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Conservation of Medicinal Plants in Central America and the Caribbean

The issues of medicinal plant conservation have been the focus of many formal and informal discussions at national and international forums, seminars, workshops, conferences and congresses in the last 10 years. Many actions are recommended in declarations and documents like the Guidelines on the Conservation of Medicinal Plants (1993). From the global perspective, many questions relating to the conservation status of medicinal plants still remain unanswered. It is certainly a long way between the documents and the practical implementation of the proposed actions. Various conservation methods were mentioned in the past by many authors and are being repeated at present. These methods include protection of wild species *in-situ*, cultivation in botanical gardens, collection of germplasm, for establishment of germplasm banks, public information campaigns and others. Can the efforts of institutions, the scientific community and community based projects have a real impact, toward the conservation of medicinal plants? In a pragmatic way, Caribbean and Central American countries are adopting common policies on medicinal plant conservation and establishing collaborative projects and appropriate agreements for research programs in order to achieve a new status for the protection of medicinal plants diversity. Regional cooperation in ethnobotanical and, taxonomic studies, scientific validation of the significant use of medicinal plants and development of conservation activities are being encouraged. An example of this cooperation is the TRAMIL Program (Scientific Research on Medicinal Plants in the Caribbean Basin) coordinated by endocaribe since 1982. TRAMIL has focused on conserving traditional community knowledge of folk remedies, and providing scientific validation of safety and

efficacy needed to encourage national health policies that include traditional medicine in primary health care programs. The main objective of the TRAMIL Program has been validation and evaluation of useful information on of the local popular therapeutic traditions, through scientific studies conducted by a network of collaborators in the Caribbean Basin. In Honduras, Nicaragua, Panama, and the Dominican Republic, four of the countries in which the TRAMIL Program is currently well established in local and national institutions, interest within government ministries in linking sustainable use of biodiversity to other community benefits, such as public health, has been particularly encouraging. In these countries and with support of a GEF Medium Size Project GF/2713-01-4356: "*Biodiversity Conservation and Integration of Traditional Knowledge on Medicinal Plants in National Primary Health Care Policy in Central America and Caribbean*" the TRAMIL Program will add a forest ecosystem conservation component to the existing regional applied research program on traditional remedies derived from medici-

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nal plants. The project has been developed by *enda-caribe* (under responsibility of the regional office in Nicaragua), with assistance and in-kind support from the Medicinal Plant Specialist Group (MPSG) of the IUCN.

Traditional knowledge of medicinal plants is currently threatened in rural communities of the Caribbean Basin by loss of traditional cultural systems and conversion of local agricultural and forest ecosystems to other purposes. Modifications of primary and secondary forest might affect principally the native species, consequently affecting also traditional knowledge and cultural practices associated with the management of the wild, semi-wild and domesticated species at the local level (Cardenal 1994).

The floristic diversity of the Caribbean, insular as well as continental, presents a complex combination of elements of the continental ecosystems of North and South America, exotic species, as well as endemic plants. Islands of volcanic origin, like Cuba, Haiti and the Dominican Republic represent bio-geographic areas with high numbers of endemic species (Cuba: almost 50% of endemic species) (WCMC 1992). Central America and the Caribbean are geographical regions known for their biological and cultural diversity. They are characterized by unique concentrations of plant species, and the tropical moist forests are classified among those with greatest habitat diversity worldwide (Myers et al.).

Considering the importance of the deliberations within this international Symposium addressing the central issue "Biodiversity and Health", the purpose of this paper is to share some lessons learned related to the issue of conservation of medicinal plants and their use in Central America and the Caribbean. The framework is provided by the 20 years of experience of the TRAMIL-Program (Scientific Research on Medicinal Plants in the Caribbean Basin) as one of the initiatives existing in the region establishing collaborative projects and appropriate agreements for research programs in order to achieve a new status for the protection of medicinal plant diversity. Regional cooperation in ethnobotanical and taxonomic studies, scientific validation of the significant use of medicinal plants and development of conservation activities are being encouraged.

The TRAMIL Network

Since 1982 and coordinated by *enda-caribe*, the TRAMIL Program (Scientific Research on Medicinal Plants in the Caribbean Basin) has focused on conserving traditional community knowledge of folk remedies, and providing scientific validation of safety and efficacy needed to encourage national health policies that include traditional medicine in primary health care programs. The TRAMIL network currently links public and private research organizations, non-government organizations concerned with

biodiversity conservation and public health, public health agencies, and local communities in an interdisciplinary program of research on the ethnopharmacology and traditional health practices of communities in the Caribbean Basin and Central America. TRAMIL also supports dissemination projects at the community level, returning remedy evaluations to promote the use of safe and effective treatments that are in harmony with local traditions.

In terms of research and application of the results, the Program published the first edition of the Caribbean Pharmacopoeia (*Farmacopea Vegetal Caribeña*) in 1996 (Robineau 1996) as an important reference in the development of community health education programs.

TRAMIL is considered a network of networks, since the Program encourages the organization of medicinal plants networks at national level., this allows TRAMIL to find a broader audience for the application of the scientific results in health and conservation programs.

Contribution to the Conservation of Medicinal Plants

The TRAMIL methodology has contributed to the implementation of the recommended tasks agreed at the Chiang Mai meeting (1988) and the guidelines on the conservation of medicinal plants published in 1993 (WHO/IUCN/WWF 1993).

Attention is given to the establishment of homegardens and agroecological demonstrative gardens, such as the TRAMIL agroecological garden in Limon, Costa Rica (Valverde and Ocampo 1996). In Guatemala, Nicaragua and Honduras TRAMIL scientists have carried out studies focused on the conservation status of TRAMIL-plants, supported by the program (Lagos-Witte 1992; House et al. 1995; Tercero 1996, Duro and López 1996; Giron et al. 1997).

In the Biosphere Reserve of Rio Platano, Honduras, TRAMIL started a community oriented ethnobotanical project (Lagos-Witte et al. 1995) that has become an example of how local people can contribute to their own floristic inventory and conservation of medicinal plants (Lagos-Witte 1997). The community of Las Marias, in Rio Platano has established a botanical garden in a mature secondary forest of *Cecropia* trees. TRAMIL has been supported in all these conservation efforts in Central America by IDRC-Canada (since 1994) and in different levels by the UNESCO, Paris through the People and Plants International Initiative, WWF/UK, PRE-BELAC (from the New York Botanical Garden) and the Biodiversity Support Program WWF, US-AID, WRI.

Through its ethnopharmacological surveys, TRAMIL works on the scientific identification of medicinal plants,

supports national networks working in this field, and encourages communities to use sustainable methods of bark harvesting, as well as methods of digging roots without killing the entire plant. The TRAMIL Dissemination program is committed to include in its training courses the conservation component of medicinal plants and to the production of educational materials, such as videos and popular information that support the conservation of the medicinal plants included in the TRAMIL list.

At the academic level, TRAMIL is encouraging curriculum building activities in Universities in Central America. Young biologists, chemists, and students of medicine will be trained in methods of ethnopharmacology, conservation and community development in field projects related to primary health care using medicinal plants.

In Honduras, Nicaragua, Panama, and the Dominican Republic, four of the countries in which the TRAMIL Program is currently well established in local and national institutions, interest within government ministries in linking sustainable use of biodiversity to other community benefits, such as public health, has been particularly encouraging. In these countries and with support of a GEF Medium Size Project: *“Biodiversity Conservation and Integration of Traditional Knowledge on Medicinal Plants in National Primary Health Care Policy in Central America and Caribbean”* the TRAMIL Program will add a forest ecosystem conservation component to the existing regional applied research program on traditional remedies derived from medicinal plants. The project has been developed by endo-caribe (under responsibility of the regional office in Nicaragua), with intellectual assistance and in-kind support from the Medicinal Plant Specialist Group (MPSG) of the IUCN.

The primary project objective is to support the conservation and sustainable use of medicinal plants important to primary health in key forest eco-regions in Honduras, Nicaragua, Panama, and the Dominican Republic by:

- assessing their conservation status and management needs;
- working with indigenous and local communities to develop appropriate management strategies; and
- working with research institutions, NGOs, and national government agencies to integrate conservation and management of medicinal plants with rational use of traditional remedies in primary health care (PHC).

The project will focus activities in these four countries, but also aims to develop models and expertise that will be more broadly useful within the region. A preliminary selection of project sites has been made from globally significant eco-regions identified as target areas for project implementation within each of the four countries involved in

developing this project:

- Honduras: Biosphere of Rio Platano (Miskito and Pech communities/Mosquitia, rainforest), South West Honduras (Lenca community, pines forest ecosystem);
- Nicaragua: Biosphere reserve of BOSAWAS (Mayagna and Miskito communities/Mosquitia, rainforest), Las Segovias in North West (Mestizo communities/pines forest ecosystem);
- Panamá: Darien tropical forest (Embera communities), Ngöbe Buglé (Teribe communities/Atlantic coast rain forest);
- Dominican Republic: National Park del Este and Zambrana Cotuí (Mestizo communities).

These eco-regions share basic strategic elements, such as being forestlands that are inhabited by indigenous populations (Miskito, Pech communities in Mosquitia, Honduras; Mayangna Sauni As and Miskito communities in Bosawás, Nicaragua; Kunas, Guayami, Teribe communities in Ngöbe-Buglé and Emberá Darién, Panama; mestizos in the case of Las Segovias in Nicaragua and Zambrana/ National Park Este in the Dominican Republic). These forests contain high levels of diversity of non-wood forest products, including medicinal plants (Davis et al. 1997).

The project will build on a number of existing surveys and conservation assessments. A recent assessment of global biodiversity “hotspots” (Myers et al. 2000) ranks forested areas of Central America (Mesoamerica) and the Caribbean second and third in global significance (after the tropical Andes) in total species and endemism. Each of the eight sites selected for this project falls within a forest eco-region having global or regional significance, according to an assessment conducted by WWF and the World Bank, which identified high global, regional, and national priority terrestrial eco-regions in Latin America and the Caribbean (Dinerstein et al. 1995). The biodiversity values of the protected areas with which each of these eight sites is associated are described by Harcourt and Sayer (1996), although this treatment does not assign rank. A preliminary conservation assessment of the TRAMIL-Caribbean Pharmacopoeia (Ocampo and Robles 1999) identifies forests as important habitats and conservation targets for medicinal plants in the region, but emphasizes the universal lack of survey and inventory data for medicinal plants (Lagos-Witte 1994). This scarcity of basic inventory data is a general problem globally. A global assessment of “Centres of Plant Diversity” undertaken by WWF and IUCN—The World Conservation Union (Davis et al. 1997) recognizes the contribution of medicinal plants to overall species diversity in important forest eco-regions, but acknowledges the lack of basic inventory and conservation status information about this economically important group of species.

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