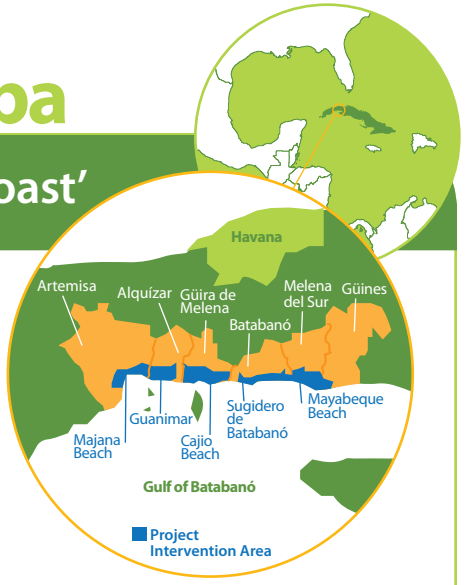
ADAPTATION FUND

Adaptation Story: Cuba

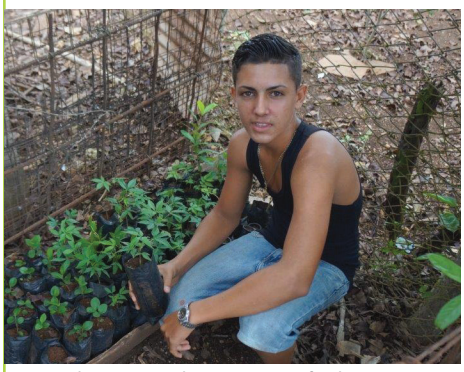
'The Song of the Birds Returns to Cuba's Gulf Coast'



When Vicente Núñez noticed several years ago that Cuba's southwestern gulf coastline and its rich plant and wildlife were disappearing, he knew something had to be done.

He experimented by replanting different types of mangroves. Further actions materialized with the arrival of a local scientist known as the "Mangrove Fairy" and a project in 2014 funded by the Adaptation Fund and carried out by UNDP and the Cuban Environment Agency.

"I started to plant and grow the mangrove to call attention to the necessity of its restoration. (Dr. Leda Menéndez, the late Cuban mangrove researcher) came with the project and taught me that the mangrove is competitive, that I shouldn't plant three together. Today we are planting through different methods. With our hands-on experience, together with the scientists who have the theory we can help in the protection of the coastline," said Núñez, 72, of the Forest Company in Artemisa Province's Cajío coast.



Leandro Lázaro. (photo courtesy of Cuba Environment Agency)

Artemisa and Mayabeque Provinces are the focus of the US$ 5.59 million project, covering 52 miles of narrow coast dominated by wetlands and mangroves. It is one of Cuba's most vulnerable regions due to climate change-associated sea level rise, intense tropical storms, saltwater surges and flooding that impact vital farm irrigation and drinking water sources. Since mangroves serve as natural sea barriers, flood risks rose as they were degraded.

The project is making a difference, thanks to the tireless dedication of many individuals on the ground like Núñez who are committed to conserving the coastlines and their ecosystems for generations to come. Communities are planting mangroves, fostering their natural regeneration, placing stake lines to reduce wave impacts, cleaning canals to restore water flow and promoting forest growth through educational activities.

"Working together we can successfully achieve raising the consciousness as part of our 'life homework'. Thanks to the mangrove, we do not have big coastal floods and salinity intrusions affect us even less."

—Zaray Rodriguez, 22, who cares for mangroves in Batabanó

The project has brought hope. Four years in, mangroves are sprouting, wildlife, shrimp and fish appear to be rising, and flooding is more controlled. *"It means that the mangrove is recuperating, that the natural regeneration that wasn't happening before is occurring,"* said Núñez.

The project's true effects will take time (mangroves planted in 2014 are 4-5 feet high today and take 10-15 years to mature), but rehabilitative actions have resulted in emerging protective benefits against flooding and reduced erosion and saltwater intrusion rates. Artemisa residents say wind and flood impacts from extreme weather have lessened in protected mangrove zones.

Leandro Lázaro, 15, who studies marine life while monitoring Artemisa's mangroves, sees the difference. *"You already see more coastal species, fish, quantity of fish, birds making nests in the mangroves and even the mangrove canary – which you didn't see much in years past,"* he said. *"The flora and fauna have recovered, and that means that the mangrove has recovered."*

Sharing knowledge of sustainable approaches that respect the environment across generations of settlements that depend on the watershed for their livelihoods is a key element of the project.

In Mayabeque, María Teresa, 54, administrator of the protected area of the Gulf of Batabanó, is committed to protecting mangroves while teaching the next generation to appreciate them as much as her. *"This village needed this project, and it arrived in the right moment,"* she said. *"The mangrove was in a very bad state. When I started here (six years ago) the mangrove didn't grow past one meter high. Today you can see*

PRIMARY objectives

- Reduce impacts of coastal flooding through recovery of coastal ecosystems and forests
- Increase adaptive capacity and resilience of vulnerable coastal communities to climate change
- Ensure effectiveness and sustainability of project by establishing enabling environments at municipal and regional levels
- Raise awareness of ecosystem-based adaptation to address climate change

"We ourselves were destroying this world, but now we have a project of environmental education, we work with all the schools and are linked to the population. Here you can breathe a healthy world."

—María Teresa, 54, Mayabeque Province

ADAPTATION FUND

Adaptation Story: Cuba

Growing mangroves. (photo courtesy of Cuba Environment Agency)

mangroves of between 15 and 18 meters with tremendous health. You can see the level of conservation they have."

Most of Teresa's workers are youth ages 18-21, which bodes well for the project's sustainability. *"We have young people that are incorporating themselves into this, are very committed and always want to learn more,"* she said. *"Kids learn here and return to their homes and transmit [knowledge] to their parents."*

The project has changed people's mindsets to link conservation to communities' economic survival. No longer are mangroves converted to coal or cut into twine. Only exotic, invasive tree species are turned into plant-based charcoal to sell, which creates income and needed space for natural regeneration of mangroves and native species of the swamp forest. Alternative incomes from medicinal mud and beekeeping are encouraged, while fostering plant restoration. Knowledge growth in ecosystem-based adaptation and climate change at the community and leadership levels is palpable, and development strategies are incorporating it. Fishermen have received environmental training.

Importantly the project has improved workers' conditions and dramatically increased salaries, which had been very low. The number of workers in mangrove nurseries and forest brigades has increased by 2-3 times, with significantly higher percentages of women than before.

Projects are managed by national experts, fostering local ownership. Communities see mangrove restoration as means to continue living in these areas rather than abandoning them, and realize the project's effects will grow. *"We have to maintain the results of the project because this only lasts five years,"* said Esther Quintana, 54, of Cajío.

Dr. Leda Menéndez (the Mangrove Fairy) passed away at 72 from a stroke in 2016 while promoting mangrove conservation, but her contributions are still felt. She taught many of the project's workers how to care for mangroves and an ecology classroom was created in her name.

The project has generated side benefits, such as forming synergies with conservation projects financed by other funds and fostering investments that prioritize watershed restoration and sustainability, reforestation and water-efficient irrigation. It indirectly helped in Cuba's recovery from Hurricane Irma. Since it had strengthened capacity and tools of the southern forest brigades, they were sent to provide immediate technical support to the northern coast's ecosystems that were most affected by the storm.

And involving youth may be Cuba's most powerful tool against climate change over time. Yamila Alfonso and other Surgidero de Batabanó volunteers help conserve the forest and now see hutias, manatees, trogons and crocodiles that were very rare before the project. *"I love being in the mangrove,"* she said. *"I forget about everything and listen to the song of the birds."*

BY THE NUMBERS

21,500 DIRECT BENEFICIARIES FROM REDUCED COASTAL FLOODING (AT LEAST 45% WOMEN)

1,440 HA OF MANGROVE ECOSYSTEM RESTORED BETWEEN MAJANA AND SURGIDERO DE BATABANÓ

270,000 INDIRECT BENEFICIARIES FROM REDUCED IMPACTS OF CLIMATE CHANGE-RELATED IMPACTS ON ECONOMIC ACTIVITIES (AT LEAST 45% WOMEN)

1,563 HA OF RED MANGROVE ESTABLISHED ALONG SEASHORE BETWEEN BATABANÓ AND PUNTA MORA

6 MUNICIPAL AND 2 PROVINCIAL DEVELOPMENT PLANS ESTABLISHED WITH PROVISIONS FOR ECOSYSTEM-BASED ADAPTATION

4 MUNICIPALITIES ESTABLISHED GROUPS OF COMMUNITY MEMBERS FROM LOCAL VOLUNTEER GROUPS ADDRESSING ENVIRONMENTAL AND ADAPTATION ISSUES (AT LEAST 45% OF MEMBERS ARE WOMEN)

4,316 HA OF LANDWARD EDGE WOODLANDS RESTORED AND ENRICHED

3 YEARLY TRAINING AND TECHNICAL VISITS TO VULNERABLE COASTAL COMMUNITIES BY PROVINCIAL AND MUNICIPAL TECHNICAL AUTHORITIES TO SUSTAINABLY SUPPORT ECOSYSTEM-BASED ADAPTATION

Placing stake lines. (photo courtesy of Cuba Environment Agency)