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A Self-Made Climber

Elisabeth Pain
United States
13 June 2008

Catherine Cardelús, 36, discovered her passion for tropical forests while listening to a teacher describe the astounding diversity of rainforests. "I decided to be a rainforest [ecologist] without having seen" a rainforest, Cardelús says. The following summer, she flew to [La Selva Biological Station](#) in Costa Rica on a summer fellowship and climbed her first tree. She "got so excited about going up that I didn't think about how to get down," she says. As she reached the first branch 15 m above the ground, "I looked up into it and saw another forest."

Cardelús has since taught herself how to move freely up and down trees, but she's still struggling to understand a key scientific question: Why is there so much plant diversity 50 m above the ground?

After obtaining her B.A. in biology from Barnard College in 1996, Cardelús did a Ph.D. on the distribution of vascular epiphytes--plants that grow on other plants--in tropical forests in the [Department of Ecology and Evolutionary Biology](#) at the University of Connecticut, Storrs. Part of her

project involved looking at how microclimate affects the way plants are laid out on the branches of individual trees. She built networks of sensors to monitor light, humidity, and temperature along the branches, powering them from the ground with a motorcycle battery. She studied the distribution of epiphytes at 500-m intervals along a 2900-m elevation gradient between La Selva and the Volcán Barva in Costa Rica.

In 2003, Cardelús took a postdoc at the [University of Florida, Gainesville](#), to study the nutrient dynamics of epiphyte communities. Together with her husband--a functional plant ecologist--and their 9-month-old son, she spent the first year of her postdoc at La Selva Biological Station comparing soil and canopy nutrient sources.

Cardelús splits her time between the United States,

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where she does a lot of analytical and biochemistry lab work quantifying nutrient dynamics, and field trips. Her eldest son, now 5, routinely accompanies her to Costa Rica, and her second son, age 2, will come along the next time.

Starting in July, Cardelús and her husband will each take assistant professorships at [Colgate University](#) in Hamilton, New York, where she plans to extend her research to nutrient dynamics in relation to local pollution and climate change. "It hasn't been until recently that I ... and other canopy researchers ... have had enough baseline data to begin addressing these questions," she says. Nowadays, "most researchers, especially forest ecologists, are incorporating climate change impacts into their research, both for funding reasons and because climate change is having a serious impact on forest ecosystems."



A woman ascending. When Catherine Cardelús started out, most "people who were climbing were men."

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Of Hispanic origin, Cardelús is keen to share her passion for forest canopies with younger scientists and to nurture minority students and women in particular. "I had more barriers to overcome," she says. In her early days, most "people who were climbing trees were men. I wasn't even considered a serious player" at the time.

<p>Elisabeth Pain is contributing editor for South and West Europe.</p>	<p>Comments, suggestions? Please send your feedback to our editor.</p>
<p>Photos. Top: Getty Images. Middle: James E. Watkins, Jr.</p>	<p>DOI: 10.1126/science.caredit.a0800088</p>

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