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## ROLEX AND NATIONAL GEOGRAPHIC PERPETUAL PLANET AMAZON EXPEDITION: IN THE FLOODED FOREST

THIAGO SILVA AND JULIA TAVARES:  
UNCOVERING THE AMAZON'S MYSTERIOUS WETLANDS

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National Geographic Explorer Thiago Silva and the LiDAR team head to a new part of the forest to check if LiDAR mapping is possible.



Lucy Parker, a LiDAR (light detection and ranging) team member, works with National Geographic Explorer Thiago Silva to create 3-D models of the flooded forests within the Amazon. The LiDAR is faster and more accurate than traditional monitoring.



National Geographic Explorer Thiago Silva joins the Trait team taking leaf samples, which need to be collected at night as sunlight reduces the amount of water in the leaves. The team are studying flooded habitats and their response to human-induced changes.

The Amazon Rainforest is one of the world's most enigmatic biomes, with countless undiscovered species and a vast network of waterways. The Rolex and National Geographic Perpetual Planet Amazon Expedition is deepening our understanding of this complex ecosystem.

Life throughout the boundless rainforest is supported by the mighty Amazon River and its myriad of tributaries. However, once a year, during the rainy season, the rivers swell and burst their banks, submerging the surrounding floodplains in several metres of water for months on end. Most forests would be decimated by such extreme weather, but the trees in the Amazon's wetlands are uniquely adapted to survive regular floods, annual dry seasons and everything in between.

Despite an astonishing 15 per cent of the Amazon River basin being made up of these wetland ecosystems, they are considerably less studied than the terrestrial forest. National Geographic Explorers Thiago Silva and Julia Tavares, as part of the Perpetual Planet Amazon Expedition, have set out to unravel the scientific mysteries of the flooded forests.

"We need to find out which forests are most vulnerable so we can give advice on where we need to place more protection. We need a basic understanding of how these forests work to be able to do that." – Julia Tavares, Plant Ecologist, National Geographic Explorer



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Silva fell in love with the Amazon when he first visited it during his master's studies, and now he's employing a groundbreaking approach to investigate its wetlands. Using LiDAR (Light Detection and Ranging) scanners, he's creating the first ever digital 3-D maps of the Amazonian wetlands, which record the state of the ecosystems in incredible detail, "down to each leaf".

Meanwhile, Tavares takes an even more detailed approach, assessing the health of individual trees. She ventures into the wetlands at night, before the trees can start losing water under the harsh equatorial sun, to measure the water pressure in their leaves. Tavares's team of climbers must scale all the way to the jungle's canopy in the dead of night to collect the perfect leaves to take back to the lab.

By combining these two starkly different but complementary approaches, Silva and Tavares are piecing together a comprehensive picture of how these fiercely adaptable wetlands work. With the LiDAR scanners, they can map great swathes of the forest faster than ever before, and Tavares' findings are helping them to understand how each tree is able to survive the changeable climate on a physiological level.

Their expedition has happened not a moment too soon. According to Silva, extreme weather events, such as excessive flooding or drought, which used to occur every seven or eight years, are now happening every one or two years. "The weather's becoming more erratic, more unpredictable from year to year." Says Silva, "That's a big concern for a system that's so tightly coupled with that regularity of the climate."

Silva and Tavares' hope is that their work will shed a light on the Amazon wetlands and show the beauty of this unique but understudied ecosystem. With the support of Rolex and the National Geographic Society, who according to Tavares, gave them, "the opportunity to approach this problem from different perspectives for the first time", they are providing evidence for both the importance and vulnerability of the flooded forests. They are using this evidence to push for the wetlands' protection, for the benefit of us all.

### 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.





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The initiative now has more than 30 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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