

An Historical Overview of Forest Service Silvicultural Activities in Puerto Rico and the Caribbean Islands

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Abstract.—Forestry has a long history in the Caribbean Islands, in particular, in Puerto Rico. This experience, implemented in recent years through numerous partnerships, involves research, inventory and monitoring, and resource management, and has been communicated through demonstration and educational activities. Much of this history is documented in the 24 volumes of the *Caribbean Forester*, in 58 years of Annual Reports or Annual Letters written by the U.S. Forest Service's International Institute of Tropical Forestry (IITF), in forestry bibliographies, and numerous publications in scientific journals as well as the proceedings of seminars, meetings and conferences. Forest managers and researchers, not only in the United States, but also in the international arena, have been the recipients of information on tropical forestry through the IITF's library and its program in international cooperation. The purpose of this paper is to briefly summarize Forest Service activities in Puerto Rico and the Caribbean.

INTRODUCTION

Silvics and silviculture were defined many years ago (Baker 1950) but have become more complex with time. Silvics is the knowledge of forests and forest trees—how they grow, reproduce, and respond to changes in their environment. Biological information, however, has blossomed since that definition was proposed. Silviculture, in turn, was defined as the handling of the forest in view of its silvics—a practice modified by economic factors. Silviculture is also modified by environmental concerns and is formulated in different cultures in response to human needs and influenced through varying degrees of local, national and international involvement, and politics. Deforestation, biodiversity, neotropical migratory birds, biomass plantations, sustainable management, ecosystem management, urban forestry, timber certification, and global climate change have become major silvicultural topics at home and abroad.

Much of the IITF's program involves neotropical countries where the common languages are Spanish and Portuguese, and the culture, working environment, and way of doing business contrast with those at home. Moreover, forestry operations are characterized by selective harvest of prime species and poor extraction techniques. Limited budgets and inadequate staffing make control over forest lands, many distant from the central offices, virtually impossible. A complex forest planning process is absent or perfunctory and many key forest administrators are only casually familiar with forestry.

The purpose of this paper is to review IITF's involvement in communicating silvicultural information for managing

neotropical forests including those of Puerto Rico and the U. S. Virgin Islands. Special emphasis is given to educational approaches although the other topics considered in this conference (eg., forest inventory and monitoring, research, resource management, demonstration, and partnerships) are an integral part of the IITF program. Without them, the educational aspect would be greatly diminished. This review, intended to be comprehensive but not exhaustive, touches on the more important activities and references only a fraction of IITF's publications. Throughout the text, the following acronyms are used:

CEER ... Center for Energy and Environmental Research (Univ. of Puerto Rico)
CITES ... Convention on International Trade in Endangered Species
CNF ... Caribbean National Forest (management designation)
DNER ... Commonwealth Department of Natural and Environmental Resources
FAO ... Food and Agricultural Organization of the United Nations
ITF (IITF) ... International Institute of Tropical Forestry (research)
ITTO ... International Timber Trade Organization
IUFRO ... International Union of Forestry Research Organizations
LEF ... Luquillo Experiment Forest (research designation)
LTER ... Long Term Ecological Research (National Science Foundation)
MAB ... Man and the Biosphere Program (UNESCO)
UNESCO ... United Nations Educational and Scientific Organization
USAID ... United States Agency for International Development
YCC ... Youth Conservation Corps
YACC ... Young Adult Conservation Corps

HISTORICAL PERSPECTIVE OF FORESTRY ACTIVITIES

The history of forestry in Puerto Rico and the U. S. Virgin Islands is briefly summarized in four documents that outline institutional programs, research and publications (Brown et al. 1983; Mosquera and Fehleley 1984; Wadsworth 1970, 1995). Highlights extracted from these documents follow.

In 1876, the Spanish government proclaimed forest reserves in Puerto Rico including nearly 5,000 ha of the Luquillo Forest in the northeastern part of the island (later additions increased the land area to 11,300 ha). In 1898, after the Spanish-American War, ownership of crown lands in Puerto Rico were transferred to the United States. In 1903, the United States proclaimed the Luquillo Forest as a reserve and in 1907, as a national forest. Boundary surveys were conducted in 1916, mahogany was first planted in 1931, and the first forest inventory was completed in 1937.

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An Act of Congress (McSweeney-McNary Forest Research Act of 1928) designated a nation-wide system of forest experiment stations which included one in the West Indies. In 1939, the Tropical Forest Experiment Station was designated and funded in Río Piedras, Puerto Rico (in 1961, it became the ITF, and in 1992, the IITF). In 1940, the CNF staff was transferred to the station where it published the first of its annual reports and the first of its 24 volumes of the *Caribbean Forester*. Subsequent research concentrated on the tropical forest environment, regeneration, silviculture of secondary forests and plantations, mensuration, management, and the economic value of forests. Species trials began throughout the island and today more than 100 native species and 350 introduced species have been tested. Long-term monitoring of permanent plots began in 1943 and the first timber management plan was completed in 1949, the same year that the Baño de Oro research natural area was set aside in the LEF.

In 1953, the ITF began the first of its international tropical forestry short courses. In 1956, the CNF was also administratively designated as the LEF to recognize the importance of research. From 1956 through 1970, about 2,800 hectares of lower montane forest were thinned. In 1959, Caribbean Pine was successfully introduced in Puerto Rico and in the early 1960's, ecological research was initiated in the LEF in collaboration with the Atomic Energy Commission. In 1965, the ITF's Annual Letter replaced the *Caribbean Forester* as the instrument to inform readers about ITF activities. In 1968, formal research efforts to save the endangered Puerto Rican Parrot, now confined to the Luquillo Forest, were started. In 1976, the Luquillo Forest was designated as a Biosphere Reserve. In 1980, the ITF, in conjunction with the Southern Experiment Station, initiated a continuous inventory of the island's secondary forests. In 1982, the ITF began biennial meetings of the Caribbean Foresters to discuss and publish forestry topics of regional interest. In 1986, LTER research was initiated in the Bisley watersheds of the Luquillo Forest, and in 1996, the El Portal Tropical Forest Center, Puerto Rico's gateway to the tropics, was opened to the public.

CURRENT PROGRAMS

A comprehensive program aimed at communicating the role of silviculture in managing national forests through educational means would be impossible without a full complement of other activities. Currently, the IITF (research designation) and the CNF (management designation) implement their programs on the same 11,300 ha forest in northeastern Puerto Rico with a combined staff of 17 professionals, 21 technicians, and 26 persons in administrative, clerical and support positions. Numerous cooperative agreements, grants, and volunteers extend the program's effectiveness.

Research

The IITF's research program is divided into four areas of emphasis: forest management, ecosystem management, wildlife management, and social ecology (Weaver 1996). The research unit description, approved in 1994 and scheduled

to cover the next 5 years, concerns four research problem areas and involves 60 studies:

- ◆ Problem 1: Insufficient knowledge to effectively manage primary forests, or secondary forests following tropical disturbance and land use changes;
- ◆ Problem 2: Insufficient knowledge and predictive methods regarding the internal dynamics and external influences that affect atmospheric and hydrologic characteristics of forested tropical watersheds;
- ◆ Problem 3: Need to identify and characterize threatened, endangered, or sensitive tropical wildlife and to determine habitat characteristics and requirements for overwintering migrant birds in the Caribbean to develop ameliorative practices; and
- ◆ Problem 4: Need to quantify the economic and social values of American tropical forests.

The IITF also cooperates with the Forest Products Laboratory focusing on the utilization of tropical forest products and tropical mycology. Moreover, occasionally it sponsors or co-sponsors special projects or activities such as symposia or training programs.

The IITF research library subscribes to more than 100 journals and receives almost the same number of complementary serial publications through exchange with other institutions. The library also owns about 7,000 books on forestry and forest-related resources, houses a geographic section with about 20,000 brochures and reports, and contains numerous historical documents and maps. The library also possesses the "Silver Platter" CD-ROM on forestry literature and just inaugurated a WEB site to facilitate communication. The IITF research laboratory contains modern facilities and equipment for the analysis of soil and vegetation samples, and GIS work.

Resource Management

The CNF staff is responsible for the daily management of the Luquillo Forest which involves four major activities: customer service; property management; planning and design; and ecosystems programs. Special use permits, management of the El Portal Tropical Forest Center, grants and agreements, recreational programs (eg. Rent a Ranger, interpretation), trail maintenance and cleaning, environmental education, and the development of the forest management plan are included in the first three groups of activities. Ecosystems programs deal with visual and heritage resources, soil, water and air resources, wildlife, botany, threatened and endangered species, and timber stand improvement.

The CNF and IITF staffs, through a program of public involvement, developed a revised land and resource management plan for the Luquillo Forest along with its accompanying environmental impact statement (U. S. Forest Service 1994). Recently, the CNF assumed the management of the El Portal tropical forest center within the Luquillo Forest.

In 1995, the IITF State and Private forestry program managed 25 grants working closely with natural resource agencies in Puerto Rico and the U. S. Virgin Islands. Among the programs being implemented are: urban and community forestry; forest stewardship and stewardship incentive; economic recovery; rural conservation and development; wood in transportation; forest products conservation and recycling; nursery and tree improvement; forest resources management; forest legacy; forestry incentives; agricultural conservation; forest health management on cooperative and federal lands; rural fire prevention and control; state resource planning; and natural resource conservation and education.

Inventory and Monitoring

The IITF has several inventory and/or monitoring programs:

◆ **Natural forest:** monitoring natural regeneration and succession of key tree species on several sites in Puerto Rico and the U. S. Virgin Islands. Specifically, since 1943, on 20 permanent plots in different forest types in the Luquillo Mountains (Crow and Weaver 1977; Weaver, in press); from 1946 to the mid-1970's, on numerous sites throughout Puerto Rico (Weaver 1983); since 1983, on 16 plots in the Cinnamon Bay watershed of St. John, U.S. Virgin Islands (Weaver and Chinea-Rivera 1987); and since 1984, in the dry Guanica forest in southeastern Puerto Rico (Murphy and Lugo 1986);

◆ **Plantations:** since the 1940's, periodic measurement of numerous species including several provenance trials throughout Puerto Rico and the U. S. Virgin Islands (Francis 1995);

◆ **Arboretum:** since 1960, the establishment and maintenance of an arboretum with more than 100 species, many with multiple subspecies and provenances, in forest conditions at 400 to 550 m in elevation in the Luquillo Mountains (Francis 1989);

◆ **Parrots:** since 1968, habitat research, and long-term monitoring of Puerto Rican Parrots (Snyder et al. 1987) and for shorter periods, other species including neotropical migrants (Wunderle and Waide 1994) and rare, endangered, or sensitive species;

◆ **Secondary forest:** since 1980, an island-wide inventory of secondary forest resources, updated in 1985 and 1990, and subsequently planned for re-measurement at 10-year intervals (Birdsey and Weaver 1982, 1987; Weaver and Birdsey 1990);

◆ **LTER:** since 1986, a long-term ecological research program dealing with flora and fauna in the Bisley watersheds of the Luquillo Mountains (Scatena 1989); and

◆ **Big tree registry:** since 1987, the maintenance of a registry of Puerto Rico's record trees to increase local appreciation for forest resources (Francis and Alemañy 1996).

The inventory and monitoring programs have provided valuable baseline information regarding forest structure, species composition, tree growth rates, and dynamics, especially in response to past human intervention and major climatic events such as hurricanes (Walker et al. 1991).

Wildlife monitoring within the Caribbean has indicated the proportions of local bird populations that are migratory and noted declines in neo-tropical migrants during the past quarter of a century. Continued monitoring may provide valuable comparative data for questions relating to human impacts on forests and wildlife as well as possible changes in global climate.

Demonstration

The Forest Service's organization and way of doing business (eg., research, management, state and private functions, and program administration) serve as a model for most visitors. Other demonstrations include:

- ◆ the IITF's continuous record system of 2550 studies;
- ◆ the maintenance and monitoring of numerous plantations (including mahogany line plantings) varying by species (or provenances), planting technique, age, and site;
- ◆ the maintenance of inventory and monitoring in primary and secondary forests, and restoration plots on abandoned lands;
- ◆ the CNF land management planning for multiple benefits;
- ◆ the El Portal tropical forest center; and
- ◆ the State and Private program with its complement of activities.

Partnerships

In 1995, the IITF had 63 active research grants and agreements with numerous institutions located in Puerto Rico, the U.S. Virgin Islands, the United States, and in foreign countries. The grants and agreements focus on a wide variety of tropical forestry issues including forest management, neotropical migratory birds, biodiversity, ecotourism, reforestation, wetlands, and the effects of deforestation on regional and global atmospheric composition.

Many scientists, managers, and students visit the island to conduct cooperative studies or observe activities on the national forest. Moreover, many of the IITF/CNF staff, working through the IITF's International Cooperation Program, participate on assignments in forest research, management or administrative activities throughout the neotropics. This frequently involves cooperation with foreign governments, international entities, Federal and Commonwealth agencies, private institutions, domestic and foreign universities, and non-government organizations whose influence may span regions or groups of countries. Among the more salient IITF cooperative activities during the past several years are:

- ◆ participation in overseas consultancies with the Forest Service, USAID, FAO, the World Bank, UNESCO, and other international entities to advance the interests of the United States at home and abroad;
- ◆ international cooperation with the World Bank in forest restoration of degraded lands throughout the tropics, activities aimed at the improvement of site productivity and

increasing timber and commodity production (Parrotta and Kanashiro 1995);

- ◆ cooperation with Brazil including global carbon and trace gas emission studies in Brazilian Amazon forests, activities aimed at the development of land management technologies that mitigate global climate change, water quality deterioration, soil erosion, and the loss of timber and non-timber species, and wildlife; and additional studies such as an English-Portuguese list of forestry terminology (Francis 1994) and a photographic guide to the trees of the Tapajos Forest (Parrotta et al. 1995);

- ◆ cooperative funding of forest inventories in the Maya zone of Mexico;

- ◆ assistance in the development of technical guidelines in support of the interests of the United States in the international arena including trade, migratory wildlife, and endangered species agreements (eg., CITES);

- ◆ cooperation with the Forest Department of Antigua-Barbuda in the development of a woody species list (Antigua: 286 species, 153 natives; Barbuda: 127 species, 65 natives) (Francis et al. 1994);

- ◆ cooperative funding of silviculture in mountain forests with the Forestry Department of Dominica;

- ◆ Peace Corps and host country collaboration through formal technology transfer plans (eg., Antigua, Dominican Republic, Grenada and Montserrat) in the design and development of nature trails and reforestation projects;

- ◆ Cooperation with the Park Service on the island of St. John, U. S. Virgin Islands, in forestry and wildlife research, and long-term monitoring;

- ◆ local cooperative research and management activities with the Puerto Rico Conservation Trust and other conservation groups;

- ◆ Collaboration with U. S. national forests as facilitators (shepherds) for six Sister Forest programs (pairings of U.S. National Forests and select national forests in neotropical countries); and

- ◆ numerous local, national and international advisory committees, among them: student thesis and university committees (eg., CEER), and interagency committees of the Commonwealth and Federal governments; national committees (eg. LTER); and international committees such as MAB, IUFRO, and the North American and Latin American Forestry Commissions of the FAO. The staff also reviews proposals for ITTO and locally cooperates with the local DNER on reviews of management plans and legislation, and with Puerto Rican Conservation Trust on research and management programs on their properties scattered throughout the island.

Education

The IITF/CNF's educational program and clientele are diverse. The program includes research and publications, library activities, training and technology transfer, conferences and workshops, and other related activities. The

clientele includes local, national and international forestry researchers, managers and administrators.

Publications. During recent years, the IITF research staff has published more than 50 scientific articles annually on forest management, ecology, wildlife, and social ecology. Staff members have also served on several journal editorial boards and reviewed numerous scientific articles for publication at home and abroad. Among the major efforts since the establishment of the IITF in 1939 are the following:

- ◆ 1939-1964: edit, publish and distribute to 2,000 collaborators, in Spanish and English, articles on forestry and related environmental topics in 24 quarterly volumes of the Caribbean Forester;

- ◆ 1939 to present: write an annual report (later called annual letter). Early editions were placed in the Caribbean Forester in both Spanish and English, but after 1964, the Annual Letter was published independently;

- ◆ 1949 to present: study and publish information on forest gradients, long-term growth, phenology, and fauna (eg., the Puerto Rican Parrot and other avifauna) in the Baño de Oro Research Natural Area (Weaver 1994);

- ◆ 1949-1993: publish the results of tree seed studies for more than 300 native and exotic species including collection, treatments, germination, and storage (Marrero 1949; Francis and Rodriguez 1993);

- ◆ 1950: publish the results of tree plantings on degraded lands (Marrero 1950a) and tree species adaptability on lands ranging from sea level to 1,000 m in elevation with rainfalls between 800 and 2,500 mm/yr (Marrero 1950b);

- ◆ 1949-1952: forest descriptions and the formulation of a land management plan based on climate, soil, topography, faunal requirements, scenic values, and past land uses and designating areas to be used for wildlife habitat, recreation, comparative research, timber production, and for the protection of primary forest ecosystems (Wadsworth 1949; 1951, 1952a, 1952b);

- ◆ 1963 to present: establish 1,275 ha of line planted mahogany at the management level (Weaver and Bauer 1986);

- ◆ 1964 and 1974: publish 2 volumes with dendrological and taxonomical descriptions, natural occurrence, uses, and common names for 750 native and exotic tree species of Puerto Rico and the U.S. Virgin Islands (Little and Wadsworth 1964; Little et al. 1974);

- ◆ 1966: summarize the results of eight herbicides for weed control in plantations (Hadley and Briscoe 1966);

- ◆ since 1968: investigate avifauna in Puerto Rico and elsewhere in the West Indies to determine population trends and the status of critical species (Snyder et al. 1987; Wunderle and Waide 1994) and their response to hurricanes Wunderle 1995);

- ◆ 1971-1973: map the ecological life zones of Puerto Rico and the U. S. Virgin Islands (Ewel and Whitmore 1973);

◆ 1972: summarize the results of fence post longevity based on four preservatives and two treatments for 6700 treated and non-treated control posts representing 70 tree species (Chudnoff and Goytia 1972);

◆ 1972: publish a summary of growth studies involving 15 conifer and 16 hardwood species for use in 60,000 ha of Puerto Rico's granitic uplands (Geary and Briscoe 1972);

◆ since 1975: publish 20 papers on long-term forest monitoring in the LEF and the Virgin Islands, some with records spanning more than 50 years (Crow and Weaver 1977; Weaver 1988, 1991; Weaver and Murphy 1990);

◆ 1979: publish a bulletin in English and Spanish on the use of 46 tree species in urban settings for Puerto Rico and the U. S. Virgin Islands (Schubert 1979);

◆ since 1981: edit the quarterly newsletter of International Society of Tropical Foresters for 2,000 subscribers in 128 countries;

◆ since 1981: draft 100 papers on indigeneous and exotic tree species in Puerto Rico and the U. S. Virgin Islands for the IITF's tropical silvics manual (including 8 species placed in the U. S. Silvics Manual) with information on habitat, life history, special uses, and genetics (Francis et al., in prep.; Burns and Honkala 1990);

◆ 1982: describe the storage and production of organic matter in tropical forests and their role in the carbon cycle (Brown and Lugo 1982);

◆ since 1982: publish several papers on the occurrence of tree species, forest structure and dynamics, and hurricane impacts for the forests of St. John, U. S. Virgin Islands (Woodbury and Weaver 1987; Park Science 1992);

◆ 1985: publish a volume on 150 vine species that grow in Puerto Rico (Acevedo-Rodríguez and Woodbury 1985);

◆ since 1987: edit and publish Acta Cientifica, a scientific journal for Puerto Rican science teachers;

◆ 1987 and 1991: publish a technical guide for nursery management (Liegel and Venator 1987) and growth and site relationships of Caribbean Pine in the Caribbean Basin (Liegel 1991);

◆ since 1988: maintain a registry of big trees in Puerto Rico;

◆ since 1988: research and publish about 200 papers on LTER in the LEF's Bisley watersheds beginning with a description of the watersheds (Scatena 1989); and

◆ 1991: publish a list of 118 naturalized exotic tree species in Puerto Rico including information on where they are common, their environmental requirements (eg., rainfall and soil properties), and their estimated rates of spread (Francis and Liogier 1991);

Moreover, the IITF has collaborated with numerous other scientists in the publication of such works as:

◆ Puerto Rican woods (Longwood 1961) and Commercial timbers of the Caribbean (Longwood 1962), two volumes containing the physical and machining properties of 60

Puerto Rican timbers and 68 Caribbean timbers with commercial potential, cooperative research with the Forest Products Laboratory in Madison, Wisconsin;

◆ A tropical rain forest: a description of research beginning in the early 1960's and culminating in 1970 with a compendium of information in 111 research papers totaling 1644 pages (Odum and Pigeon 1970);

◆ Journal of the Arnold Arboretum: the introduction by Howard (1968) was the first of 17 articles published from 1968-77 on the climate, soils, forest resources, and related topics in the LEF's dwarf forest; and

◆ The parrots of Luquillo: a history of 20 years of parrot research in the LEF published in 1987 (Snyder et al. 1987).

Library. The library staff hosts from 600 to 700 international and local visitors annually. Most library users are from Federal and Commonwealth government agencies or students and teachers from local universities and highschools. The library also answers an average of 16,000 information requests annually, half of which are from Puerto Rico. The IITF's Annual Letter is interchanged for research reports with about 200 research units worldwide.

Training and Technology Transfer. Since 1939, the IITF staff has hosted innumerable visitors and interns from all over the tropics. Recently, volunteers have worked with the research staff for periods ranging from a few weeks to a year. Formal training programs have been presented for several groups or individuals, among them the following:

◆ from 1953 to 1983, the presentation of 20 bilingual international forestry short courses with some of the attendees later being promoted to leadership positions within their respective governments;

◆ 1962-63, formal 3-month programs of graduate study in tropical forestry and silviculture for 30 forestry students from all over the United States;

◆ from 1975 to the present, the occasional development of short training programs for Peace Corps volunteers, mainly in Caribbean Basin countries; and

◆ from 1980 to the present, participation on student theses committees and as lecturers in university courses locally, in the U. S., and internationally.

In addition to the formal training programs mentioned above, the CNF staff hosts 700,000 visitors annually within the Luquillo Forest. Among the major attractions are wildlife, mountainous scenery, riparian areas, and several trails with interpretative signs. Tours are available on request.

Recently, the El Portal tropical forest center opened to the public. The 930 square meters of floor space is divided into classrooms, conference rooms, laboratories, and three large exhibition rooms. The staff of the Portal offers educational programs for students and holds workshops for school teachers. Training modules highlighting Puerto Rican tree species and forests, human benefits derived from forests,

Table 1.—Symposia and conferences held in Puerto Rico and sponsored by or in collaboration with the International Institute of Tropical Forestry

Date	Topic
1986	Conference on the Management of the Forests of Tropical America ¹
1987	Workshop on Caribbean Wetlands
1988	USAID Mangrove Workshop
1989	IITF Golden Anniversary Symposium ²
1991	Seed Workshop for Nursery Managers
1991	USFS-NASA-FAO Workshop on Remote Sensing ³
1993	30th Anniversary of the Association for Tropical Biology (ATB)
1993	International Symposium on Tropical Montane Forests ⁴
1996	Horticulture Conference
1996	Big-leaf Mahogany: ecology, genetic resources, and management ⁵

¹Figueroa Colon et al. 1986.

²Lugo and Lowe 1995.

³Gillespie 1991.

⁴Hamilton et al. 1993.

⁵Proceedings in preparation.

Table 2.—Host countries and topics for the Biennial Caribbean Foresters' Meetings

Host country location Dates	Conference themes ¹
Castries, St. Lucia May 24-28, 1982	Forestry in the Caribbean
Kingstown, St. Vincent March 19-23, 1984	Watershed management in the Caribbean
Pointe-a-Pitre, Guadeloupe May 19-23, 1986	Forest recreation in the Caribbean Islands
Roseau, Dominica April 5-9, 1988	Wildlife management in the Caribbean Islands
Port-of-Spain, Trinidad May 21-26, 1990	Wetlands management in the Caribbean and the role of forestry in the economy
Fort de France, Martinique July 20-22, 1992	Towards sustainable forest resource management in the Caribbean
Kingston, Jamaica July 20-24, 1994	Economics of Caribbean Forestry
St. Georges, Grenada June 2-6, 1996	Protected areas management

¹All conferences have been published as proceedings except the last which is in press.

and conservation issues have been developed to serve an estimated 30,000 students per year. A training program aimed at improving forest management capabilities will also be offered for forest managers from the Caribbean and Latin America.

The CNF also hosts the YACC and YCC programs during the summer months. Occasionally, it sponsors an open house on the forest or exhibits at shopping malls where up to 20,000 visitors may become familiar with Forest Service programs.

Other activities include judging at local science fairs, participation in highschool career day activities, and presentations on local radio and television programs.

Conferences and Workshops. The IITF has hosted several different activities both locally (Table 1) and internationally (Table 2). Attendance at these meetings ranges from 25 to 300 or more with representation from numerous countries throughout the world. Proceedings of locally sponsored meetings are always published.

SUMMARY

The IITF has a 58-year history of serving its forestry clientele—the domestic interests of the peoples of Puerto Rico, the U.S. Virgin Islands, and the United States, and the foreign concerns of the peoples elsewhere in the Caribbean Basin and Latin America. Research, resource management, forest inventories and monitoring, demonstration, partnerships, and educational activities have been an integral part of its domestic and international programs.

Program diversity has been one critical element in program success. Currently, this diversity includes research, management, international cooperation, and state and private forestry. Another important element has been the long term coordination of forest research and management objectives within Puerto Rico and the U.S. Virgin Islands. These program attributes, diversity and coordination, along with the library and the recently completed El Portal tropical forest center, have contributed to a viable forestry program and have facilitated the communication of silvicultural benefits to domestic and international audiences.

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