agency
Proyecto Ambiental para Centro América (PACA)
United Nations Development Program (UNDP)
United Nations Education, Science and Culture Organization (UNESCO)
U.S. Agency for International Development (USAID)
Wildlife Conservation Society
World Bank
World Conservation Union (IUCN)
World Ecotourism Society
World Wildlife Fund (WWF)

Distributed: 18
Completed: 9
APPENDIX D

INTERVIEW GUIDE

I. INTRODUCTION
   . Introductions
     . Purpose and context of interview
     . Name of interviewee; position, organization, address, telephone

II. STATE OF ENVIRONMENT
   . Primary/important environmental characteristics in Costa Rica?
   . Current state and evaluation of environment?
   . How has it changed and why? Primary problems, concerns, threats?
   . Public's attitude toward environment? Government's?
   . Attitudes and actions changed/changing?

III. CONSERVATION
   . How has conservation developed in Costa Rica?
   . Characterize Government policies on conservation?
   . Characterize implementation? Complementary or not?
   . Public's attitude toward conservation?
   . Primary conservation model? Has it changed and why?
   . Is conservation effective? Strengths and weaknesses, problems?

IV. ECOTOURISM (context)
   . How do you define ecotourism? What is its context?
   . Are there different kinds and situations?
   . How does ecotourism differ from traditional tourism?
   . Official view of ecotourism? Public's view?
V. **ECOTOURISM** (impact)
   .Effects/impact of ecotourism in the following areas?
     .Specifics, examples?
       - conservation policies
       - attitudes toward conservation
       - conservation awareness/education
       - establishment of protected areas
       - management of protected areas
       - environmental effects at visited sites

VI. **SUSTAINABLE DEVELOPMENT**
   .What does sustainable development mean?
   .Is it a valid and important goal/strategy?
   .Does ecotourism contribute to SD? How and why?
   .Does ecotourism serve interests of both development and conservation?
   .Public vs private reserves, programs, actions, etc?
   .Within SD context - too little or too much eco-tourism?
   .Will ecotourism help conservation and SD in long term?

VII. **MISCELLANEOUS**
   .Overall summarization and prognosis?
   .Other comments, remarks, concerns?
   .Key information/research needs?
APPENDIX E

REGISTER OF INTERVIEWS

Ana L. Báez
President, Tourism and Conservation Consultants
Tibás, Costa Rica
15 February 1996

Amos Bien
Owner, Rara Avis
(President, Costa Rica Association of Private Reserves)
San José, Costa Rica
10 December 1995

Mario A. Boza
Director, Mesoamerican Region
Wildlife Conservation Society
San Pedro, Costa Rica
2 March 1996

Guillermo Brenes
Professor, Department of Geography
University of Costa Rica
San Pedro, Costa Rica
11 December 1995

Gerardo Budowski
President, World Ecotourism Society
(Director of Natural Resources, University of Peace)
Curridabat, Costa Rica
8 February 1996

Jorge Campos
Professor, School of Biology
University of Costa Rica
(Coordinator, Program of Environmental Studies)
San Pedro, Costa Rica
8 December 1995
Rodrigo Carrazo
Owner, Los Angeles Cloud Forest Preserve
(Ex-President of Costa Rica)
Escazú, Costa Rica
23 April 1996

Miguel Cifuentes
Regional Director, World Wildlife Fund
Turrialba, Costa Rica
23 February 1996

Jack Ewing
Owner, Hacienda Barú Wildlife Reserve
Dominical, Costa Rica
9 March 1996

Michael Kaye
Owner, Costa Rica Expeditions
San José, Costa Rica
6 May 1996

Enrique Lahmann
Director, Meso-American Region
World Conservation Union
Moravia, Costa Rica
29 February 1996

Terry Pratt
Travel Consultant, Horizontes de Costa Rica
San José, Costa Rica
27 February 1996

Jacques Quillery
Executive Director, Foundation for Development of the
   Central Volcanic Cordillera
Moravia, Costa Rica
29 February 1996

Gabriel Rivas
Ecotourism Officer, Ecological Association of Costa
   Rica
San José, Costa Rica
21 February 1996
Bary Roberts
Owner, Tikal Tours
(Board of Directors Vice-President, Costa Rican Institute of Tourism)
San José, Costa Rica
19 April 1996

Carlos Manuel Rodríguez
Sub-Director, National System of Conservation Areas (SINAC)
Ministry of Environment and Energy
San José, Costa Rica
31 January 1996

José María Rodríguez
Environmental Policy Coordinator
Organization for Tropical Studies
Moravia, Costa Rica
25 January 1996

Cecilia Sánchez
Director, Department of Planning
Costa Rican Institute of Tourism
San José, Costa Rica
13 February 1996

Jane Segleau Erle
Owner, Las Cusingas
Guápiles, Costa Rica
17 March 1996

Alvaro Ugalde
Environmental Advisor, United Nations Development Program
Pavas, Costa Rica
21 February 1996

Emilio Vargas
Professor, School of Environmental Sciences
National University
Heredia, Costa Rica
20 March 1996
Christopher Vaughn
Regional Wildlife Management for Mesoamerica and the Caribbean Program
National University
(Editor, Journal of Neotropical Wildlife)
Heredia, Costa Rica
13 December 1995

José Villa
Chief, Protected Area Program
Tropical Agriculture Center for Teaching and Research
Turrialba, Costa Rica
23 February 1996

Victor Villalobos
Sub-Director, Controloría Ambiental
Ministry of Environment and Energy
San Pedro, Costa Rica
15 May 1996

Robert Wells
Attorney, Center for Environmental and Natural Resource Law
San Pedro, Costa Rica
27 February 1996
APPENDIX F
OTHER CONTACTS/DISCUSSIONS

Gerardo Aguero
Administrator, Cirripó National Park

Laura Anderson
Chief of Ecotourism
Cabo Blanco Absolute Nature Reserve

Gustavo Arias Navarro
Protected Areas Coordinator
Amistad Pacific Conservation Area, SINAC

Omar Arrieta
Director, School of Geographic Sciences
National University

Ann Becher
Journalist
(Co-author, The New Key to Costa Rica)

Fernando Bermúdez
Chief of Protected Areas, SINAC

Rafael Bolaños
Director, Monteverde Cloud Forest Reserve

Maria Marta Calvo
Executive Director, Costa Rican Tourism Council

Karla Ceciliano
National Parks Foundation

Juan Humberto Cevo
Advisor to the President
Latin American University of Science and Technology
Eduardo Chamorro  
Coordinator of Protection  
Tortuguero Conservation Area, SINAC

Ronald Chávez  
Administrator, Carara Biological Reserve

Olga Corrales  
Environmental Officer  
Regional Office of The World Bank

José Courrau  
Advisor to the Director, SINAC

Astrid Cremers  
Owner, Ecole Travel Agency

Gina Cuza  
Administrator, Cahuita National Park

Edwin Cyrus  
Director, Amistad Atlantic Conservation Area  
SINAC

Carlos Elizondo  
Director, Department of Geography  
National Geographic Institute

Luis Fallas  
Chief, Sustainable Development Unit  
Ministry of Planning and Economic Policy

Pascal Girot  
Professor, Department of Geography  
University of Costa Rica

Carlos Granados  
Director, Department of Geography  
University of Costa Rica

Schuyler Greenleaf  
Research Program Coordinator  
Caribbean Conservation Corporation Biological Station
Carlos Herrera Arguedas  
Sub-Director, Foundation for Development of the Central Volcanic Cordillera

Guillermo Jiménez  
Director, Central Pacific Conservation Area  
SINAC

Earl Junier  
Administrator, Gandoca-Manzanillo National Wildlife Refuge

Eduardo Leiton Rodríguez  
Director, School of Tourism  
Latin American University of Science and Technology

Lorena López  
Department of Valuation  
Ministry of Housing

Stephen Mack  
Attorney  
Center for Environmental and Natural Resource Law

Tirso Maldonado  
Director, Center for Environmental Studies and Policies  
Neotropical Foundation

Andrew Michael Maxey  
Program Officer  
United States Agency for International Development

Guisselle Méndez Vega  
Ecotourism Specialist, Guanacaste Conservation Area  
SINAC

Eduardo Mora Castellano  
Professor, School of Environmental Sciences  
National University  
(Also -- Editor, Ambien-Tico)

Manuel Morales  
Department of Valuation  
Ministry of Housing
Carlos Morera Beita
Professor, School of Geographic Sciences
National University

Marco Tulio Picado
Biologist, Department of Natural Resources
Costa Rican Institute of Tourism

Juan Carlos Perez Herra
Adjunct Director, International Cooperation/Relations
Ministry of Environment and Energy

Zdenka Piskulich
Attorney
Center for Environmental and Natural Resource Law

Alfio Piva
Sub-Director, Institute of Biodiversity

Manuel Ramirez
Resident Director, Conservation International

Catherine Rideout
Research Program Coordinator
Caribbean Conservation Corporation Biological Station

Oscar Rocha
Director, School of Biology
University of Costa Rica

Silvia Rodriguez
Professor, School of Environmental Sciences
National University

Alberto Sánchez
Biologist, Department of Natural Resources
Costa Rican Institute of Tourism

Roxana Silman
Executive Director, Costa Rica
Caribbean Conservation Corporation

Joseph Tosi
Consultant, Tropical Science Center
Adrian Ugalde
Administrator, Tapantí National Park

Gilbert Vargas Ulate
Professor, Department of Geography
University of Costa Rica
APPENDIX G

PROTECTED AREAS VISITED

Public Protected Areas
Tapanti National Park (3 February 1996)
Irazú National Park (4 February 1996)
Vulcán Poás National Park (11 February 1996)
Tortuguero National Park (24-25 February 1996)
Carara Biological Reserve (6-7 March 1996)
Manuel Antonio National Park (8 March 1996)
Ballena National Marine Park (10 March 1996)
Chirripó National Park (13 March 1996)
Cahuita National Park (15 March 1996)
Gandoca-Manzanillo National Wildlife Refuge (16 March 1996)
Cabo Blanco Absolute Nature Reserve (27 March 1996)
Las Baulas National Marine Park (29 March 1996)
Tamarindo National Wildlife Refuge (30 March 1996)
Rincón de la Vieja National Park (31 March 1996)
Santa Rosa National Park (1 April 1996)
Palo Verde National Park (2 April 1996)
Braulio Carillo National Park (5 April 1996)

Private Protected Areas
La Selva Biological Station (9 February 1996)
Dr. Archie Carr Wildlife Refuge/Caribbean Conservation Corporation Biological Station (23-24 February 1996)
Hacienda Barú Wildlife Refuge (9 March 1996)
Las Cruces Biological Station (11 March 1996)
Las Cusingas Private Reserve (17 March 1996)
Monteverde Cloud Forest Preserve (22-23 March 1996)
Santa Elena Rainforest Reserve (24 March 1996)
BIBLIOGRAPHY


Báez, Anna. 1996. Interview by author, 15 February, Tibás, Costa Rica


Bien, Amos. 1995. Interview by author, 10 December, San José, Costa Rica


______. 1996. Interview by author, 2 March, San Pedro, Costa Rica


Campos, Jorge. 1996. Interview by author, Sabanilla, Costa Rica


Carrazo, Rodrigo. 1996. Interview by author, 23 April, Escazú, Costa Rica


352
Lowman, 69-86. Chichester, UK: John Wiley & Sons, Ltd


Cifuentes, Miguel. 1996. Interview by author, 23 February, Turrialba, Costa Rica


1996a. Aprobación del Convenio Regional para el Manejo y Conservación de los Ecosistemas Naturales Forestales y el Desarrollo Plantaciones Forestales, Ley No. 7572. San José, Costa Rica: La Gaceta No. 47 (6 de marzo)


354
1993b. Decreto No. 22550. San José, Costa Rica: La Gaceta No. 193 (8 de octubre)
1993c. Estrategia Global de Desarrollo para el SINAC. San José, Costa Rica: MIRENEM, Servicio de Parques Nacionales
1994b. Decreto No. 23547. San José, Costa Rica: La Gaceta No. 154 (16 de agosto)
1994c. Decreto No. 23548. San José, Costa Rica: La Gaceta No. 154 (16 de agosto)


Ewing, Jack. 1996. Interview by author, 9 March, Dominican, Costa Rica

356


Sustainable Option?, eds. Erlet Cater and Gwen Lowman, 177-94. Chichester, UK: John Wiley & Sons, Ltd


Holdridge, L.R. 1967. Life Zone Ecology. San José, Costa Rica: Tropical Science Center


Rica. San José, Costa Rica: Editorial Universidad de Costa Rica


Kaye, Michael. 1996. Interview by author, 6 May, San José, Costa Rica


Lahmann, Enrique. 1996. Interview by author, 29 February, Moravia, Costa Rica


360
Zealand: University of Auckland and East-West Center, Hawaii


Costa Rica: CEDARENA


Mora Castellano, Eduardo. 1991. Los Pies de Barro de ECODES. Ciencias Ambientales 7: 123-8


Panayotou, Theodore. 1995. Conservation of Biodiversity and Economic Development: The Concept of Transfer-


Pratt, Terry. 1996. Interview by author, 27 February, San José, Costa Rica


Roberts, Bary. 1996. Interview by author, 19 April, San José, Costa Rica

Rodríguez, Carlos Manuel. 1996. Interview by author, 31 January, San José, Costa Rica

Rodríguez, José Maria. 1996. Interview by author, 25 January, Moravia, Costa Rica


365


Sánchez, Cecilia. 1996. Interview by author, 13 February, San José, Costa Rica


366

Segleau Erle, Jane. 1996. Interview by author, 17 March, Guápiles, Costa Rica


_______. 1996. Interview by author, 21 February, Pavas, Costa Rica


Vargas, Fredy. 1995. La Ley Orgánica del Ambiente y la institucionalidad para el desarrollo sostenible. Ambien-Tico 36: 8-11

cos de America Latina


______. 1996. Interview by author, 20 March, Heredia, Costa Rica


Vaughn, Christopher. 1995. Interview by author, 13 December, Heredia, Costa Rica


Villa, José. 1996. Interview by author, 23 February, Turrialba, Costa Rica


