

# PACUARE RESERVE

This year, Ecology Project International's 2,000-acre Pacuare Reserve celebrated its 30<sup>th</sup> anniversary and provided educational programming and scientific partnership to its highest number of visitors yet. A total of 1,424 students, teachers, volunteers, researchers, and ecotourists immersed themselves in the stunning biodiversity and conservation programs of the Reserve this year, representing an 8% increase over last year. Average length of stays at the Reserve also increased by .25 days per visitor, and revenue from visitors was more than double budgeted expectations.

**10,000+** STUDENTS AND TEACHERS SINCE 2000  
**30** YEARS OF CONSERVATION

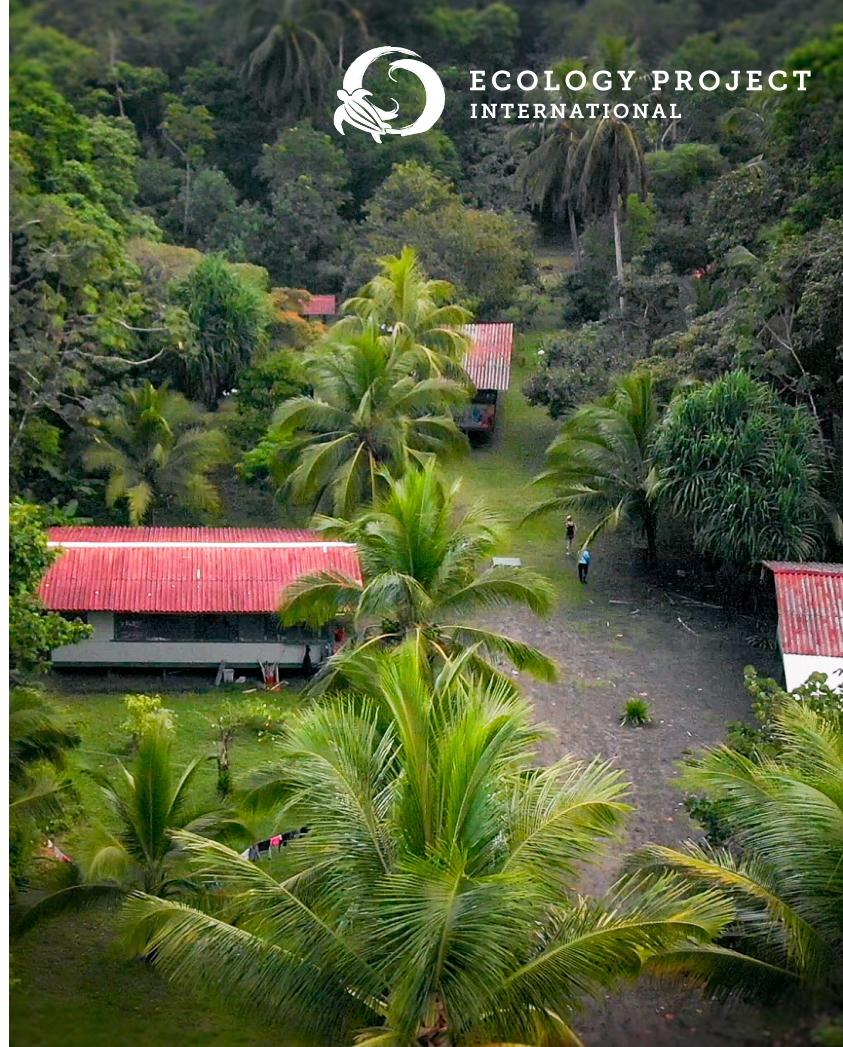
A thrumming young jungle stretches through Pacuare Reserve all the way to its coastline. What was once logged for timber or grazed by cattle is now protected for a wide variety of wildlife seeking haven in the region. Beyond the iconic leatherback sea turtle, Pacuare Reserve is now home to more than 2,700 species of plants and animals (and counting). Among the more than 200 species of birds, 32 species of bats, and 6 species of feline, there are many rare, threatened, or endangered animals, offering myriad potential for ground-breaking conservation research. EPI's research staff are currently focused on four key species, and are partnering with more international research institutions each year to study the incredible flora and fauna of the reserve—and how to protect it in perpetuity.

## SEA TURTLE RESEARCH

EPI's Pacuare Reserve has the longest-running leatherback sea turtle (*Dermochelys coriacea*) conservation program in the Caribbean region of Costa Rica, and its impact continues to grow. Due to the history, success, and investment in this program, Pacuare Reserve is being sought out by the sea turtle community and government agencies for project development, training, and scientific-technical support.

This year, the global conservation status of the leatherback turtle went from Vulnerable to Endangered on the IUCN Red List of threatened species. As the only beach in Costa Rica that has not shown a negative trend in leatherback populations, Pacuare Reserve's importance to their survival is critical.

**581** LEATHERBACK NESTS RECORDED  
**25,564** HATCHLINGS RELEASED



## NEW & NOTABLE

### Pacuare Reserve Resource Center

Last year, EPI's Pacuare Reserve launched an innovative sustainability program that separates and collects waste considered "trash" and creatively converts it into materials that can be reused in educational and artistic resources.



The Reserve strives to be a pioneer in the recovery of resources by partnering with local recycling organizations

and solving environmental problems in practical ways while cultivating values and habits in its visitors that support the natural world. One example of this creativity in resource re-use is the Reserve's new program of creating ecobricks—hard plastic containers filled with soft plastic waste that can be used as building bricks.

### Three-Star Beach Award

Pacuare Reserve received a three-star Ecological Blue Flag Award from Bandera Azul Ecologica in the Beaches Category, granted annually by the Costa Rican Tourism Institute (ICT) and the Institute of Aqueducts and Sewers (AyA). This certification evaluates the organization's efforts to develop specific actions in the field of solid and liquid waste management, water quality, and environmental education.



Bandera Azul Ecologica

# PACUARE RESERVE CONSERVATION & RESEARCH

## Sea Turtle Monitoring and Conservation Program

EPI's Pacuare Reserve recorded 581 leatherback nests and successfully released 25,564 hatchlings this season. Nests that were protected in the hatchery experienced 69% success compared to 31% success in nests which



were not relocated. This data illustrates the importance of a carefully monitored management plan, and highlights the need to do more research to understand the reasons for the difference in success rates between hatchery incubation and wild incubation.

## Building a Conservation Network

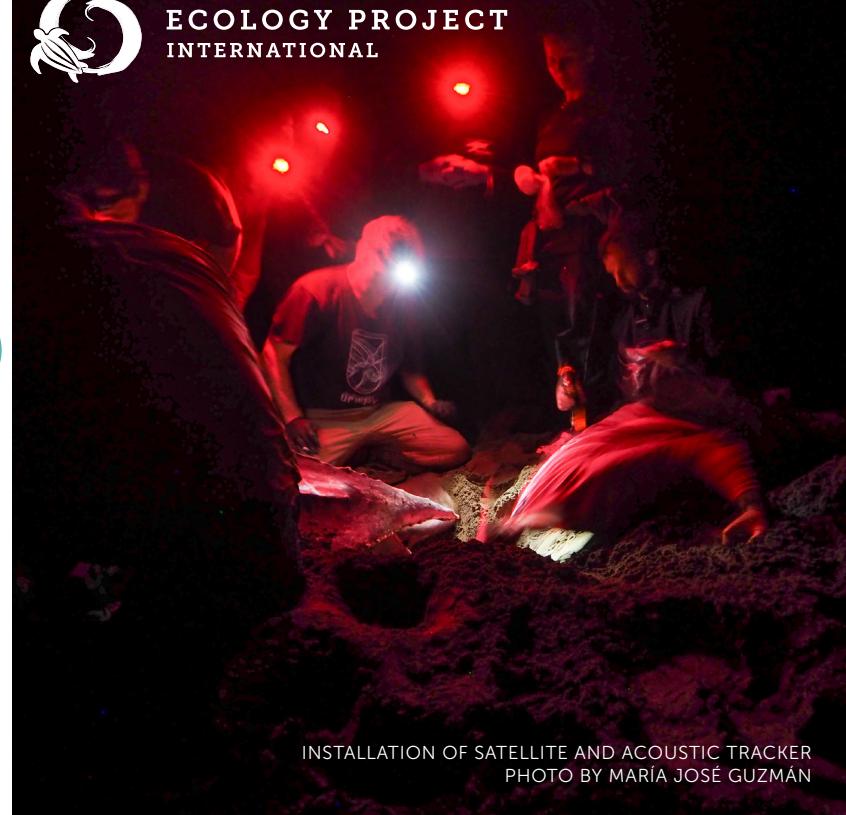
One of Pacuare Reserve's goals in sea turtle conservation is to build and support a network of projects, organizations, and community members dedicated to the protection of sea turtle species. The network will collaborate to share technical scientific advice, training, resources, data, and volunteers.

As part of this initiative, Pacuare Reserve Research and Conservation Coordinator, Claudio Quesada, is supporting a local NGO in the community of Cahuita with technical advice for a new sea turtle conservation project. The beach at Cahuita has historically experienced an illegal harvest rate of sea turtle eggs of 100%, but this year the organization protected 18 leatherback nests—about 20% of the total nests this season—and those nests had more than 70% hatching success.

## New Sea Turtle Research & Partnerships

Notably, Pacuare Reserve formalized a partnership with Upwell and NOAA, who provided training from scientists George Schillinger and Scott Benson, in order for the Reserve to acquire and install satellite and acoustic transmitters on 11 leatherback sea turtles. This groundbreaking research will provide 9 months of information on leatherback sea turtle migration routes and dive depths.

Pacuare Reserve also welcomed coordinators from three other Costa Rica-based sea turtle conservation projects and two members of the National System of Conservation Areas for the Reserve's Research Assistant Workshop, which explored sea turtle biology and ecology as well as research protocols and project management strategies.



INSTALLATION OF SATELLITE AND ACOUSTIC TRACKER  
PHOTO BY MARÍA JOSÉ GUZMAN

## PLANNING FOR THE NEXT 30 YEARS

Pacuare Reserve's first priority has always been to protect its incredible biodiversity. Through working with the local community, increasing the sustainability of its facilities, partnering with local and international researchers, and increasing and diversifying its income, the Reserve plans to continue empowering local conservation leadership to protect the threatened species that call it home far into the future.

To achieve these goals, the Reserve has identified these immediate investment priorities for its two stations:

- Overhaul of the 30-year old sewer systems by replacing septic fields that negatively impact the environment with environmentally-friendly and efficient biodigesters
- New water purification systems for staff and visitors

### Additional planned infrastructure investments

The Reserve recognizes that as it becomes a global leader in youth and community conservation education, as well as scientific research, it must sustainably increase its capacity.

The strategic plan for the Reserve first outlines an increase in overnight visitor capacity at its South Field Station. The plan includes an update of the current restroom facilities to offer increased comfort to long-term researchers and other visitors.

In order to allow for long-term research and non-intrusive viewing and photography of one of the only known (and accessible) nesting sites of the agami heron in the world, the Reserve intends to build a low-impact, permanent viewing platform and bird blind.



# ADVANCING RESEARCH IN COASTAL COSTA RICA

EPI's Pacuare Reserve is a uniquely forested tract of land amidst the deforestation of the Caribbean coast of Costa Rica. The Reserve has become a haven for thousands of animal and plant species, including at least six Central American feline species and more than 200 bird species. The presence each of these species gives rise to new scientific partnerships and enrichment of global knowledge of restoration and conservation of tropical ecosystems.

## FELINE RESEARCH



### Jaguars and Prey Monitoring Program

Pacuare Reserve may represent a critical link in habitat connectivity for dispersion, feeding, and reproduction for at least six Central American feline species.

4,320 HOURS OF FIELD CAMERA FOOTAGE

2 JAGUARS SPOTTED ON FIELD CAMERAS

6 OCELOTS IDENTIFIED AT PACUARE

This year, Pacuare Reserve welcomed two new partners—Panthera Costa Rica and Coastal Jaguar Conservation—as collaborators for investigations of feline presence and activity at the Reserve. Local and visiting students and teachers, as part of EPI's Costa Rica Felines and Primates program, help plan location and installation of remote cameras, and record data from videos to help identify presence of felines and their prey species.



Panthera Costa Rica, the Coastal Jaguar Conservation, and EPI's Pacuare Reserve identified key priorities for felines:

- 1) Estimate the current density of jaguars in Caribbean Costa Rica
- 2) Generate information about other wild cats and their prey at EPI's Pacuare Reserve
- 3) Estimate the abundance of other mammals in the Reserve

The organizational partnership also provides an important opportunity to work with local communities on conservation of jaguar prey species in order to decrease livestock predation conflicts.



A STately AGAMI HERON IN PACUARE RESERVE.  
PHOTO BY ALVARO CUBERO

## HERONS AND MONKEYS



### Agami Heron Nest Monitoring Program

EPI's Pacuare Reserve is seasonal home to the largest breeding and nesting colony of agami heron (*Agamia agami*) in Costa Rica, and the only one on the Caribbean side of the country. Twice a week, EPI researchers and visitors visit the colony to collect data from behind a blind. Their research is beginning to populate the sparse body of data on this stunning species.

The Reserve has partnered with a working group of five countries (Brazil, French Guiana, Venezuela, Colombia, and Ecuador) to share research methods and data from observations on the relatively unknown and extremely rare agami heron. Researchers follow a protocol designed by scientists within the IUCN's Agami Heron Working Group.

59 ADULT AGAMI HERONS COUNTED

42 AGAMI CHICKS HATCHED (AND COUNTING!)

### Monkey Population Ethology Program

The white-faced (*Cebus imitator*), howler (*Alouatta palliata*), and spider monkeys (*Ateles geoffroyi*) are among the most abundant and visible mammals at Pacuare Reserve. Primate social learning is a complex cognitive phenomenon, and this program seeks to describe the different behaviors and social learning processes exhibited by each species. Research assistants, with the support of EPI Costa Rica students, recorded baseline data in the hopes of developing partnerships with researchers interested in longer-term projects.



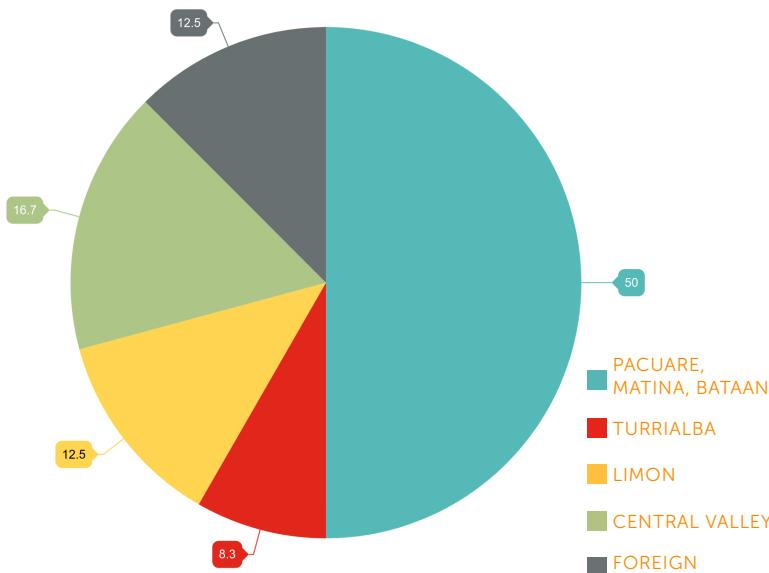
## BUILDING COMMUNITY



One of Pacuare Reserve's goals for this year was to hire more staff from the local community, focusing on areas closest to the Reserve: Pacuare, Matina, and Bataan. The Reserve is proud to share that more than 70% of staff are from the Caribbean, including Pacuare, Matina, Bataan, Limon, and Turrialba.

The Reserve employs six full-time staff at the field stations, three full-time staff at the office, and 15 seasonal positions in a region of high poverty and unemployment. The Reserve supports the human communities as they move away from traditional practices of turtle egg harvesting and hunting, reducing local residents' need to move to the Central Valley of Costa Rica for employment opportunities.

## 2019 PACUARE RESERVE STAFF



# PACUARE RESERVE BEYOND THE SCIENCE

The mission of EPI's Pacuare Reserve, to understand, protect, and support its biodiversity, could not be accomplished without several other simultaneous efforts, most notably by supporting the human communities who share the land surrounding the Reserve. The Reserve works to educate, employ, and empower conservation leadership in these important yet economically disadvantaged communities. To that end, the Reserve created strategic educational and employment plans, outlined below.

## ENVIRONMENTAL EDUCATION

EPI's Pacuare Reserve has defined five main areas to focus on and guide future educational work:

- 1. Sustainability Leadership:** Children from nearby communities will learn about the United Nations' Sustainable Development Goals.
- 2. Local Naturalist Guide Program:** Fully train young people from the Matina and Bataan communities as local guides in Pacuare Reserve, increasing economic support of the local community, as well as local and international access to meaningful ecotourism.
- 3. Community Science:** Continue to build involvement of visiting groups in Pacuare Reserve's research projects, providing hands-on education and conservation inspiration.
- 4. Capacity Development Program:** Professional development training for staff.
- 5. Sustainable Community Program:** Develop visitor awareness of the importance of a sustainable lifestyle by learning and practicing Pacuare Reserve principles.

This year, the Reserve has worked to deeply develop these areas of focus for environmental education, as well as continuing to host and educate dozens of groups of local and visiting high school students through the EPI Costa Rica field programs.

## FUNDERS

Paul M. Angell Family Foundation  
JP & Bridget Henson  
Rick Potts

## PARTNERS

Upwell  
NOAA  
Coastal Jaguar Conservation  
Panthera Costa Rica