

SUMMARY OF SITE VISIT: INBIO

Guide: Andrea Borel

Rapporteurs: Elena Mateo, Lawrence Pratt , and Claudio Torres Nachon

1 INTRODUCTION

INBio is a government-created non-profit scientific institution with a mission to serve the public good. INBio's mission is to promote a new awareness of the value of biodiversity, and thereby achieve its conservation and use to improve the quality of life. It promotes the wise management and use of Costa Rica's biotic wealth through the development and distribution of information on species, genes and ecosystems. INBio generates knowledge about biodiversity. It communicates and promotes this information in many formats designed to be responsive to a broad spectrum of national and international users. INBio's activities support the spiritual, social and economic development of Costa Rican society in equilibrium with the environment. INBio's mission is carried out through:

- Biodiversity inventory, with emphasis on our national protected areas
- Search for sustainable uses of biodiversity by any and all social sectors, and promotion of these uses
- Organization and administration of biodiversity information
- Transfer and dissemination of biodiversity knowledge

INBio's headquarters, and its new exhibition centre "INBio Parque" are located 4km from San Jose in the town of Santo Domingo de Heredia.

2 BACKGROUND ON COSTA RICAN BIODIVERSITY

The tropical zones of the American

continent, the Neotropics, contain more species than other tropical regions of the world and, definitely, many more species than the Planet's temperate and cold zones. Costa Rica has been considered one of the most diverse regions and it is estimated that 6% of all living species are found here, even though this country comprises only 0.01% of the global territory.

When comparing Costa Rica with large countries well known for their biological resources, such as Colombia or Brazil, the countries great concentration of biodiversity becomes evident. For example, if we consider the number of species for every 10,000 km², Costa Rica has 295 tree species, while Colombia has 35 species and Brazil, 6.

Out of the 500,000 species estimated for the country, more than 87,000 (17.4%) have been described. Over 79% of these species are arthropods. Plants comprise another important group, of which some 10,979 (91%) species have been described. Such data indicate that out of the entire biodiversity described in the world, approximately 6% belongs to Costa Rica. At present, 98.8% of vertebrates (excluding fish), close to 90% of plants and 60% of fish have been described. However, out of the most diverse group (arthropods), less than 20% of species have been described. The same goes for other invertebrates, excluding mollusks. Groups such as fungi, bacteria and virus are almost unknown, since more than 98% of expected species are yet to be described.

3 NATIONAL BIODIVERSITY PROGRAM

The country has made enormous progress in this direction. During the last

four decades, the National Parks System has been consolidated and complemented by other types of protected areas; all together, these represent 25% of the national territory. The creation of the Ministry of National Resources, Energy and Mines (MIRENEM) —now Ministry of Environment and Energy (MINAE), helped integrate all activities related to the management and conservation of the country's natural resources. Additionally, the concern that these resources be managed adequately led to national consensus to form a suitable structure for this purpose, called the National System of Conservation Areas (SINAC). SINAC is under the direct responsibility of MINAE, with support and participation of certain private organizations.

Moreover, Costa Rica has assumed the task of developing the National Biodiversity Program, aimed at conserving most of the country's existing biodiversity through the sustainable and equitable utilization of these resources. The program works according to the following strategy:

- saving representative samples of Costa Rica's biodiversity through the establishment of protected wildlands administered by SINAC — with support of several conservation NGOs and the National System of Private Reserves;
- increasing knowledge about the existing biodiversity, particularly within the protected areas. This process is carried out by universities, the National Museum, scientists and the National Biodiversity Institute (INBio), among others;
- searching for sustainable and rational uses of such biodiversity. Participants in this search are institutions such as the Clodomiro Picado Institute, the Tropical Agronomical Center of Research and Education (CATIE), INBio and several universities, among others.

NOTE: This national program is based on

the framework defined at the international level in "The Global Biodiversity Strategy" (WRI, IUCN, UNEP, 1992) and the June 1992 United Nations Conference on Environment and Development ("Earth Summit"), celebrated in Rio de Janeiro, Brazil.

4 BIOPROSPECTING AND INTELLECTUAL PROPERTY

A primary premise to the mission of INBio is that biodiversity will be conserved only if the areas protected generate enough intellectual and economic income to sustain conservation efforts and to offset revenue foregone from other potential uses. One way to generate this kind of intellectual and economic income is through bioprospecting. An express goal of INBio is to use bioprospecting to "generate income from Costa Rica's conservation areas so as to contribute to Costa Rica's wild land management costs" as well as to the country's GNP.

Profiting from biodiversity resources in this way is conditioned on the Costa Rican government's assertion of property rights over the resources. Intellectual property rights for "improved genetic and biochemical resources" have existed for decades. Ownership interests in unimproved genetic resources, however traditionally have been understood in the context of the "common heritage doctrine". The essence of the common heritage doctrine is that wild species are considered "ownerless, open-access resources". Bioprospecting involves "wild resources with commercial potential," placing the collected specimens somewhere in between an intellectual property rights system and a property rights system based on the common heritage doctrine. To accommodate the type of resource valuable bioprospecting, the Biodiversity Convention affirms a country's national sovereignty over its bio-

diversity resources.

The Convention also asserts, however, that source countries are obliged to facilitate access to their biodiversity resources, while all countries-owners of biodiversity resources as well as beneficiaries-are obliged to share the economic benefits from biodiversity. It is on this basis that INBio, vested with the authority over Costa Rica's biodiversity-rich Conservation Areas, has been able to halt what had been a one-way bioprospecting process, and transform the process into a two-way commercial exchange, allowing Costa Rica as the source country to profit from its natural biodiversity resources.

In addition to profiting from facilitating the commercial transfer of biodiversity resources in a non-destructive manner, INBio also is able to profit from the value it can add to a party's bioprospecting efforts. The National Biodiversity Inventory and the trained INBio staff transform haphazard bioprospecting into an efficient, organized, and focused endeavour. This type of arrangement has been captured in contractual relationships between INBio and parties such as pharmaceutical and biotechnological companies interested in utilizing Costa Rica's biodiversity resources. Significantly, INBio is "fully empowered by the Costa Rican government to enter into contracts and agreements with national and international institutions and individuals".

5 MODEL COMMERCIAL AGREEMENTS

In September, 1991, INBio and US-based pharmaceutical company Merck, Sharp and Dohme, Inc. entered into a landmark two-year contractual relationship anchored on sustainably developing Costa Rica's rich biodiversity resources through bioprospecting. Under the terms of the deal, which the parties renewed in 1993 and again in 1996, INBio provided Merck

with "chemical extracts from wild plants, insects, and micro-organisms" primarily from Costa Rica's conservation areas. Using these chemical extracts, Merck hoped to develop or find clues that would lead to developing a new medicine. In exchange, Merck paid INBio an up-front fee of US\$1 million, donated US\$135,000 worth of equipment for use in chemical extraction, and sent two natural products chemists to set up the facilities necessary for chemical extraction and to train INBio scientists in the extraction process. In addition, INBio would receive a royalty from any commercially marketable drug developed from a compound it provided. Although the percentage of the royalty is confidential, it is widely believed to be between one and three percent of net sales. Because drug development usually takes as long as ten to fifteen years and costs between US\$300 to 400 million, the possibility of a royalty obviously is considered a long-term, prospective benefit of the contract.

INBio and Costa Rica benefit in several other ways from this contract. One is the relationship with Merck is non-exclusive in that INBio is permitted to enter into agreements with other pharmaceutical companies, or other parties interested in gaining access to Costa Rica's biodiversity. A second is that ten percent of the up-front fee and fifty percent of any royalties go to the Costa Rican government's national park fund to support conservation efforts. This aspect of the relationship is significant, because it implies that conservation of the biodiversity resources is valuable in the market. Contracts that create a demand for species samples also create collection-related jobs for Costa Ricans. Although less tangible than the above benefits, this deal also has generated positive public relations for Merck; in 1993, the National Wildlife Federation bestowed its Environmental Achievement Award upon Merck for its work toward sustainable

development as represented by its relationship with INBio.

Capitalizing on the positive exposure from its relationship with Merck, INBio has since entered into several contractual relationships with other companies. The set of criteria used in the Merck agreement is the same for every new agreement thereafter: access, compensation, transfer of technology, and training, and sustainable uses. If the company does not meet one or more of these criteria, then the potential research agreement is not carried out.

Source: Hunter, Christopher J, *Sustainable bioprospecting: Using private contracts and international legal principles and policies to conserve raw medicinal materials*, Boston College Environmental Affairs Law Review, Newton, fall 1997.

6 DISCUSSION QUESTIONS AND ISSUES

- Could the INBio model of bioprospecting be replicated in other countries? What are the legal, physical and other barriers and opportunities?
- Can bioprospecting agreements and similar mechanisms serve conservation goals in other developing countries? Is it or could it be a sufficient solution to conservation issues in other parts of the world?