

Master Plan Revision

Glossary of Abbreviations and Definitions

ACCVC	Area de Conservación Cordillera Volcánica Central
BCNP	Braulio Carrillo National Park (Parque Nacional Braulio Carrillo)
CATIE	Centro Agronómico Tropical de Investigación y Enseñanza
CATUSA	Sarapiquí Tourism Association (Cámara de Turismo de Sarapiquí)
CONICIT	Consejo Nacional de Investigaciones Científicas y Tecnológicas
Exotic	Species and/or genetic provenance not native to La Selva.
FUNDECOR	Foundation for the Development of the Cordillera Volcánica Central
FPN	National Parks Foundation (Fundación de Parques Nacionales)
GIS	Geographic Information System
INBio	Costa Rican National Biodiversity Institute (Instituto Nacional de Biodiversidad)
PI	Principal Investigator. Individual responsible for research project.

OTS

AoD	Association of Delegates.
BINABITROP	OTS bibliographic database to all publications on biological research conducted in Costa Rica since 1956 (Bibliografía Nacional en Biología Tropical).
BoD	Board of Directors.
CEO	Chief Executive Officer.
CRIC	Costa Rican Institutions Committee.
CRO	OTS Costa Rican Office in San José.
ESINTRO	The for-profit subsidiary of OTS in Costa Rica (Estudios e Investigación Tropicales).
Greater La Selva	The La Selva Biological Station and the surrounding region.
La Selva	The La Selva Biological Station.
LSAC	La Selva Advisory Committee.
NAO	OTS North American Office at Duke University
OTS	Organization for Tropical Studies.

Costa Rican Government Institutions

FONAFIFO	National Forest Finance Fund (Fondo Nacional de Financiamiento Forestal)
MS	Health Ministry (Ministerio de Salud)
CCSS	Costa Rican Social Security (Caja Costarricense del Seguro Social)
MSP	Public Security Ministry (Ministerio de Seguridad Pública)
MINAE	Environment and Energy Ministry (Ministerio de Ambiente y Energía)
MEP	Public Education Ministry (Ministerio de Educación Pública)
MAG	Ministry of Agriculture (Ministerio de Agricultura y Ganadería)
MTSS	Ministry of Labor (Ministerio de Trabajo y Seguridad Social)
SPN	National Parks Service (Servicio de Parques Nacionales, part of MINAE)

Greater La Selva Principal Areas and Zoning

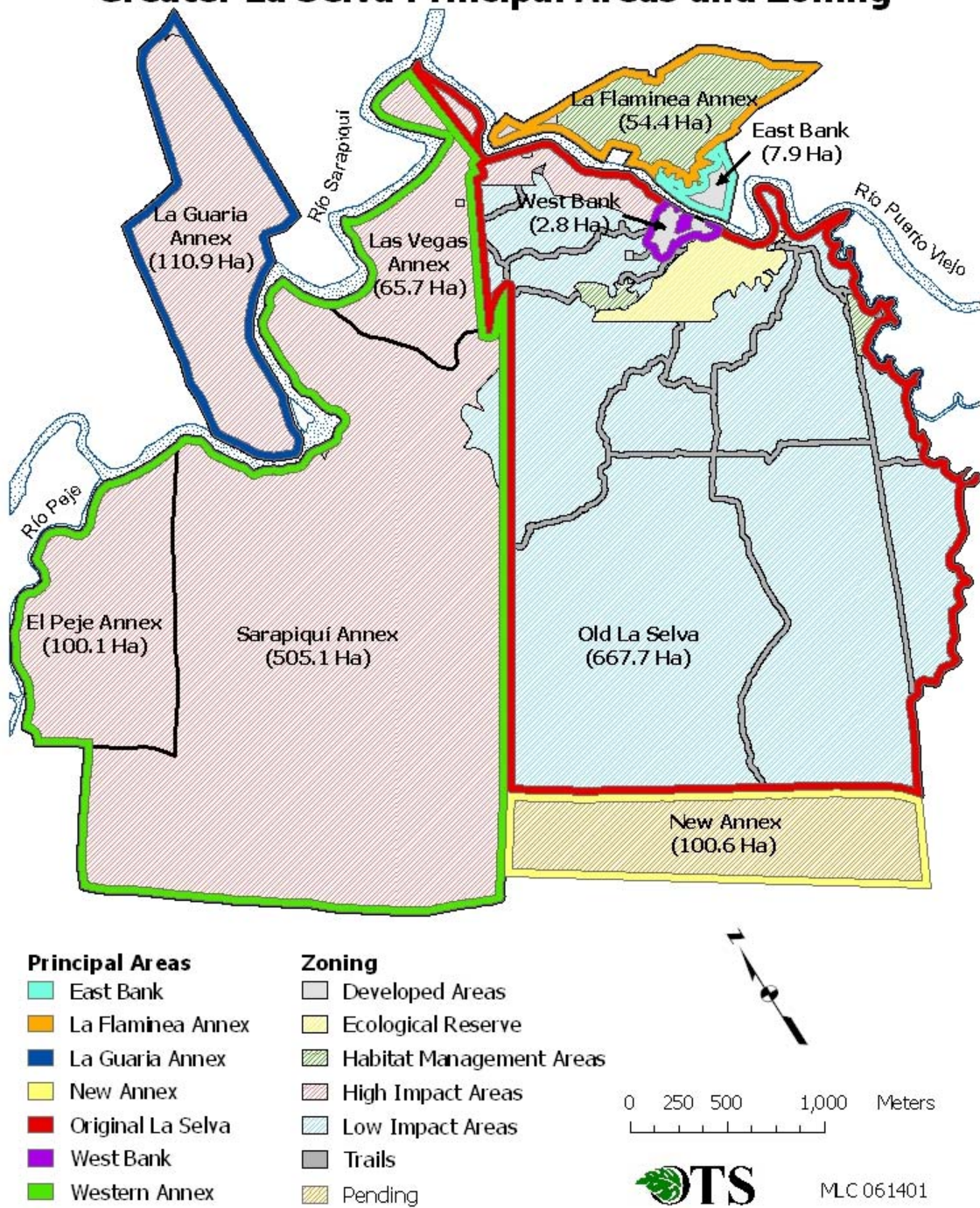


Figure 1

List of Areas La Selva (displayed in Fig. 1):

Old La Selva. Core 667.7 ha reserve; this is the southeastern section of the property, bounded by the Río Puerto Viejo, the Quebradas Sábalo and Esquina, the Lindero Sur [border with Braulio Carrillo National Park], the Lindero Occidental, and the Las Vegas Annex.

East Bank. The 7.9 ha parcel on the east side of the Puerto Viejo River, site of the dining room/dorm complex.

West Bank. The 2.8 ha developed parcel on the west side of the Puerto Viejo River, site of the laboratories and cabinas.

Las Vegas Annex. The 65.7 ha section bounded by the Sarapiquí River, Old La Selva, and the Sarapiquí Annex.

Sarapiquí Annex. The 505.1 ha section SW of Old La Selva, bounded on the west by the Río Sarapiquí and the Peje Annex.

Peje Annex. The 100.1 ha section bounded by the Sarapiquí Annex, the Ríos Peje and Sarapiquí, and Braulio Carrillo National Park.

Western Annex. The combined area, 670.9 ha of the Las Vegas, Sarapiquí, and Peje Annexes.

La Guaría. The 110.9 ha section due N across the Río Sarapiquí from the Las Vegas and Sarapiquí Annexes.

La Flaminea. The 54.4 ha section north of the East Bank, bounded by the Río Puerto Viejo, the dirt road to Puerto Viejo, the East Bank, and the Napoleón Murillo farm.

New Annex. The 100.6 ha section south of old La Selva along the Lindero Sur.

I. INTRODUCTION

A. Goals of the Organization for Tropical Studies (OTS)

The mission of OTS is to "**provide leadership in education, research, and the responsible use of natural resources in the tropics.**" To carry out this mission, OTS will work towards the following five goals:

1. Engage in programs of formal and non-formal education and professional training.
2. Facilitate research by operating field stations and maintenance of selected databases.
3. Promote habitat management, ecological restoration and public policy dialogue.
4. Foster greater public and scientific understanding of the tropics.
5. Develop the human and financial resources and infrastructure to carry out its mission.

B. Purposes of the La Selva Biological Station

La Selva is owned and operated by OTS as its flagship field station. In order of priority, the mission of La Selva embraces the following objectives:

1. To promote a productive mix of research and university-level teaching in pristine and altered humid tropical ecosystems, encouraging innovation, while recognizing and continuing to facilitate the wide diversity of research questions and approaches that have built the foundation of our present knowledge.

2. To promote actively and to preserve the greatest possible diversity of ecosystems, habitats, indigenous species, and indigenous genotypes at La Selva – for research, teaching for posterity; to contribute to the conservation/management goals of the Reserva de la Biosfera de la Cordillera Volcánica Central and of Costa Rica as a whole.
3. To the full extent compatible with the foregoing objectives, to serve as a facility and facilitator for the biological and conservation education of the general public.
4. To promote communication of research results from La Selva to the scientific community, policy makers, and the general public.

C. Purposes of a Master Plan for the Development of La Selva

To meet the goals expressed above, OTS has designed a comprehensive plan for the management and development of La Selva. Several trends have made such a plan necessary. Increased usage has required extensive physical plant development. Acquisition of new land increased the scope of potential research programs and introduced the possibility of major long-term land allocation to projects. With increased usage the need for research guidelines and increased research support became acute. A plan was also required to safeguard against deterioration of the natural resources due to excessive or inappropriate human impacts. Details for the actual implementation of the Master Plan are found in the Operational Procedures Manual.

The goals of the Master Plan are:

1. To link La Selva station policy to the OTS Strategic Plan.
2. To provide an orderly integrated plan for the development of station facilities to meet current and predicted needs.
3. To present research review and management policies, including zoning and land allocation criteria. Details are provided in the Operations Manual.
4. To fully acquaint member institutions and other potential users with current and future research and education opportunities at La Selva, while at the same time stimulating further suggestions for management and development.

D. Development of the La Selva Master Plan

The first La Selva Master Plan, adopted in 1984, was the result of four years of discussions, suggestions, and revisions by many people: OTS staff, LSAC members, outside advisors, and many La Selva researchers. The initial basis for the Master Plan was provided by two operational plans for La Selva covering the period 1980-1984. In 1981 OTS staff, the La Selva Advisory Committee (LSAC), La Selva researchers, and several invited experts met at La Selva to outline a first draft of the MP. This draft was subsequently written by station Co-Directors, Deborah and David Clark, and circulated to LSAC and researchers. On the basis of this review, a second draft was submitted to LSAC, and the draft was circulated to the OTS Executive Committee (currently the Board of Directors), La Selva researchers, and other interested parties. A third draft incorporated ideas and suggestions from these reviewers, and this was further reviewed, revised, and then recommended for adoption as OTS operating policy by LSAC. In March 1984 the Board of Directors of OTS voted to adopt this plan as official OTS policy for management of La Selva. A first revision was drafted in May 1987 and was amended following LSAC review in July 1987; LSAC approved the revision in January 1988, and the OTS Board of Directors adopted the revisions in June 1988. Subsequent revisions were recommended by LSAC and adopted by the OTS Executive Committee in August 1989 and March 1991. In 1995, the Operation Procedures Manual was separated from the Master Plan. The Master Plan and Operations Manual were revised in 1997 and 2002.

E. Revision of the Master Plan

As with any policy and planning document, regular revisions are required for the La Selva Master Plan and the Operational Procedures Manual. The Master Plan will be revised every five years and the Operations Manual every two years. The La Selva Scientific and Administrative Directors will present draft revisions

to the La Selva Advisory Committee (LSAC) for consideration during their regular meetings. LSAC will then recommend to the OTS President/CEO the changes it deems necessary. Copies of the most recent version of the La Selva Master Plan and the Operations Procedures Manual (in English and in Spanish) will be distributed to the OTS institutional representatives within Costa Rica, to the OTS Board of Directors, and to others upon request. Currently, no Spanish versions of the Master Plan and Operational Procedures Manual exist. Both documents will be translated to Spanish in 2002.

II. The La Selva Advisory Committee and the Master Plan

A. LSAC Administration

Members of LSAC are appointed by, and serve at the pleasure of, the President/CEO of OTS, and they normally serve staggered three-year terms. In appointing members to LSAC, the President/CEO of OTS considers the need to ensure representation of local and international interests in the station's activities, the main clients of La Selva, including those involved in research, education and environmental outreach, and management needs of the station, including expertise in administration and infrastructure. When ever possible, LSAC will have at least one member who concomitantly serves on the OTS Board of Directors provides a useful bridge to that entity and its dealings with broader aspects of OTS policy and management.

B. Purview of LSAC

The charge of La Selva Advisory Committee (LSAC) is to advise OTS Research, Administrative and Executive staff on the policy aspects of management and development of La Selva, in the context of the organization's strategic plan. Included within this charge is the responsibility to periodically review the La Selva Master Plan, Operational Procedures Manual, and Site Plan. Additional charges are outlined in Sections C-E, below.

C. Establishing Usage Limits and Management Guidelines for La Selva

An underlying assumption at any field research facility is that it is desirable to support the maximum amount of research and education possible without seriously damaging the resource base and in the case of La Selva, the forest reserve. This is particularly true at La Selva. There are few well-equipped tropical field sites in the world, and research and teaching interest in tropical problems are increasing annually. Therefore, a basic tenet of this plan is to provide for maximum use of La Selva up to some set usage limit. This limit will be set subjectively, because few scientific data exist to determine the biological impact of different levels of human usage.

Regional deforestation and partial isolation of La Selva also make it difficult to isolate the effects of increased station use from the general effects of deforestation and changing land use in the Sarapiquí region. Despite these difficulties, it is imperative that OTS establish station visitation guidelines so that future growth and use of the La Selva reserve be carefully managed. OTS management should also try to mitigate or avoid user impact through proper trail maintenance to decrease trail erosion and through careful project review, project siting, and practical suggestions to investigators for minimizing disturbance. Detailed station use guidelines are contained in the Operations Manual. LSAC should review these guidelines annually. LSAC should also recommend policies to limit the biological impact of increased researcher use.

D. La Selva Site Plan

Concomitant with the need to set usage limits is the need to plan the development of station facilities. OTS will maintain a Site Plan providing mid to long-term (5-20 year) vision for infrastructure developments at La Selva. LSAC will review the Site Plan every five years and also prior to the initiation of any new major construction projects.

E. Resolution of User Grievances

Disagreements may arise between station users or between users and OTS staff. Normally, such problems can be resolved amicably by the parties involved. On rare occasions, however, when serious grievances arise, alleging professional misconduct or dishonesty, such informal mediation may not be adequate and a more formal procedure of resolution may be necessary. In such situations, LSAC will review the case and recommend a settlement, using a procedure outlined in a document (*Procedure for Resolution of Research and Student Grievances*) available upon request from Scientific and Administrative Directors or from NAO.

III. LA SELVA LANDUSE ZONING

Greater La Selva is zoned for use according to the following categories (Fig. 1 provisional map attached name of new annex still pending).

A. Rafael Chavarría Ecological Reserve.

The purpose of the Ecological Reserve is to preserve a section of primary forest that was set aside for limited access early in the history of the station. The guidelines given in the Operational Procedures Manual limit access in order to preserve the esthetic and historic value of this relatively undisturbed portion of forest close to the high activity areas of the station, and to honor the spirit and memory of former station manager, Rafael Chavarria, for whom the Reserve is named.

B. Low impact areas.

Available for all research and education activities, except for major habitat alteration at a scale $> 100 \text{ m}^2$ (small long-term plots and small manipulations are approved and sited by the Station Scientific Director).

C. High impact areas.

May be allocated to projects by the Scientific Director for habitat manipulation on a scale $> 100 \text{ m}^2$. Sites within this zoning category are ranked such that higher-ranking sites are allocated for large scale manipulation only when lower-ranked sites are clearly demonstrated inappropriate for the project in question. High impact areas are itemized by rank in the Operations Manual.

D. OTS habitat management areas.

OTS maintains three types of managed habitats at La Selva: trails, the arboretum and the successional plots. Management plans for these habitats are contained in the Operational Procedures Manual.

E. The La Selva Site Plan

Goal V, Objective 15 of the OTS Strategic Plan (approved by the Board of Directors-BoD) establishes that OTS should support program objectives through improvements in physical infrastructure. Specifically, it stipulates that each field station should have a Master Plan (also approved by the BoD) that includes consideration of physical plant and laboratories. Encouraged by LSAC, in 2000 OTS management developed a Site Plan for La Selva to better manage and locate future infrastructure (Appendix 1). The Site Plan establishes four facilities zones for La Selva:

- 1. Scientific Zone** (West Bank, Río Puerto Viejo). This zone will contain laboratories, classrooms and other structures associated with La Selva research and education activities.
- 2. Education Residential Zone** (East Bank, Río Puerto Viejo). The vicinity of the comedor, including Iguana, Tortuga and the family houses. This zone will contain dining facilities and housing for education groups.
- 3. Administration Zone** (La Flaminea). This zone will contain La Selva's principal administrative buildings, the workshop and the backup powerplant.

- 4. Investigator Residential Zone** (La Flaminea). This zone will contain all new researcher housing. The existing cabins in the Scientific Zone will eventually be decommissioned and moved to the Investigator Residential Zone.

Sites where buildings exist or are planned in the La Selva Site Plan are defined as Developed Areas. Perimeters are defined by the edge of all mowed areas in existing building sites, and by the mapped sites of future construction. Research is encouraged in these areas, with the understanding that site maintenance and development and human safety take precedence over research needs.

IV. INTRODUCTION AND CONTROL OF EXOTIC ORGANISMS TO LA SELVA

A. Prevention of Introduction of Exotics

Since La Selva's inauguration, OTS has added a diversity of altered lands to the station forest reserve to encourage manipulative studies in ecology, forestry, agronomy and other research related to sustainable use of natural resources. With these opportunities, however, come added obligations. OTS as a responsible citizen in Costa Rica must ensure that the introduction of exotics, whose provenance is outside the boundaries of La Selva, is carefully managed. Of particular concern are: 1) exotic species that could escape and become pests in the surrounding rural region of Sarapiquí; 2) exotic species that might escape and thrive in the natural communities of La Selva; and 3) the potential introduction of foreign genes into La Selva populations with consequent negative impact on genetic studies. Details of OTS regulations controlling the introduction of exotic animals and plants are provided in the Operations Manual.

B. Control of Exotic Species.

In 2002, over 90 species of exotics were recorded from La Selva. These species were introduced by research activities or by natural dispersal from the region surrounding the station, being confined to small areas in the former case, but generally more widespread in the latter. OTS policy is to control these exotics to prevent significant impacts to the reserve. Protection of La Selva's primary forest is given highest priority. Limited use of approved chemicals (enumerated in the Operations Manual) will be permitted in isolated, controlled situations for the eradication and/or control of exotics. OTS will maintain a list of exotic species established at La Selva, which will be reviewed annually by LSAC.

V. RESEARCH USE POLICY

A. Goals of Research Management

The OTS Strategic Plan states that OTS should provide leadership in tropical research through the management of field stations. To achieve this goal, La Selva management will work towards accomplishing the five subsidiary goals below:

1. To provide research facilities and logistical support to investigators working in Greater La Selva.
2. To provide for the orderly management and tracking of research projects to minimize impacts preserving the long-term integrity of habitats within the La Selva reserve for research and education and to avoid potential conflicts among research projects.
3. To extend La Selva research into the region surrounding the station, and in particular, into the La Selva – Braulio Carrillo National Park corridor.
4. To actively recruit research to La Selva that is of strategic interest to OTS (while not detracting from existing research efforts). Research recruitment will require active participation by OTS staff from La Selva, the Costa Rican and North American Offices, LSAC, the OTS Research Committee and Vice Chair for Research and the OTS Board of Directors.

5. To promote dissemination of the results of La Selva research through OTS educational activities, oral presentations at professional meetings, scientific publications and through publicly accessible data and other information served by OTS to the world wide web.

B. General Research Guidelines

A broad range of research projects is considered potentially appropriate at La Selva, under the following general constraints:

1. **Informing users of La Selva research regulations.** Detailed research guidelines and regulations are provided in the Operational Procedures Manual and are 1) supplied to researchers at the time of initial contact electronically and 2) presented in a handout provided to arriving or prospective researchers (attached as an appendix to the Operations Manual).
2. **Approval.** Researchers must obtain approval from OTS before initiating any project (see Section V.C. below).
3. **Basis of evaluation.** Proposals for work at La Selva are evaluated primarily according to the impact of the proposed work on watershed dynamics, forest integrity and other impacts on the La Selva reserve as outlined in the Operations Manual. Impact on existing research projects will also be a prime consideration. Proposals for research requiring large-scale manipulation or long-term assignment of land will also be reviewed for compatibility with the development and priorities of La Selva.
4. **Data Management.** Researchers are required to submit metadata and to comply with other La Selva data management policies outlined in the Operations Manual.
5. **Reporting.** Investigators are requested to send OTS (North American Office) four copies of all publications (including theses and dissertations) derived from work at La Selva and to acknowledge OTS assistance in their publications. OTS will also encourage oral presentations by La Selva researchers to Costa Rican member institutions and other groups.
6. **Dissemination of results.** OTS will maintain current bibliographies of La Selva publications as well as databases on La Selva research projects that document basic project information and metadata. This information will be made available to the public via the world wide web.
7. **Collaboration with Costa Ricans.** Non-Costa Rican researchers are actively encouraged to include funds for Costa Rican collaboration in their projects. The Station Scientific and Administrative Directors and the CRIC provide the necessary contacts with Costa Rican institutions.
8. **Permits.** In accordance with Costa Rican law, researchers must obtain research permits from the Costa Rican Ministerio de Ambiente y Energía (MINAE) before initiating their research projects. The research permit must authorize any planned collections. In addition, researchers must obtain export permits from MINAE if biological materials or their derivatives are to be transported outside the country. The Costa Rican and North American offices lend assistance in these cases (see Operations Manual). Any project that has received permission from OTS to cut trees within La Selva as part of the research must also obtain MINAE Forest Service approval. The OTS Costa Rican offices and La Selva staff assist in obtaining these permits.
9. **Research in Braulio Carrillo National Park.** Visitation to Braulio Carrillo National Park is facilitated by a Memorandum of Understanding between OTS and the Ministry of the Environment and Energy (MINAE). Permission for research activities inside BCNP must be obtained from the National Park Service (Servicio de Parques Nacionales, SPN), a subagency of MINAE. The OTS Costa Rican office assists in obtaining these permits. A daily use fee must also be paid to the SPN for time spent within the Park.

If MINAE determines that additional broadening of the Braulio Carrillo (Zona Protectora) corridor would be desirable, then – in the context of the memorandum of understanding between La Selva and Braulio Carrillo – OTS should make every effort to facilitate such an effort.

C. Proposal Review

1. **Low-impact Projects.** The review of lower impact projects (defined by the Operations Manual) is the purview of the La Selva Scientific Director. If the Scientific Director feels that a project requires outside review, that proposal will be sent to LSAC and scientists with relevant expertise. Details of the approval process are contained in the Operations Manual.
2. **Higher-impact Projects.** Projects potentially causing more significant impacts on La Selva ecosystems or logistic capacities will be reviewed by LSAC. Such higher impact projects will be evaluated on the basis of their compatibility with OTS' long-term goals for La Selva. OTS staff and LSAC will carefully consider the impact of proposed experimental manipulations (e.g. tree cutting, pesticide application) in a broad spatial and temporal context. OTS may also seek outside scientific review to gain additional information about potential impacts and/or to determine if the research question and study design warrant the proposed impact on La Selva. LSAC and outside reviews will be completed in a timely fashion. If approved, OTS' written notification will specify details regarding operating procedures that are to be followed.

VI. EDUCATION USE POLICY

Goal I of the OTS Strategic Plan states that OTS should provide leadership in training professionals in tropical science. La Selva contributes to the completion of this goal by supporting university course education at the station.

1. **Support Staff.** La Selva will maintain support staff whose primary duty is to assist education groups. In addition to these primary staff, La Selva scientific staff will assist courses with laboratory work, GIS, plant and animal identification and the La Selva Scientific Director helps students and courses with the development of individual projects.
2. **Classrooms and laboratories.** OTS is committed to providing classroom and laboratory space for two simultaneous courses at La Selva. OTS will furnish this building with appropriate equipment, including computers, laboratory equipment and microscopes.
3. **Reservation Priority.** Education groups will have priority for group reservations at the station. Reservation priorities will be ranked in the following order: 1) OTS courses, 2) OTS member institutions and 3) other institutions.

VII. INFORMATION MANAGEMENT

A. Information Management Goals

La Selva will seek funds to improve data management and will continue to work toward the following goals:

1. Providing in electronic format a list of current and past research projects, together with key word, study site, and researcher's institution, in order to facilitate retrieval of information and coordination and collaboration among researchers.
2. Capturing and disseminating metadata on all La Selva research to the world wide web.
3. Documenting and archiving 1) data sets of broad utility to the La Selva research and education communities and 2) significant data sets critical for long-term monitoring of the ecological integrity of La Selva. Such data sets include meteorological, TRIALS, forestry, forest plot, precipitation chemistry, plant and animal population and taxonomic data (i.e., species lists, keys and web-based taxonomic tools).
4. Making the latest GIS coverages, other core data sets such as meteorological data easily available to the scientific public in digital form via the world wide web.

B. Database Management Policy

Goal II, Objective 5 of the OTS Strategic Plan states that the organization will “Continue to improve long-term databases to better support research, as well as comparison and analyses at the landscape level and among tropical sites”. La Selva policy is to encourage the widest possible dissemination of scientific results. OTS requires researchers to submit metadata on all La Selva projects. In addition, La Selva database management policy stipulates that some fully documented data sets of broad utility must be submitted to the station if requested by OTS. During the process of research approval the La Selva Scientific Director will determine whether project data must be deposited with OTS. Station regulations concerning database management, including data and metadata deposition are contained in the Appendix to the La Selva Operations Manual: “Data Management Procedures at La Selva”.

C. Management of Other Information

Regulations concerning other types of information (collections, herbarium, library, photographs, geographical imagery and species lists and keys are contained in the Operations Manual:

VIII. INTEGRATION OF LA SELVA INTO COSTA RICA

The government of Costa Rica considers sustainable resource use to be a national priority. Because OTS' mission goals of promoting education, research and rational use of resources in the tropics are in accordance with this priority, the Costa Rican National Assembly declared OTS to be an National Institution of Public Merit in 1983 and again in 1992. To further mission goals, it is important for La Selva to maintain strong, supportive relationships with Costa Rican Universities, Government Agencies, Local Institutions and the General Public.

A. Relationships with Universities

- 1. Project assistants and technicians.** OTS policy is to encourage interaction between the Costa Rican member institutions and the La Selva research community. OTS encourages non-Costa Rican principal investigators at La Selva to hire Costa Rican scientists as the postdoctoral fellows, technicians, assistants and interns for their projects or to take them as graduate students. The Station Scientific and Administrative Directors will assist in locating candidates for positions with visiting researchers by sending announcements of job opportunities to the Costa Rican OTS member institution representatives, CRIC, and to faculty in relevant departments of the member institutions.
- 2. Hiring Practice.** To contribute to the development of the national scientific and professional community, OTS will make an effort to recruit Costa Rican nationals for all professional positions at La Selva.
- 3. Interaction with La Selva Researchers.** La Selva staff will provide an introductory lecture on La Selva and guided field walks to visiting Costa Rican courses and should encourage attendance by Costa Rican course students, faculty and Costa Rican researchers at La Selva seminars. Whenever possible, these should be given in Spanish. The La Selva Scientific Director and CRIC should assist with contacts between La Selva researchers and Costa Rican university faculty organizing seminar programs or class lectures.
- 4. Reporting on research at La Selva.** Listings of researchers and projects from the La Selva researcher database will be maintained on the world wide web and descriptions of web-based resources will be distributed to Costa Rican Assembly of Delegates members and to CRIC annually.

B. Relationships with Government Agencies

- 1. MINAE and the Area de Conservación de la Cordillera Volcánica Central (ACCVC).** MINAE the ACCVC, which includes La Selva, the biological corridor and main body of BCNP, the Central Volcanic Cordillera Forest Reserve (Reserva Forestal Cordillera Volcánica Central) and 15 other protected areas. A close working relationship with the ACCVC, and particularly with the personnel of Braulio Carrillo National Park, is very important to La Selva.

2. **Data Sharing.** OTS will make a special effort to share data from La Selva research with Costa Rican Government Institutions, NGO's and individual researchers. In particular, OTS forestry trial data will be made available to MINAE, FUNDECOR and other institutions on request.

C. Relationship with the Institutions and the Public in the Sarapiquí Region

Due to growth during the last decade, La Selva visitation now surpasses 25,000 person days per year and the station is one of the largest employers in the Sarapiquí region. La Selva has thus become an important institution in the Cantón de Sarapiquí. Commensurate with La Selva's role as a key player in regional affairs, it is imperative that the station maintain strong positive relationships with local institutions.

1. **Government Agencies.** La Selva will maintain relationships with the local municipal government, agencies of the central government, local non-governmental organizations and for-profit businesses.

In addition to MINAE, Important governmental institutions with whom OTS must interact include: the Ministry of Health (MS), Costa Rican Social Security (CCSS), Ministry of Public Security (MSP), Ministry of Environment and Energy (MINAE), Ministry of Public Education (MEP), Ministry of Agriculture (MAG), Ministry of Labor (MTSS), the Municipality of Sarapiquí and the National Forest Finance Fund (Fondo Nacional de Financiamiento Forestal, FONAFIFO).

Foremost among these is the Municipality of Sarapiquí, which has jurisdiction over La Selva. Also of paramount importance are local representatives of MINAE, because MINAE and OTS share the common objective of promoting tropical conservation and managing the Braulio Carrillo National Park – La Selva corridor. To foster strong communication between MINAE, National Parks Service (SPN) park guards, La Selva staff and researchers, SPN guards have a standing invitation to visit La Selva, eat lunch, use the telephone and avail themselves of La Selva transportation to Puerto Viejo. La Selva Forest Guards should also cooperate closely with BCNP-based SPN guards, conducting regular joint patrols to protect the security of La Selva and BCNP.

2. **Local NGO's.** The most important non-governmental organizations working in La Selva's vicinity are the Foundation for the Development of the Central Volcanic Cordillera (Fundación para el Desarrollo de la Cordillera Volcánica Central, FUNDECOR), which supports reforestation and natural forest preservation in the region surrounding the ACCVC, the National Forest Finance Fund (FONAFIFO), which finances environmental service and reforestation incentive payments and the National Parks Foundation (FPN), which finances purchases of lands for inclusion in the National Park System. La Selva should work closely with these institutions to promote forest conservation and reforestation in the Sarapiquí region, especially in the vicinity of BCNP and La Selva.
3. **La Selva's Economic Role in the Community.** La Selva is an important member of the local tourism market, natural history visitation to the station now exceeding 5,000 person-days per year. OTS should be an active member of the local Tourism Association (Camera de Turismo de Sarapiquí, CATUSA) through its for-profit subsidiary, ESINTRO, and should collaborate with CATUSA to promote tourism in the Sarapiquí region. Whenever possible La Selva will support the local Sarapiquí economy by purchasing from local businesses and hiring staff from the local population.
4. **Local public relations.** To foster community relations, La Selva will maintain and develop its environmental education program as a major component of station activities. Staff will develop and maintain close contacts with local schools, arranging frequent class visits to La Selva, and setting up special lectures by La Selva researchers and faculty from Costa Rican institutions at the request of local teachers.
5. **Station Management.** The considerations of the preceding section also apply to the relations between La Selva and the general public in neighboring communities. The public perception of La Selva (and of the adjacent Braulio Carrillo National Park) has direct impact on the security of La Selva, the Braulio Carrillo-La Selva corridor and the ACCVC. La Selva's public image also affects the quality of local personnel available for station staff. To foster strong public relations, La Selva staff should

maintain relations with local officials, community groups and members of the general public in surrounding areas.

IX.FACILITIES DEVELOPMENT AT LA SELVA

A. General Policy

Goal V, Objective 14 of the OTS Strategic Plan states that the organization should improve the infrastructure of OTS facilities. The long-range plan for La Selva physical plant development is to provide living and working space for the number of station users judged to represent the human carrying capacity of the La Selva forest and associated habitats (see Operations Manual), as demand rises to these levels. OTS will endeavor to provide single occupancy housing to researchers (or doubles, for couples), although it may be necessary for researchers to share double rooms during peak-use periods. Groups will be housed 1-4 persons/room, depending on space.

OTS will strive to provide office space to all researchers and will work to increase the number of secure, private researcher offices to meet increasing demand. OTS policy is to guarantee every researcher one workspace (either desk or 1.5 m length of laboratory bench space). This space will be in air-conditioned quarters if the project's equipment requires this protection (but not necessarily in AC otherwise). Additional desk or bench space may be rented by researchers, subject to availability.

Facilities development at La Selva will be step-wise, with the construction of new facilities timed to meet the demands of projected use patterns in the near future (5 yr). New facilities that anticipate future needs can stimulate and in some cases even make new lines of research possible. An important concern, however, is to avoid over-building, adding maintenance costs that are not justified by current station use. An attempt to balance these factors will guide decisions by OTS regarding the timing and the extent of further physical plant development at La Selva.

As a standing policy, La Selva will avoid, wherever feasible, creating any new architectural barrier to wheelchair access. As a long-term goal, La Selva is committed to the modification of facilities (buildings and trails), where feasible, to make possible both day visits and research by persons with physical disabilities.

B. Trails

OTS will maintain a network of permanent trails to achieve three goals: (1) to promote access to the forest reserve, (2) to protect the reserve from impacts associated with station use and (3) to provide thoroughfares for emergency evacuation. Permanent trails (cement sidewalk or other durable materials) will be expanded, especially where erosion and trail widening are problems to control and mitigate impacts. OTS encourages the use of bicycles for more efficient access to the reserve and is committed to enlarging the network of bicycle accessible trails. OTS is also committed to providing access for the physically challenged. Gasoline powered vehicles will be allowed on the West Bank for short-term construction-related hauling and for emergency evacuation of injured persons, but for no other activities.

C. Scientific Facilities and Services.

The tropical research station market is increasingly global and competitive. New stations are forming in other Central American countries and South America, many of which maintain forest reserves larger than La Selva's. Because La Selva's surroundings are largely deforested, increasing the station's primary forest holdings is not practical. Instead, to differentiate itself from the competition in this global market, OTS should concentrate on providing excellent scientific service and infrastructure. Few other stations can provide both primary and secondary forest habitat and superior scientific facilities.

- 1. Chemistry.** One of La Selva's major strengths is its analytical laboratory housing equipment for sample preparation and chemical analyses. La Selva will continue to build in house capacity in analytical chemistry for plant, animal soil, water and atmospheric samples. This includes the development of a first class sample preparation facility with the goal of establishing and maintaining an analytical lab, and elemental analysis in solid, liquid or gaseous samples. The laboratory facilities will include equipment for the preparation and cold storage of genetic material. Scientists should be

encouraged to analyze genetic material in Costa Rica whenever possible. La Selva will also offer chemical analysis services on a fee basis (currently, NO₃, NH₄, PO₄, CO₂) and will staff the laboratory with skilled personnel capable of proper operation and maintenance of equipment and of providing excellent service to researchers and education groups.

2. **GIS and Remote Sensing.** To facilitate geographically focused research, to assist OTS staff with station management and to encourage research in the Sarapiquí region beyond La Selva's political boundaries as proscribed in Master Plan objective II.A.3, OTS will maintain and staff a GIS laboratory that will serve as the primary repository of all georeferenced data for La Selva and vicinity. To achieve these goals, OTS will also maintain the hardware and software requisite for GIS and remote sensing research and server capacity and public computers for adequate public access to the GIS system. The broad regional focus of the GIS lab will also assist OTS staff in fulfilling Strategic Plan goal III, to promote and practice sustainability in the tropics, by facilitating more research in the regional agricultural landscape surrounding La Selva.
3. **Researcher Vehicle.** To further facilitate regional research, OTS will maintain a vehicle prioritized for researcher use, rented at reasonable rates.
4. **Library.** La Selva will maintain an onsite library with a complete and accessible collection of literature concerning research conducted at La Selva and the surrounding region. The library will also provide library resources and journal articles to researchers and resident staff through electronic connection with CRO/OTS national archive (BINATROP) and other local and international library services.
5. **Plant and Animal Identification Resources.** OTS will provide a suite of tools to facilitate plant identification at La Selva by students and researchers. A key resource is a staff naturalist capable of identifying a significant fraction of the flora. As a short-term goal, OTS will work to develop a vascular florula for La Selva and as a longer-term objective to complete the vascular plant collection in the La Selva herbarium with actual, physical specimens. OTS will also maintain the Holdridge Arboretum, editions of relevant flora in the library, monographs and digital resources. In addition, OTS will maintain and develop identification resources for other taxa. The nature and extent of these resources vary among taxa, but, in general, OTS will emphasize printed and and www-based digital identification tools.

D. Rational Use of Resources and Waste Management

OTS will promote the rational use of natural resources and environmentally sound waste management at La Selva. The station will minimize waste contamination (solid and liquid), promoting recycling whenever possible and will make efficient use of other resources (electricity, fuel, drinking water, etc.). A major operating expense at La Selva is the cost of electricity needed to fuel the physical plant. La Selva will increase the energy efficiency of the current physical plant and will incorporate energy-efficient technologies in all future development.

E. Informatics

Objective V.15.a of the OTS Strategic Plan states that each OTS station Master Plan should include consideration of telecommunications and Informatics. To fulfill that objective La Selva management will work towards achieving the following goals:

1. **Data Access and Security.** La Selva will maintain servers, backup devices and other hardware necessary for secure data storage and access. As a short-term goal, OTS will work to provide easily accessible backup server space to station researchers to safeguard the security of research data.
2. **Internet Service.** La Selva will augment internet bandwidth to stay abreast of station data transfer needs, planning such augmentation well in advance, given the pronounced lag time needed for bandwidth increases.

- 3. Informatics Staff.** OTS will staff at least one computer support position onsite at La Selva. As a short-term goal, OTS will staff a metadata curator position to manage the capture, curation and dissemination of La Selva data and metadata to station users and the public.