

Building

CLIMATE RESILIENCE

*Osa Conservation
2022 Impact Report*





Osa Conservation

is working to conserve the globally significant biological diversity of the Osa Peninsula.

To protect this unparalleled biodiversity, Osa Conservation makes an impact by leading conservation action from the Pacific Ocean to the Talamanca Mountains.



Scan this code to further support our work.

Osa Conservation is a 501c3 nonprofit.



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BUILDING LIFEBOATS TO SAVE BIODIVERSITY

A Letter From Our Executive Director

Over 60% of the world's tropical forest elevation gradients, or 'climate lifeboats for biodiversity,' are broken.

In the face of a rapidly changing climate, the research is clear that life on Earth will need to move and adapt to these changing conditions. Science indicates that the movement of plants and animals will be upslope in search of cooler climates.

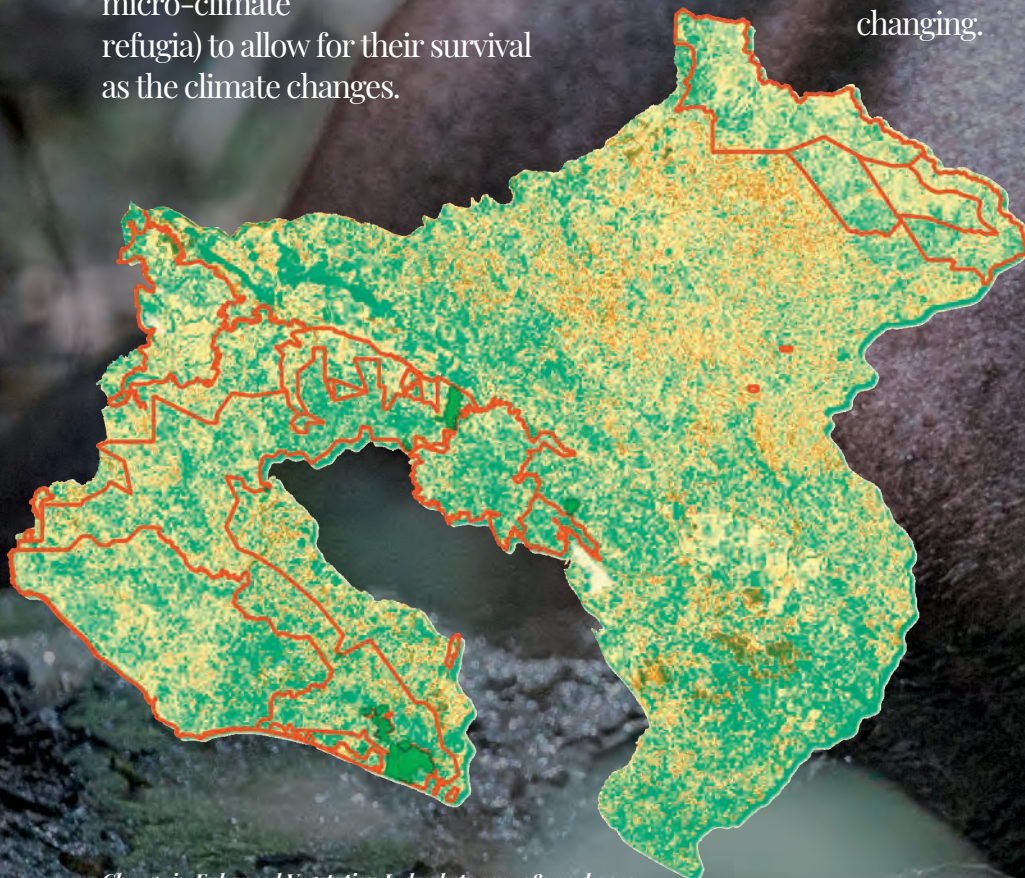
While climate change adaptation is at the forefront of many ecosystem restoration agendas, there is no organized effort to plan restoration initiatives around climate resilience for long-term biodiversity preservation. It has been estimated that only 40% of the World's remaining tropical forests currently have sufficient connectivity for plants and animals to move upslope (or into micro-climate refugia) to allow for their survival as the climate changes.

In Costa Rica, one of the most important areas for actively restoring the connectivity of forests across elevational gradients is the Amistosa Biological Corridor.

The region is comprised of cloud forest mountaintops, archaic tropical lowland rainforests, Central America's largest mangrove system, and the unmatched seascape of the Cocos-Galapagos Swimway, making this region a biological hotspot on which the planet depends.

The map below shows the change in the Enhanced Vegetation Index (EVI) between 1987 and 2019, created with NASA Develop, a student based learning platform to help on-the-ground practitioners understand how landscapes are changing.

Areas in blue reflect increases in vegetation health while orange reflects decreases. Over this 32-year period, vegetation health generally increased in protected areas (outlined in red), including the Osa Peninsula and Talamanca Mountains, but drastically decreased in the Amistosa Biological Corridor. The Corridor is primarily of privately-owned properties including cattle farms and plantations.



Change in Enhanced Vegetation Index between 1987 and 2019, created with NASA Develop. Osa Conservation properties highlighted in green.


In order to preserve the globally-significant biodiversity of the Osa Peninsula in the face of climate change, connectivity must be re-established from the Osa lowland rainforests to the vast wilderness of the Talamanca Mountains.

To rebuild this connectivity, Osa Conservation leads their Ridge to Reef initiative, an amalgamation of sustainable infrastructure, cutting-edge technology, scientific exploration, and conservation action to protect one of the world's last wild places – from the transnational Talamanca mountain ridges to the Pacific Ocean's coral reefs. Powered by a network of partners and local stakeholders advancing holistic conservation strategies, Ridge to Reef is currently working to:

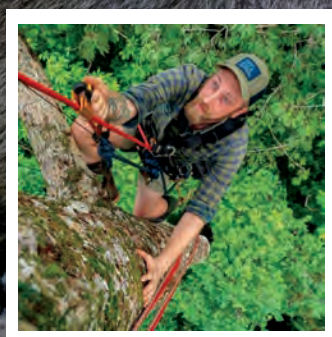
- Reconnect fragmented forests throughout Osa's biological corridors with rare, native and endemic species
- Restore crucial biological interactions and maintain existing forest cover
- Rewild landscapes to encourage the return of ecosystem engineers, seed pollinators, and dispersers
- Monitor wildlife movement and ecological indicators in real-time from ridge to reef
- Develop and implement cutting-edge technology tools specific for tropical ecosystem conservation
- Catalyze a shift in the social fabric of human-wildlife interaction and empower the next generation of conservation leaders to understand, advocate for, and protect their natural resources

TO SAVE AS MUCH BIODIVERSITY AS POSSIBLE.

Thank you,
Dr. Andrew Whitworth



Executive Director
Osa Conservation



An Overview of Our

2022

CONSERV

IMPACT

From implementing cutting-edge conservation technologies on the ground to establishing a coalition of local rainforest protectors, this year Osa Conservation has pushed the frontier of conservation impact and scientific knowledge.



ATION

OUR IMPACT

Osa Conservation works across the landscape to rebuild connectivity through protected areas and private lands.

Our team has brought together a Restoration Network of over 200 community members (**red**) and deployed wildlife monitoring devices every kilometer from the Pacific Ocean to the Talamanca Mountains (**orange**) to understand how wildlife is distributed throughout the region.

69,731
km. patrolled by
Rainforest Protectors

Expanded nursery to grow
175,000
native, rare &
threatened trees

1,135
Pounds of plastic
removed
from sea turtle nesting
habitat

Legend

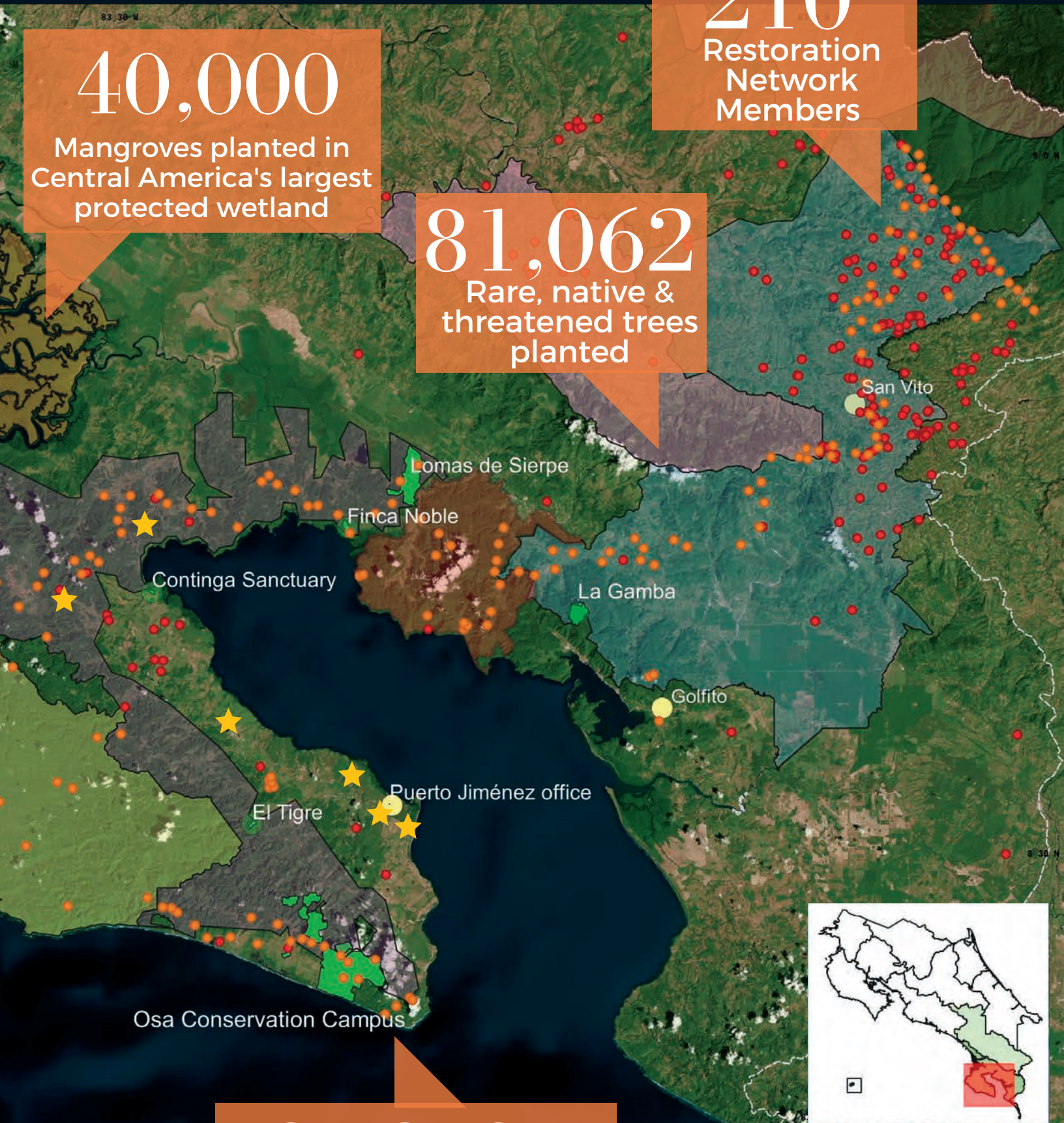
- Camera Trap Locations
- Restoration Partners
- Osa Conservation properties
- Corcovado National Park
- Piedras Blancas National Park
- La Amistad International Park
- Golfo Dulce Forest Reserve
- Terraba-Sierpe National Wetland
- AmistOsa Biological Corridor
- Langusiana Biological Corridor
- Towns
- ★ Youth Nature Club Chapters

MAP

210
Restoration
Network
Members

40,000
Mangroves planted in
Central America's largest
protected wetland

81,062
Rare, native &
threatened trees
planted



28,272
Sea turtle babies released

2022 RESTORATION

We restore rainforests and mangroves to help lost wildlife and flora return. Our work focuses on rare, native, and threatened species, some of which can be found here and nowhere else in the world.

Hand-in-hand with local communities, we plant and protect living forests that connect landscapes so biodiversity can thrive. This work is guided by scientific knowledge, and leads to the publication of numerous peer-reviewed articles annually.

64,945
trees planted in 2021

81,062

RARE, NATIVE AND
THREATENED TREES PLANTED
IN 2022.

IMPACT & REWILDING

Deployed
+ **7**

treetop bridges so arboreal animals can safely cross roads, bringing us to

20

TOTAL BRIDGES
ACROSS THE REGION.

Restored

40 ha.

of degraded
mangrove forest,
bringing our total to

91.6 ha.

OF TOTAL MANGROVE
FOREST RESTORED.

2022 PUTTING TECH



Innovation, creativity and impact collide at Osa Conservation, where we trial and test technologies to protect and monitor rainforest biodiversity. We helped to execute Central America's largest camera trap network to monitor wildlife from the mountain ridges to the coastal lowlands.

From thermal drone imaging to acoustic monitoring sensors and remote underwater ocean cameras, our tech 'eyes and ears' are on Costa Rica's most precious natural resources.



Deployed solar panel powered GSM transmitter backpacks on

17 KING VULTURES

in Peru and Costa Rica, marking the first time this species has been tagged.

This data allows us to see how the species moves through vast wilderness vs. human disturbed landscapes.

IMPACT TO WORK

Trained

30

volunteer rangers to patrol

69,731 km.

and generate

27,265

biodiversity observations.

This data is integrated in real time into Latin America's first EarthRanger project.

Collected

9,402

GPS data points from

8 ENDANGERED
0 BAIRD'S TAPIRS,

the largest terrestrial mammal native to the Americas to learn about

how this keystone species is recovering outside of protected areas.



2022 REGENERATIVE

Grew our farm's
production from

30%
produce in 2021 to
71%

of fresh produce
consumed on the OC
campus in 2022
grown at our farm.

Our work expands beyond the borders of protected areas, stretching across hundreds of private farms. We work with local farmers to promote biodiversity-friendly farming, increase forest cover and enhance ecosystem services on private land.

Our regenerative farm, Osa Verde, is the heart of these efforts, acting as a model system for growing wildlife-friendly sustainable produce in the tropics.

IMPACT FARMING

Grew our restoration network to

210

private land owners and farmers committed to restoration implementation.

Trained

12

restoration network members and farmers on

Value-added Production

to diversify income streams & build resilient livelihoods.

2022 PROTECTING OUR

We strive to protect the marine biodiversity of the waters surrounding the Osa Peninsula, which connect crucial coastal breeding grounds to the Cocos-Galapagos Swimway.

With the support of coastal communities, we work to increase protection of marine habitats, enhance coastal economies, increase fish stocks for local fishers, and uncover the unknown wonders of the Golfo Dulce and Pacific Ocean.

Collected

1,135 lbs.

of debris from pristine sea turtle nesting beaches alongside

215

volunteers.

Worked with National Geographic to publish a

key piece of science

showcasing the value of Osa's marine habitats and need for protection of coastal and near-shore ecosystems.

IMPACT BLUE PLANET

Led a series of
workshops training

149

coastal community
members on business
management for
coastal communities.

Protected and released

28,272

sea turtle babies in our
hatchery, bringing us to

208,700


total hatchlings
released by
Osa Conservation.

2022 COMMUNITY

Employed

114

local community members through restoration, research, and conservation initiatives.



Empowering people to become Earth's stewards, we elevate the voices of local conservation heroes, build human capacity for and knowledge of conservation, and provide immersive nature-based learning experiences to connect people and wildlife in Costa Rica's greatest wilderness.

This network of thousands of citizen scientists works together to shift mindsets, create lasting change, and raise the next generation of conservation leaders.



IMPACT DRIVEN ACTION

Led

1,308

unique interactions with
Osa's youth in nature
through the Ridge to Reef
Nature Club, which has

9 chapters

across the region.

Hosted over

400

community members at
the bi-annual Rainforest
Heroes Celebration, which
honored

5 local heroes and
families making an
impact for nature.

2022 AN IMMERSIVE



The Osa Conservation Campus forms the hub of our organization's impact - a facility for applied conservation action, ecological science and training. Here, situated in one of Earth's greatest wild places, our well equipped facilities, dedicated conservation team, and extraordinary landscape, form an incubator for innovation and talent. This year we welcomed our second cohort of Ugalde-Forsyth Research Fellows, who pushed the frontier of scientific knowledge of tropical rainforest systems.



IMPACT EDUCATION SITE



Hosted

10

Ugalde-Forsyth
Research Fellows from

6

different countries at the
OC Campus for 6 months.

Together, this cohort
conducted

305

cumulative days of active
field research studying a
variety of topics.

Drafted

7

manuscripts to
publish their research
in peer-reviewed
scientific journals.



2022 SCIENTIFIC IMPACT

Osa Conservation's efforts are guided by scientific knowledge and evidence, and the scientific output of our work is key to maximize our impact. In 2022, researchers from the Osa Conservation team contributed to four scientific papers published in peer-reviewed journals:



**Saving A Living Dinosaur:
The first propagation of one of Osa's rarest trees**
June 2022

This year our team was published in international scientific journal *Tropical Conservation Science*. Our work tells the story of the *Pleodendron costaricense* tree, a living dinosaur that was likely just a generation from extinction - and is now growing by the hundreds.

This research started years ago during our team's tough expeditions into Osa's rainforests on a mission to uncover more about the region's 10 most rare, native and threatened trees. Fast forward through years of trial and error, we now have over a hundred *Pleodendron costaricense* saplings growing in OC's Native Tree Nursery - thanks largely to our botanic expert Marvin, who was born and raised on the Osa and whose legacy continues to inspire.

We are happy to celebrate that this ancient species will remain among our forests and off the extinction list - just one more prime example of the power of conservation, science and the sheer pursuit of knowledge. Check out [this video](#) to learn more.



Arboreal wildlife bridges in the tropical rainforest of Costa Rica's Osa Peninsula
April 2022

Our team has published a technical report in *Folia Primatologica*, showcasing the preliminary results of the first 12 arboreal wildlife bridges we installed across the Osa region.

The report also provides vital information on site selection, bridge construction, installation time, and bridge costs in an effort to help guide conservation action throughout the tropics.

Maintaining forests connectivity is crucial to keeping wildlife populations healthy, and arboreal bridges are one way we can do that. Information on implementing arboreal bridges is sparse, particularly for tropical rainforests in Latin America. Communicating this work will hopefully expand and evolve wildlife crossings to overcome the barrier and threat of roads for treetop wildlife.

Drone Monitoring Changes the Game for Sea Turtle Conservation

July 2022

Osa Conservation's most recent published research highlights the use of the thermal infrared sensor drone for sea turtle monitoring at night - the first published research on the topic in the world. Featured in *Frontiers in Conservation Science*, this research concludes:

- Thermal camera drones can detect sea turtles, hatchlings, wildlife, nest predators and poachers at night, and can also differentiate sea turtle species by their tracks.
- The thermal drone is more effective at detecting sea turtle nesting activity than people patrolling by 20%.
- Its implementation can benefit sea turtle programs worldwide, especially on dangerous nesting beaches with high poaching rates.



Marine Protection for People & Wildlife

July 2022

In collaboration with the National Geographic Pristine Seas team, Osa Conservation's Marine Advisor Dr. Noelia Hernandez co-authored a crucial piece of science that articulates the value of the Osa Peninsula's coastal ecosystems for people and wildlife, showcasing that a "logical conservation measure would be to expand the [Corcovado marine] reserve. The open access article highlights the importance of the Térraba Sierpe National Wetland for migratory marine fauna and keystone predators including scalloped hammerhead sharks. The mangroves also provide flood protection and help lessen the impacts of sedimentation and coastal erosion.

This is why Osa Conservation fights to:

1. Investigate, discover and disseminate the most impactful conservation practices for coastal ecosystems
2. Restore crucial habitat in the Térraba Sierpe National Wetland and beyond
3. Work with local communities and the national government to create a Marine Protected Area in Southern Costa Rica's Pacific Ocean that would safeguard people and wildlife.



PROTECTING WILD PLACES

Osa Conservation's properties are strategically located to maximize impact through habitat restoration, discovery, and protection. They allow researchers, volunteers and community members to explore wilderness first-hand, and propel our work toward climate resilience in the tropics.

Continuing to Grow

Over the past two years, Osa Conservation has acquired two crucial pieces of property that elevate our capacity for landscape-level conservation.

Fully Protecting the Piro Watershed

In 2022, the Osa Conservation Campus expanded by over 286 acres to protect the entire Piro Watershed. By safeguarding this river – from the headwaters, through the primary rainforest and out to the coast to where the river meets the Pacific Ocean – we will increase the quality of freshwater on which biodiversity, including wildlife and humans, depend.

Expanding Key Habitat

Our recent acquisition of La Gamba, a key property near Piedras Blancas National Park, expanded protection for wildlife confined to the park's boundaries to further safeguard crucial habitat on the eastern side of the Golfo Dulce. Here, keystone species that have gone missing can one day return with strategic conservation action, and this protected land will help make that possible.

Each of these properties provide specific roles in supporting our conservation efforts, from coastal conservation efforts to hosting rare and native tree nurseries and protecting ancient megatrees found only in this corner of the Planet.

OSA CONSERVATION
PROTECTS

8,124

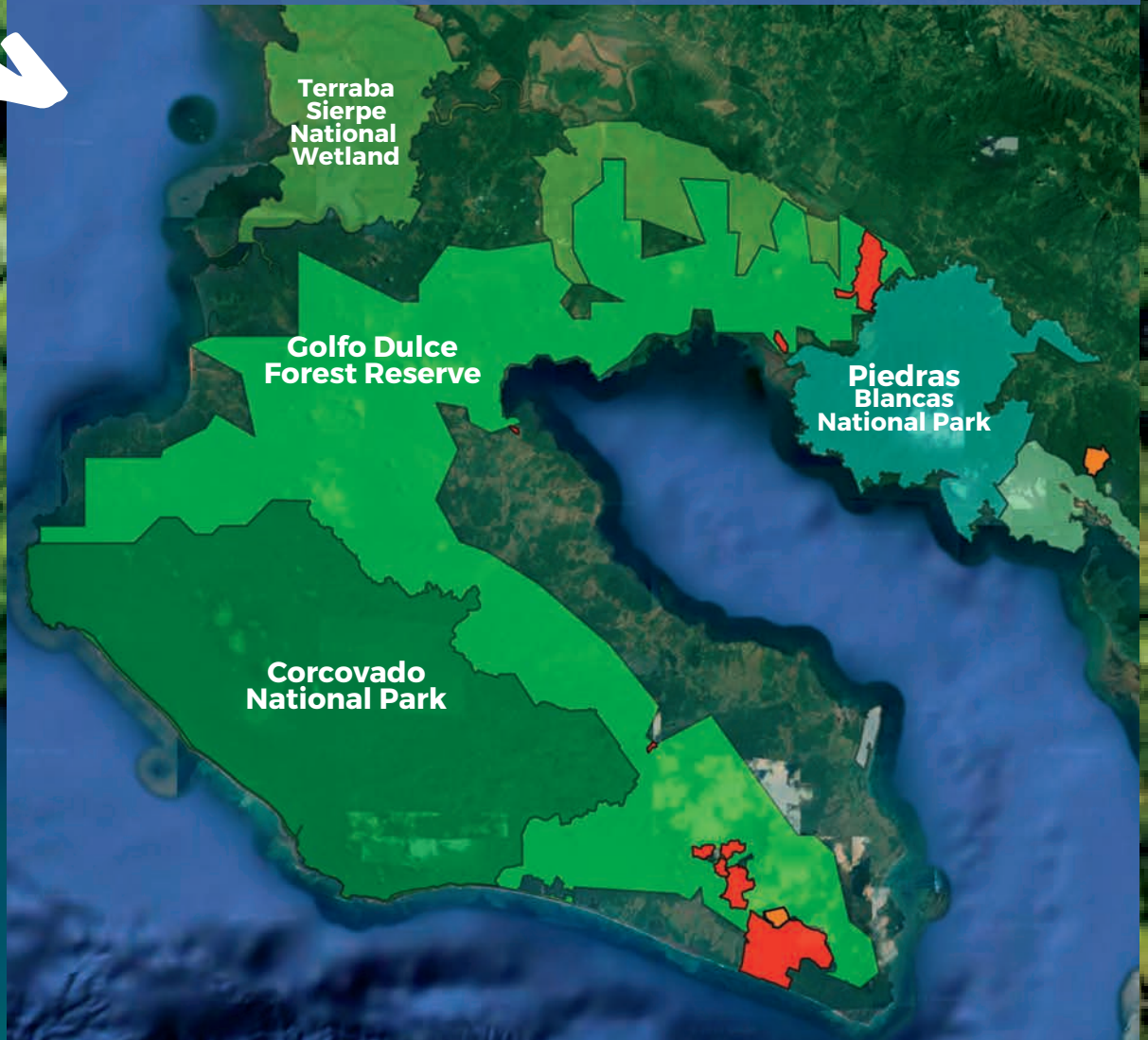
ACRES IN OUR PRIVATE
WILDLIFE REFUGE

OUR WORKING
CONSERVATION
LANDSAPE SPANS

1,330,428

ACRES INCLUDING
NATIONAL PARKS, PRIVATE
FARMS, AND MORE

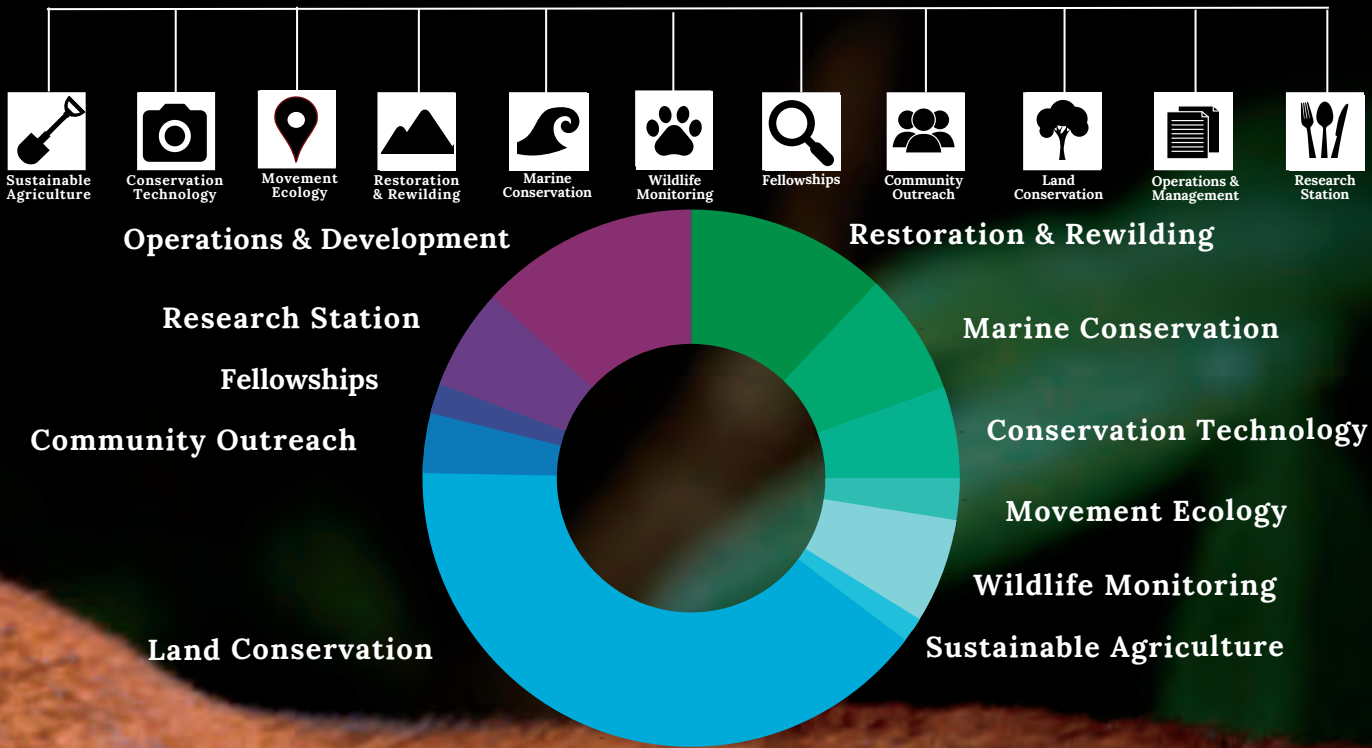
Osa Conservation properties highlighted in red,
New OC properties highlighted in orange.
National Protected Areas highlighted in green.







2022 FINANCIAL REPORT



REVENUE & EXPENDITURE

REVENUE TOTAL
\$ 6,507,889

Foundation Grants
59%

Land Conservation
28%

Sales & Other
7%

Individual Donations
6%

Science Programs
33%

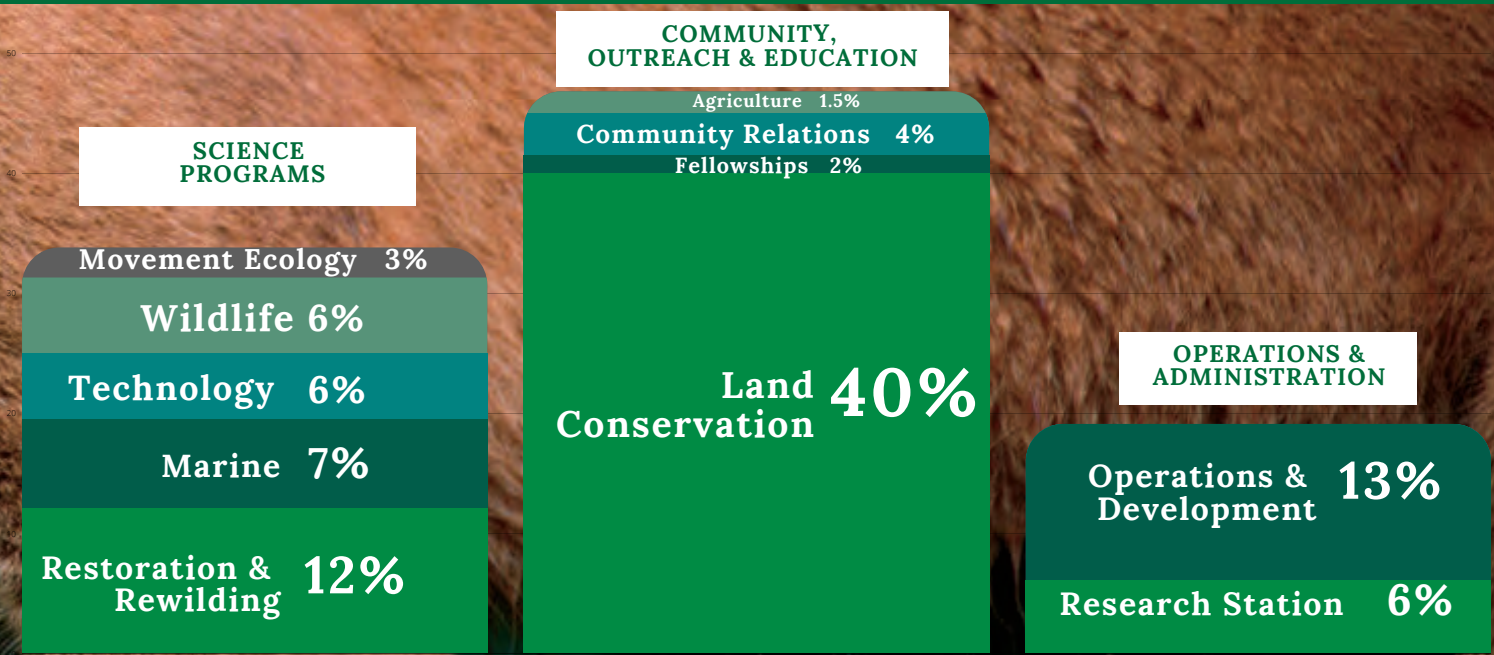
Community, Outreach & Education
47%

Operations & Devt.
13%

Field Station
6%

EXPENDITURE TOTAL
\$ 4,294,836

EXPENDITURE BY MAJOR CATEGORY



Thank You.

Together, we are building a more resilient future for people and nature.

Photo credit in order of appearance: Brandon Guell, Andrew Whitworth, Roman Willi, Christofer Viquez, Michael and Patricia Fogden, Dave Hamilton, Lucy Kleiner, Ana Lucia Rodriguez, Danixa Peña Villalobos, Miquel Gomila Lladó, Eden McCall, Ian Rock, Carolina Pinto, Orane Latour, Vargas Montoya Josué Alberto, Jeremy Vargas Badilla, Luis Matarríta Soto, Federico Pardo, Ian Rock, Johana Simonova, Maya Visbek, Chris Penker, Nancy López



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Nancy López
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