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Next big idea in forest conservation? Quantifying the cost of forest degradation

By: [Liz Kimbrough](#)

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Innovation in Tropical Forest Conservation: Q&A with Dr. Phillip Fearnside

INNOVATION IN TROPICAL FOREST CONSERVATION SERIES

Despite decades of attention and advocacy, tropical forests are still falling at rapid rates worldwide. Now, mongabay.com's new special series, Innovation in Tropical Forest Conservation aims to highlight solutions to the crisis through short interviews with some of the world's leading conservation scientists, practitioners, and thinkers about new and emerging approaches to conservation. For more of these interviews, please check our [Innovation in Tropical Forest Conservation](#) feed.



Pasture meets gallery forest in the Brazilian Amazon. Photo by: Rhett A. Butler.

How much is a forest really worth? And what is the cost of forest degradation? These values are difficult to estimate, but according to Dr. Phillip Fearnside, we need to do a better job.

For nearly forty years, Fearnside has lived in Amazonia doing ecological research, looking at the value of forests in terms of environmental or [ecosystem services](#) such as [carbon storage](#), [water cycling](#), and [biodiversity](#) preservation. Fearnside then works to convert these services into a basis for sustainable development for rural populations.

"The idea of 'environmental services' was certainly radical and innovative when this started out, but now it is a household word. Nevertheless, there is a long way to go before this substitutes for forest destruction here," Fearnside told mongabay.com.



Philip Fearnside. Photo courtesy of Philip Fearnside.

Fearnside also feels we need to improve our ability to estimate forest degradation. Degradation, or the gradual destruction of forests caused by [edge effects](#), climate change, and infrastructure projects has received less attention from scientific and environmental groups than outright [deforestation](#).

"The ability to estimate the effect of specific infrastructure projects and policy decisions is essential," Fearnside said. "Most of what has been done on deforestation deals with region-wide trends, but it is the effect of specific projects that counts most."

To this end Fearnside says one area that has received too much attention and funding is restoring degraded lands over avoiding deforestation in the first place.

"The advantage of recuperating degraded areas is that everyone is in favor of it, whereas avoiding deforestation must buck powerful economic interests...The financial cost of recuperating a hectare of degraded land is much higher than the cost of avoiding the loss of a hectare of native forest, and the benefit in terms of biodiversity, water and carbon is much less."

Fearnside has authored over 490 professional publications focused on problems of environment and development. In 2006 he was identified by Thompson-ISI as the world's second most-cited scientist on the subject of global warming. In 2012 he was identified as the world's seventh most-cited scientist in the area of sustainable development.

Currently, Fearnside is a permanent resident of Brazil and a research professor at the National Institute for Research in Amazonia.

AN INTERVIEW WITH DR. PHILLIP FEARNSIDE

Mongabay: *What is your background?*

Phillip Fearnside: I am a research professor at INPA (National Institute for Research in Amazonia) in Manaus, Amazonas, Brazil. I am an ecologist with a PhD in biological sciences from the University of Michigan advised by Dan Janzen and John Vandermeer. The thesis was on estimation of human carrying capacity on Brazil's Transamazon Highway.

Mongabay: *How long have you worked in tropical forest conservation and in what geographies? What is the focus of your work?*

Phillip Fearnside: I have been in Brazilian Amazonia for 38 years (two on the Transamazon Highway plus 36 at INPA). Before that I worked on reservoirs in India for two years. I have also published on shorter studies in China, Indonesia and Peru.

Mongabay: *Are you personally involved in any projects or research that represent emerging innovation in tropical forest conservation?*

Phillip Fearnside: For almost three decades now my work has been organized around making the value of the environmental services of Amazonia into an alternative basis to support the rural population here. The idea of "environmental services" was certainly radical and innovative when this started

out, but now it is a household word. Nevertheless, there is a long way to go before this substitutes for forest destruction here. I am head of one of Brazil's "national institutes of science and technology"(which are really big projects rather than an institutions) titled "Environmental Services of Amazonia." This involves estimating the environmental costs of forest destruction (and thereby the value of avoiding it). Most of the data relates to greenhouse-gas emissions, but the costs involve other services such as water cycling and biodiversity maintenance. Modeling the impact of major infrastructure projects, such as highways and dams, is part of this, as well as the benefits of creating and maintaining various kinds of protected areas.

Mongabay: *What do you see at the next big idea or emerging innovation in tropical forest conservation? And why?*

Phillip Fearnside: Much more attention needs to be given to forest degradation, as by logging, fires and edge effects. Almost everyone (including myself) has been concentrating on outright deforestation instead.

The ability to estimate the effect of specific infrastructure projects and policy decisions is



Amazon rainforest in Peru. Photo by: Rhett A. Butler.

essential. Most of what has been done on deforestation deals with region-wide trends, but it is the effect of specific projects that counts most. Politicians and decision makers may be all in favor of reducing deforestation in general, but when it comes to foregoing a specific highway or dam the reaction is very different!

Quantifying Amazonian deforestation effects needs to have much more effort on water cycling, which affects rainfall in places like São Paulo (now in the throes of a major drought, even without Amazonian deforestation having advanced to the point that the large transfers of water vapor from the region are affected).

Work needs to be done to clear up the conflicting estimates of the level of threat that climate change poses to Amazon forest. Models agree that Amazonia will be hotter and drier and that the air will have more CO₂, but how this will affect the forest is not a matter of agreement. The consequences of getting it wrong could be substantial.

Mongabay: *In regards to conservation, is there anything you feel is NOT working (or not working well) that continues to get a lot of attention and support?*



Aerial view of the Amazon rainforest in Ecuador. Photo by: Jeremy Hance.

Phillip Fearnside: Recuperating degraded areas in Amazonia fits this description. The advantage of recuperating degraded areas is that everyone is in favor of it, whereas avoiding deforestation must buck powerful economic interests. Opportunities to create protected areas are quickly disappearing because the difficulty of creating these areas increases rapidly as human occupation advances. The financial cost of recuperating a hectare of degraded land is

much higher than the cost of avoiding the loss of a hectare of native forest, and the benefit in terms of biodiversity, water and carbon is much less. Since the funds available for environmental actions are always limited and insufficient, money spent on recuperating degraded lands implies less for avoiding deforestation.

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