



Annual Report 2022

Who are we?

The Organization for Tropical Studies (OTS) is a nonprofit consortium of about than 50 universities and research institutions around the world. OTS was founded in 1963, and its mission is to provide leadership in education, research, and the responsible use of natural resources in the tropics. The Organization has an office in the United States and four research stations in Costa Rica and South Africa. For 60 years, OTS has been a world leader in the study of tropical biology, providing courses in tropical ecology, conservation, and global health and trained students, including leading scientists in biology and conservation

Our areas of work

- ▶ Research: scientific discovery and knowledge to answer the most pressing questions about the present and future of the tropics
- ▶ Education: inspiring the next generation on their path to discovery and global leadership
- ▶ Public Policy: improving global policies that impact the tropics



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MAIN ACTIVITIES AND RESULTS 2022

a. Research and Education

During 2022, OTS consolidated research and education activities under the Academic Department. This was achieved thanks to the incorporation of an Education Coordinator, a Scientific Coordinator, and an Assistant for the Academic department, under the leadership of the Academic Dean and the Director of Curriculum.

Scholarships and Fellowships awarded in 2022

- 19 research grants
- 8 scholarships for international students
- 3 scholarships for students from member institutions
- 3 scholarships for research professors from member institutions
- 5 scholarships for emerging scientists
- 5 articles published in scientific journals
- USD \$120.000 allocated in scholarships

OTS Courses

	Undergraduate	Graduate	Virtual
2019	4	5	0
2020	0	1	4
2021	3	3	3
2022	3	4	2

Total quantity of students in OTS courses in 2022

Costa Rica

96

South Africa

39

Virtual

30

TOTAL

165

Scientific Presentations

- Participation in the International Congress of the Society of Animal Behavior 2022 in Costa Rica (ABS 2022)
- Participation of OTS Costa Rica and South Africa in the Annual Meeting of the Organization of Biological Field Stations 2022 in Beaver Island, Michigan

Faculty Led Academic Groups (FLAGS)

Año	Costa Rica # of participants	South Africa # of participants
2019	1.047	7
2020	149	0
2021	49	62
2022	481	41
Total	1.726	110



b. Environmental Science and Policy

As part of our efforts to train professionals and decision makers, OTS facilitated the following specialized courses:

- **Course for elected officials in Costa Rica:** 6 officials and legislative advisors, together with representatives of the Ministry of Environment and Energy of Costa Rica, United Nations Development Program, National Fund for Forest Financing (FONAFIFO), MarViva, and rectories of public universities in Costa Rica, among others
- **Course *Climate Change: Science, Public Policy, Case Studies and Action*** - 7 participants - Advanced students and professionals
- **Course *Water: A Critical and Imperiled Global Resource*** - 10 participants - Advanced students and professionals



Project Implementation

OTS is currently an implementing partner on 3 projects of great relevance:

Towards the Transboundary Integrated Water Resource Management (IWRM) of the Sixaola River Basin shared by Costa Rica and Panama (Connecting communities and ecosystems)

- **Budget:** USD\$4,386,210
- **Donor:** Global Environment Facility (GEF)
- **Implementing Partner:** United Nations Development Programme (UNDP)
- **Implementation period:** 2021-2025

Transition to an Urban Green Economy and the Generation of Global Environmental Benefits (TEVU)

- **Presupuesto:** USD\$10.317.970
- **Donor:** Global Environment Facility (GEF)
- **Implementing Partner:** United Nations Development Programme (UNDP)
- **Implementation period:** 2022-2027

Development of Costa Rica's First Biennial Transparency Report to the UNFCCC (BTR)

- **Presupuesto:** 484.000 USD
- **Donante:** Fondo para el Medio Ambiente Mundial (GEF)
- **Socio Implementador:** Programa de las Naciones Unidas para el Desarrollo (PNUD)
- **Periodo de implementación:** 2022-2024



c. Research Stations

La Selva

Sarapiquí, Heredia, Costa Rica

Visitation 2020-2022

	2020	2021	2022
Researchers, interns, and practitioners	1.819	1.739	4.778
Students	2.277	2.325	7.594
Natural History	5.002	3.099	10.709
Others	327	1.414	1.748
TOTAL	9.425	8.577	24.829

Research

This year marked the return of researchers and students to OTS research stations. As a result, La Selva approved 50 new research project proposals, for a total of 85 different ongoing projects. Two of the most iconic projects are STREAMS, led by Alonso Ramírez and Marcelo Ardón (North Carolina State University); and FIU-CARBON, developed by Steve Oberbauer. Each of these research programs have been run for more than 25 years. The researcher with the greatest number of active projects this year was Adrián Pinto from the University of Costa Rica, with projects on the relationship between insects and bacteria. Moreover, the National Science Foundation - Louis Stokes Alliance for Minority Participation Research Experiences for Undergraduates (NSF-LSAMP REU) program brought minority students, along with their mentors, from the United States to conduct short-term research projects.

Recently La Selva has become a popular place for international film and audiovisual production teams thanks to its biodiversity, the facilities, and the knowledge and support of the scientific staff of the station. More than 10 film crews from international broadcasting companies have been received at the Station.

Excellence

A modern Visitor Center was built that includes among its facilities an area for permanent exhibitions, a reception space, offices, a gift shop, a snack shop, and a terrace.

New workspaces for the scientific staff and a new herbarium facility replaced the old Orquidea building and the old herbarium. Improvements to housing included three new bedrooms and ten full bathrooms.

Network capacity was increased from 100 Mbps to 1 Gbps, and sections of fiber optic were upgraded at several points on the station, including one that was up to 26 years old. A redundant Wi-Fi link improved internet coverage in the scientific area, and Wi-Fi upgrades were made at other points as well. VoIP phones were installed throughout the station.



Sustainability

La Selva renovated several buildings using sustainable construction techniques that include environmentally friendly and high-efficiency technologies to reduce energy and water consumption.

The air conditioning systems at the station were renovated to reduce energy waste, which allowed a reduction of energy consumption by up to 50%.

Thermal insulation was applied to structures, and walls were waterproofed.

Solar water heating systems were installed for vacuum tube thermosiphon showers. This allows the sun's energy to be captured, providing hot water 24 hours a day.

Extensión

- Environmental Fair in August 2022 in coordination with the National University of Costa Rica with the participation of 1,500 people
- Workshop: "Reconnecting with our home" in coordination with the Guarumo Association with the participation of 30 people
- The 38th Annual Christmas Bird Count at La Selva was conducted on December 17, 2022, with the registration of about 120 people distributed along 25 observation routes

Projects

"The Green in Our Hands," coordinated by artist Rossella Matamoros

- Donor:** American Embassy in Costa Rica
- 20 students from the community participated for one year

"Vivero de la Cultura: Workshops for the recovery of the environmental culture of Sarapiquí"

- Donors:** Joan Citron and Towards Sustainability
- 50 participants

Strategic Alliances

OTS and La Selva Research Station would like to extend a special thanks to the alliance with the National Conservation System (SINAC) for all the years of joint cooperation.



Research Station

Las Cruces and Wilson Botanical Garden

Coto Brus, Puntarenas, Costa Rica



Visitation 2020-2022

	2020	2021	2022
Researchers, interns, and practitioners	599	587	595
Students	1.260	875	4.048
Natural History	1.876	1.125	2.956
Others	26	553	393
TOTAL	3.761	3.140	7.992

Most relevant research

During 2022, seven new projects were added at Las Cruces, for a total of 12 active projects. OTS supported 8 of these initiatives through research grant funds. Two of these scholarships were awarded to graduate students, whose research focused on the influence of fungal infections on the survival of tree seedlings and the taxonomic relationships of the butterfly *Heliconius pacheus*. In addition, the National Science Foundation - Louis Stokes Alliance for Minority Participation Research Experiences for Undergraduates (NSF-LSAMP REU) program brought minority students, along with their mentors, from the United States to conduct short-term research projects.



Excellence

The station's laundry service was expanded to better serve visitors.

Internet bandwidth was increased, and network cabling was renewed. In addition, a new VoIP telephone exchange with emergency telephones was installed at various points in all the buildings at the Station.

Extensión

- In total, about 200 people attended the Las Cruces Open House, which was held in partnership with institutions such as UNED, MINAE, Finca Cántaros Association, and the local government, among others
- The 2nd Annual Christmas Bird Count at Las Cruces was conducted on December 27, 2022, with 11 observation routes and an enrollment of 49 participants



Projects

“Promoting the beauty of pollinating plants ”

Donor: Smith Horticultural Trust

“Forest Gardens and Traditional Knowledge - Building Dialogue and Connections with Ngöbe Indigenous Peoples for Environmental and Social Sustainability and Innovation in Southern Costa Rica”

Donor: Canada Fund for Local Initiatives (CFLI)

Total budget: USD\$33.865

Strategic Plan Workshop

The workshop was funded by the National Science Foundation (NSF), with about 20 presentations from Costa Rica and international experts, and local organizations focused on restoration issues. The objective of the workshop was the development of a 5-year strategic plan to transform Las Cruces into a Center for Ecological Restoration Specialized

Strategic Alliances

Las Cruces Research Station wish to acknowledge and thank the following organizations for their valuable support: San Vito Bird Club; Turibus, Asociación Finca Cántaros; Proyecto Ovop; the Embassy of Canada in Costa Rica, Nicaragua and Honduras; the Canada Fund for Local Initiatives; and the IISAAK Olam Foundation .





Research Station Palo Verde

Bagaces, Guanacaste, Costa Rica

Visitation 2020-2022

	2020	2021	2022
Researchers, interns, and practitioners	42	64	106
Students	798	438	1.158
Natural History	839	521	353
Others	29	94	37
TOTAL	1.708	1.117	1.654

Research

Palo Verde continues to support research on tropical dry forest, wetlands management, and biodiversity. Around ten projects were developed during 2022, three of which are supported by research grants.



Excellence

- Improvements to the elevated bridge with reconstruction in partnership with MINAE
- The internet provider was changed, increasing the connection bandwidth from 4Mbps to 12Mbps. Improvements are planned in 2023 to double the internet connection for a new telephone exchange and network infrastructure

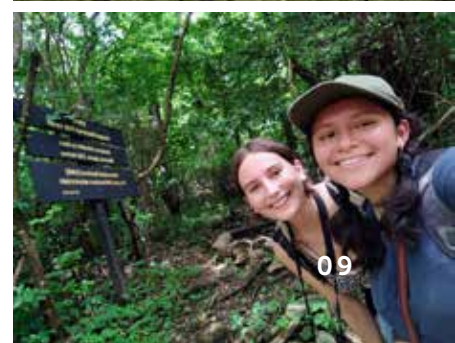


Extension

The 3rd Annual Palo Verde Christmas Bird Count was conducted on December 20, 2022, with 10 observation routes and an enrollment of more than 45 people.

Strategic Alliances

For OTS and the Palo Verde Research Station, it is important to recognize our collaborative work with the Ministry of Environment and Energy (MINAE), the National System of Conservation Areas (SINAC), and the support of Peninsula Papagayo.



Estación de Investigación Skukuza

Sudáfrica

Visitación 2019-2022

	2019	2020	2021	2022
Researchers, interns, and practitioners	474	470	836	904
Students	3.272	1.045	1.287	3.586
Natural History	235	199	865	988
TOTAL	3.981	1.714	2.988	5.478

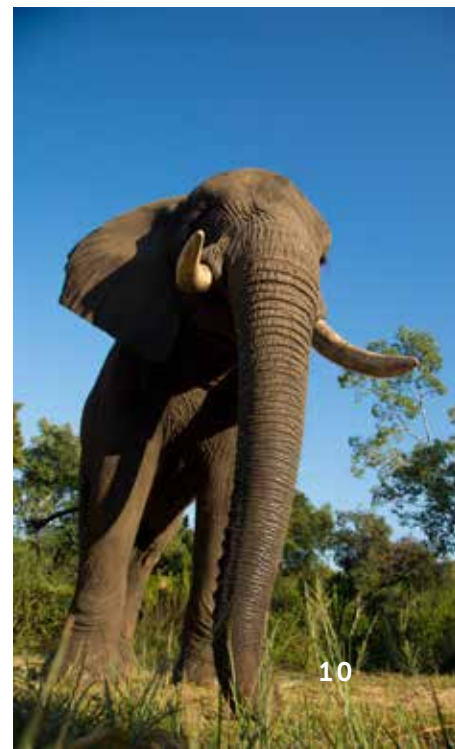
Research

OTS programs in South Africa continue to lead and contribute to long-term research and biodiversity monitoring projects. This is achieved thanks to close collaboration with scientists from local conservation agencies, such as the South African National Parks (SANParks) and CapeNature, on invasive species investigations in rivers within protected areas. Other research projects focus on the application of fusion technologies in biodiversity monitoring and functional trait ecology.



Excellence

- The Skukuza Science Leadership Initiative (SSLI) Campus received the 2021 Human Diversity Award from the Organization of Biological Stations (OBFS)
- The capacity of the Station to accommodate Natural History visitors and the construction of new bathroom units was expanded thanks to the collaboration of Merensky Timbers, which donated a wooden platform for this project
- There were improvements to the maintenance shop with the installation of dedicated metal and woodwork areas, as well as the construction of a tool shed, storage areas, and a full range of recently acquired second-hand commercial-grade machines
- Bandwidth was increased from 15/5 Mbps to 20/20 Mbps. A new 1Gbps POE physical backbone was installed, providing Wi-Fi access throughout the Station and 10 new routers. Video conferencing systems and equipment upgrades were installed, including four new laptops and workstations
- Laundry service was made available to visitors



Extension

OTS' environmental education and outreach efforts in South Africa contribute to SSLI. This initiative was established to promote human capital development and equity in the Southern African biodiversity sector by supporting and implementing locally relevant field programs, outreach, and training opportunities.

Strategic Alliances

OTS and the Skukuza Research Station wish to highlight links with the University of the Witwatersrand, the University of Cape Town, and the University of Mpumalanga. In addition, OTS continues to collaborate with the South African National Parks (SANParks) and Nsasani Trust in the implementation of the Skukuza Science Leadership Initiative (SSLI) in Kruger National Park.





d. Operations

During the last year, OTS has made efforts to enhance and renew its technical capacities in the aftermath of the Covid-19 pandemic. These efforts include OTS' partnership with the University of Costa Rica (UCR) on the following improvements:

- OTS reopened the library at its headquarters in Costa Rica in September 2022, after almost three years of closure. The library is now managed by UCR.
- OTS now has an internet network provided by UCR, both at its headquarters and at its three research stations in Costa Rica. OTS' computer systems are also under the administration of UCR, which has considerably reduced cybersecurity risks.
- OTS now offers UCR two permanent workspaces: a security guard's post in a strategic area for monitoring and surveillance and a house for the maintenance staff
- OTS has provided workspace for the Center for Research in Biodiversity and Tropical Ecology (CIBET) of the UCR School of Biology

OTS thanks the University of Costa Rica and Dr. Gustavo Gutiérrez Espeleta, Rector of the University, and all the UCR officials who have worked with OTS for the support received over so many years of collaboration.

Technological Improvements

At the OTS headquarters in Costa Rica, the bandwidth of internet connection was increased. In addition, an update was made to the server software, and a new platform for server backups was enabled.



Signage and Training

- OTS as a center of excellence for students, researchers, and collaborators updated the signage at the three research stations in Costa Rica for information and risk prevention, and updated the labeling of the rooms and other strategic points.
- OTS promotes a safe environment for collaborators, students, researchers, and the general public. In compliance with and adoption of the law of each of the countries where OTS works.

Gratitude

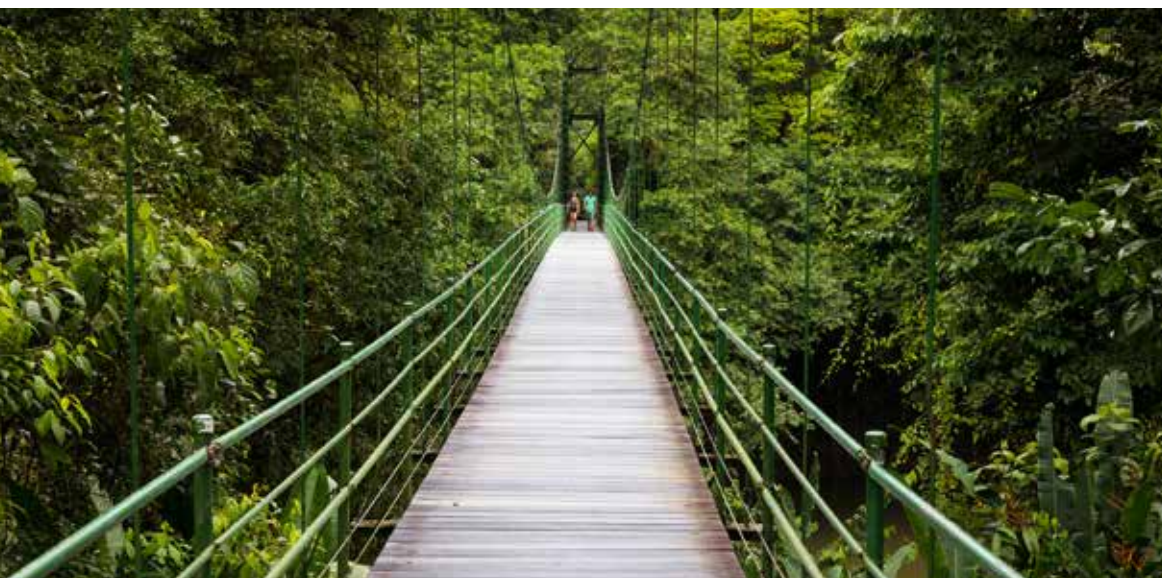
OTS received donations from students, station visitors, researchers, board members, private foundations, corporations, and individuals who appreciate the work OTS does.

Thanks to this valuable support, it was possible to:

- Provide scholarships for students from all over the world
- Carry out repairs on the bridge of La Selva
- Expand the Women in Science Program in South Africa
- Continue research on pesticides and microplastics in the Palo Verde wetland of Costa Rica
- Organize Christmas Bird Counts at all three research stations in Costa Rica, including the 38th count at La Selva
- Develop a new garden and interpretive trail at Las Cruces that highlights traditional medicinal plants used by the indigenous community and people of the Brunca Region

Without your support, this – and much more – would not have been possible.

We look forward to what we can achieve together in 2023!

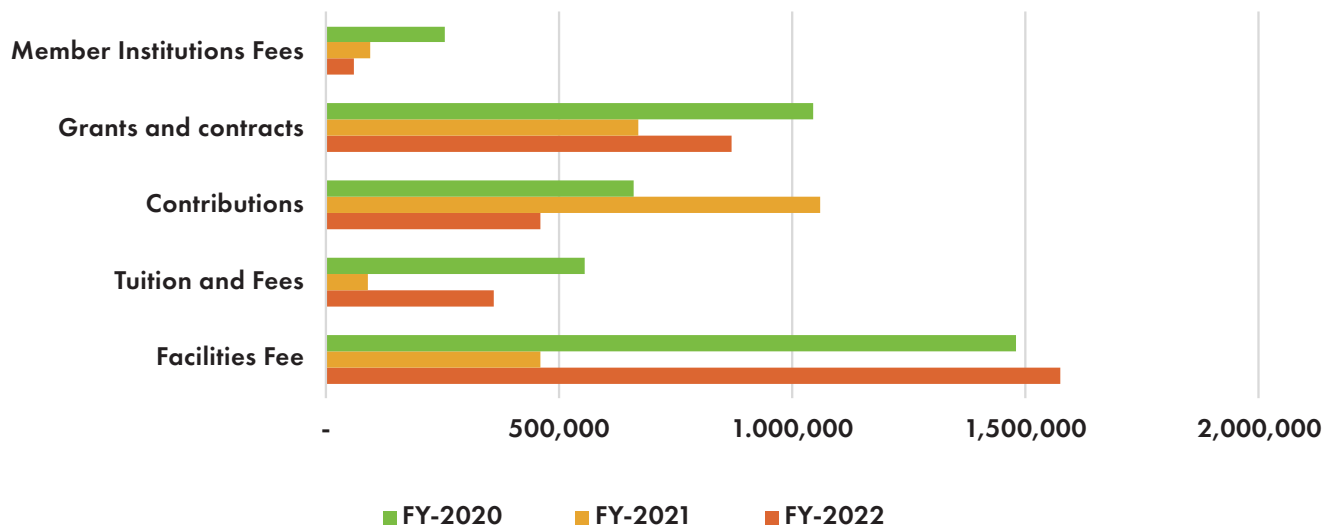


e. Finance

OTS revenue by category by fiscal year (FY) ended in June of each period is listed below. Although revenues doubled and even tripled in some of the categories, compared to the 2021 period, some still do not reach the levels registered prior to the impact of the Covid-19 pandemic. Below is the data divided by category, indicated in USD.

	FY-2022	%	FY-2021	%	FY-2020	%
Facilities Fee	1,575,374	47%	457,268	19%	1,478,641	37%
Tuition and Fees	358,459	11%	89,763	4%	555,403	14%
Contributions	456,576	14%	1,058,097	45%	657,514	16%
Grants and Contracts	870,665	26%	671,350	28%	1,046,191	26%
Member Institutions Fees	57,053	2%	92,711	4%	254,700	6%
	3,318,127		2,369,189		3,992,449	

OTS revenue by category



OTS60



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