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ROLEX AND NATIONAL GEOGRAPHIC PERPETUAL PLANET AMAZON EXPEDITION: WITHIN THE SOIL

RESEARCHERS SUGGEST INNOVATIVE SOLUTIONS TO RESTORING DAMAGED AMAZON ECOSYSTEMS

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National Geographic Explorers Hinsby Cadillo-Quiroz, Josh West and Jennifer Angel-Amaya in south-eastern Peru. The trio are monitoring ponds created by human activities in the area to compare how pollutants disperse through the water, sediment and species found there.



This area in south-eastern Peru is where National Geographic Explorers Hinsby Cadillo-Quiroz, Josh West and Jennifer Angel-Amaya are conducting their research, equipped with a variety of instruments from thermal sensors and drones to inflatable rafts.



National Geographic Explorer Hinsby Cadillo-Quiroz (right) and his assistant install equipment underwater to take measurements in a pond in Peru. The team are looking at microbes in the soils and waters of the Amazon to better understand the effects of human activity in the river basin.

The Rolex and National Geographic Perpetual Planet Amazon Expedition is epic in scale, surveying the extensive network of waterways from the Andean glaciers to the vast river mouth, but one team is focusing on the truly minute details. National Geographic Explorers Hinsby Cadillo-Quiroz, Jennifer Angel-Amaya and Josh West are looking at the microbes, soils, and waters of the Amazon to better understand the effects of human activity in the river basin. Their findings – and the innovative solutions they propose for restoring the most affected stretches of forest – offer heartening indications that all is not lost. Despite the scale of the degradation, the team continue to see evidence of wildlife such as jaguars and capybaras returning to reclaim these transformed landscapes, reason to be optimistic even in the face of environmental disaster.

“THE DESTRUCTION HAS BEEN DRAMATIC. AT THE SAME TIME, WE SEE A GREAT OPPORTUNITY TO FIND NEW SOLUTIONS. LIFE HAS NOT BEEN COMPLETELY OBLITERATED BY THIS ANTHROPOGENIC ACTIVITY, BUT IS FIGHTING BACK.”

Hinsby Cadillo-Quiroz, microbial ecologist and national geographic explorer



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Deep in the Peruvian Amazon, three scientists are checking the lay of the land. Equipped with everything from thermal sensors to drones to inflatable rafts, they emerge from the dense primary forest to find a wide, sandy clearing pockmarked with waterlogged holes. This is the subject of their research: Amazonian landscapes that have been altered by human activity.

Hinsby Cadillo-Quiroz, National Geographic Explorer and associate professor at the School of Life Sciences at Arizona State University, leads the soil component of the expedition. A microbial ecologist by training, Cadillo-Quiroz traces back his fascination with microbes to childhood experiences of, “looking at a dirty water sample through a microscope in my biology class, which captured me”.

You might say “dirty water” is the object of his interest even today. The samples he takes from polluted pools as part of the Rolex and National Geographic Perpetual Planet Amazon Expedition are telling him that something here is wrong. Whereas microbes in a healthy aquatic and soil environment remove methane, a powerful greenhouse gas, here ponds and soils are somehow becoming net methane producers.

Another part of the problem is how easily pollution can spread from these sites of human activity. According to geologist and National Geographic Explorer Jennifer Angel-Amaya, once pollutants enter the water cycle, they travel throughout the Amazon River basin and accumulate up the food chain from microbes to fish and eventually even to people. Angel-Amaya says some indigenous communities may carry up to 100 times the safe level of certain toxic elements in their bodies.

The project’s first phase is about gathering information. Using drones, thermosensing and LIDAR technology to create high-resolution spatial maps of deforested areas, the team begins homing in on specific sites that might be suitable for environmental repair and reforestation.

Cadillo-Quiroz’s innovative solution for restoring these areas where trees have been removed and the topsoil has washed off is to transform them back into wetland environments. Wetlands are good at sequestering carbon and allowing soil to recover its microbial balance. With support from Rolex, they are going to pilot this approach by planting palms such as the aguaje, which flourishes in wetland conditions and whose fruit has a considerable market value, making it a desirable tree for local farmers to grow. In order to have a lasting impact, Cadillo-Quiroz says, “the project needs to be embraced by the local community and offer them clear benefits”.

In time, these barren clearings may even become havens of life. Cadillo-Quiroz reports seeing the footprints of big cats such as jaguars in the deforested areas, some of which are gradually achieving a healthy microbial status quo. As a result, fish populations are increasing, and all manner of wildlife has also started gathering at the artificial ponds to drink. “Life finds a way to get back to these places,” says Cadillo-Quiroz.



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National Geographic Explorer Josh West, a specialist in geomorphology and hydrology at the University of Southern California and third lead member of the team, agrees with Cadillo-Quiroz's cautiously optimistic take. He asks: "Is there an opportunity to use deforested areas to create really biodiverse and exciting wetland environments? It's something we should definitely be exploring."

ABOUT THE PERPETUAL PLANET INITIATIVE

For nearly a century, Rolex has supported pioneering explorers pushing back the boundaries of human endeavour. The company has moved from championing exploration for the sake of discovery to protecting the planet, committing for the long term to support individuals and organizations using science to understand and devise solutions to today's environmental challenges.

This engagement was reinforced with the launch of the Perpetual Planet Initiative in 2019, which initially focused on the Rolex Awards for Enterprise, as well as long-standing partnerships with Mission Blue and National Geographic Society.

The initiative now has more than 20 other partnerships in an expanding portfolio. They include, for example, Cristina Mittermeier and Paul Nicklen, Rewilding Argentina and Rewilding Chile, offspring organizations of Tompkins Conservation, the Under The Pole expeditions, the Monaco Blue Initiative, and Coral Gardeners.

Rolex also supports organizations and initiatives fostering the next generations of explorers, scientists and conservationists through scholarships and grants, such as Our World-Underwater Scholarship Society and The Rolex Explorers Club Grants.

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