Amazon conservation efforts must come soon to save world's largest rainforest says leading scientist

Rhett A. Butler, mongabay.com
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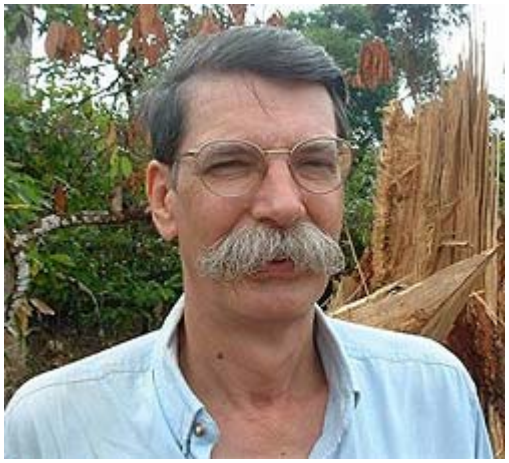
An interview with Dr. Philip M. Fearnside of the National Institute for Research in the Amazon.

In the past four years Brazil has set aside more than 20 million hectares of the Amazon basin from development. The country now has some 110 million hectares, an area twice the size of France, under some form of protection, giving it the largest protected areas system in the world. This, combined with plunging commodity prices and stricter environmental law enforcement, has helped cause annual deforestation rates to drop by nearly 40 percent since 2004. Further progress is expected next month at climate talks in Nairobi, when the Brazilian government will propose expanded rainforest conservation under a plan that would have industrialized countries meet greenhouse gas emissions targets by compensating tropical countries for forgoing forest clearing and replanting trees in deforested areas. While these are hopeful signs, there is an immense threat looming on the horizon: climate change could well cause most of the Amazon rainforest to disappear by the end of the century.

Dr. Philip Fearnside, a Research Professor at the National Institute for Research in the Amazon in Manaus, Brazil and one of the most cited scientists on the subject of climate

change, understands the threat well. Having spent more than 30 years in Brazil and now recognized as one of the world's foremost experts on the Amazon rainforest, Fearnside is working to do nothing less than to save this remarkable ecosystem.


Dr. Philip M. Fearnside.

Fearnside believes saving the Amazon will require a fundamental shift in perception where the Amazon is recognized as an asset beyond the current price of mahogany, soybeans, or cattle, where its value is only unlocked by its destruction. The Amazon is far worth more than this he says. It can play a key role in fighting climate change while providing economic sustenance for millions through sustainable agriculture and rational utilization of its renewable products. It can serve as a storehouse for biodiversity while at the same time ensuring reliable water supplies and moderating regional temperature and precipitation. In short, maintaining the Amazon as a viable ecosystem makes sense economically and ecologically -- it is in our best interest to preserve this resource while we still can.

In an October 2006 interview with mongabay.com, Fearnside elaborated on these concepts, revealing his thoughts on the future of the Amazon, conservation in the region, lack of U.S. leadership on climate change and deforestation, and what we can learn from pre-Colombian cultures.

Mongabay: *There seem to be a variety estimates on the current causes of deforestation in the Amazon, how would you break down the sources of forest loss in the region? Do you expect the contribution of these to shift over the next generation?*

Fearnside: Deforestation occurs for a variety of reasons. The forces driving the process vary between different

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parts of the region. They also undergo a sequence of changes over time in any one location, and the mix of forces in the region as a whole changes over time. New forces, such as soybeans and the force of international markets for frozen beef, are added to old forces such as land speculation and use of clearing to secure possession and titling of land by both large and small actors. Over the next generation one can expect market forces such as soybeans and beef to increase, along with new products such as biofuels. Other forces such as land speculation may dwindle as the government extends its control over areas that now have a “wild west” type of social environment.

Mongabay: *What's your 20-year outlook for the Amazon rainforest? 50-year? How will climate change affect the Amazon?*

Deforestation is progressing rapidly, and if continued for 20 or 50 years the results would be disastrous. However, it is very important not to succumb to the fatalism that so often affects discussions of Amazonia. What happens depends on human decisions. This includes not only the direct deforestation that is destroying the forest, but also the climate changes that threaten to destroy the forest even without further clearing. Global warming is believed to be the cause of observed increases in the frequency of El Niño events, which are caused by warm surface water in the Pacific Ocean. Most climate models now

Dr. Philip M. Fearnside in Brazil.

predict “permanent” El Niño-like conditions to develop in the Pacific. One climate model (the Hadley Center model of the UK Meteorological Office) shows this permanent El Niño resulting in catastrophic die off of Amazonian forest by 2080 if global warming is unchecked. Other models currently do not show the connection between El Niño-like conditions and drought in Amazonia. Unfortunately for us, the fact that El Niño causes droughts in Amazonia is known from direct observations – it does not depend on the results of climate models. This is obvious to anyone in Amazonia who saw the fires in the El Niños of 1982-1983, 1997-1998 and 2003. The threat of a “permanent El Niño” is therefore to be taken very seriously. Again, it depends on how seriously society takes the problem to be. If fossil-fuel combustion and deforestation are reduced to reflect the importance of the problem, then the worst could be avoided. If this does not happen, the danger of a “runaway greenhouse” escaping from human control becomes much greater. Disintegration of the Amazon forest, with release of the carbon stocks in the biomass and soil, would be a significant factor in pushing us into a runaway greenhouse.

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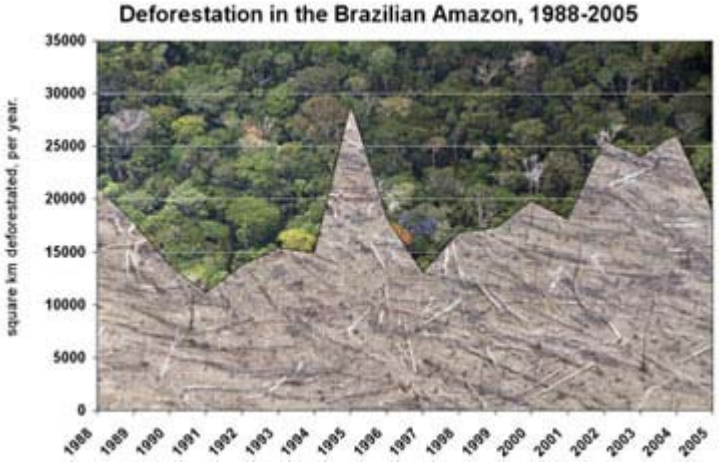
Mongabay: *In a chapter you recently authored in Emerging Threats to Tropical Forests, you argued that "avoided deforestation" has the greatest potential for both achieving both climatic benefits and other environmental objectives such as biodiversity preservation. Do you believe the new rainforest conservation-for-cash compensation initiatives set forth by the Coalition for Rainforest Nations, and soon Brazil, are a step in right direction? Are there better, alternative schemes under development? Will these proposals require some form of capitulation on the part of the United States with its official stance on climate change?*

Fearnside: Avoided deforestation has great potential both in the struggle against global warming and as a means of maintaining Amazonian forest with all of its environmental services, of which carbon storage is only one. The proposals by the Coalition of Rainforest Nations and by Brazil's Ministry of the Environment are certainly positive. The proposals are for voluntary contributions to a fund, which is apparently viewed as the maximum that is politically feasible to obtain approval. I would hope that in the future avoided deforestation payments will represent carbon credit towards the mandatory quotas that the industrialized countries take on under the Kyoto Protocol. Obviously, this represents a form of credit where much larger sums of money are potentially involved, with correspondingly greater potential for replacing Amazonia's current economy that is based on destroying the forest.

The United States must rejoin the international negotiation process and agree to make serious reductions in its emissions. That said, the rest of the World cannot allow the current stance of the US to serve as an excuse for other countries to do little or nothing while waiting for the US government to wake up. Avoided deforestation should be a part of efforts to mitigate global warming, with or without the United States. My site (**http://philip.inpa.gov.br**) has a wealth of information on avoided deforestation as a mitigation option, as well as information on other developments and controversies in Amazonia.

Mongabay: *Recent discoveries of so-called "black earth" (terra preta do índio) in Brazil lend support to the theory that the Amazon rainforest was once home to advanced cultures and large sedentary populations of people. What are the conservation implications of these findings? Is there a way that carbon could be sequestered in a similar form and used to make the Amazon more productive for agriculture? Would making the Amazon more fertile for crops be detrimental to the forest in the long run by opening it up for development?*

Fearnside: Black earth isn't exactly a "recent discovery." The fact that indigenous peoples of the past have influenced the forests we see in Amazonia today is important to understanding those forests. The soil at black-earth sites is more fertile and productive for agriculture than are any other soils in Amazonia. Their extent is limited and they are dispersed in small patches, making them more important for small farmers than they are for large landholders.



DEFORESTATION IN BRAZIL: 60-70 percent of deforestation in the Amazon results from cattle ranches while the rest mostly results from small-scale subsistence agriculture. Logging results in forest degradation but rarely direct deforestation. However, studies have showed a close correlation between logging and future clearing for settlement and farming. Graphic by R. Butler.

The possible importance of black earths in mitigating global warming lies in efforts to replicate the soil formation process to create "*terra preta nova*" (new black earth). This would both increase the sustainability of whatever is planted and store more carbon in the soil. Finely powdered charcoal is an important ingredient of black earth and is being tested separately as a soil amendment that increases the absorption by plants of any nutrients that are added to the soil. At least theoretically, the plan is to use these techniques in recuperating areas that are already deforested. The already-cleared area is

sufficiently vast that any programs to recover their soils by creating new black earth could be kept busy for a long time. Of course, if these techniques proved to be a great success capable of removing soil limitations over vast areas at low cost, then more effort would be needed to keep it from becoming a new driver for deforestation. The proper way of handling such a possibility is to strengthen the controls and influences over land use, rather than to neglect or even actively hinder developing the technology for creating *terra preta nova*.

Mongabay: *In your experience, do sustainable development mandates ever get in the way of conservation initiatives? If so, how do we best strike a balance between preserving natural places and the maintenance of the local resident population?*

Fearnside: "Sustainable development reserves," "extractive reserves" and various types of national and state forests for timber management have been gaining prominence in Brazil among recent reserve-creation efforts. This is primarily because it is much easier to convince government authorities to create reserves of this type, especially large reserves. The state of Amazonas has greatly expanded its reserve system in this way over the past four years. The downside is that some areas that have high biodiversity value and few residents would be appropriate for conservation unit categories that offer complete protection, such as national parks and ecological stations, but instead wind up in one of the politically easier but less-protected categories. The case being decided at the moment is for proposed reserves along the planned route of a reconstructed BR-319 (Manaus-Porto Velho) Highway, where some key state government actors only want "sustainable development" areas instead of the completely protected areas favored in part of the area by the Ministry of the Environment. Again, see my site (**http://philip.inpa.gov.br**) for information on the BR-319 and many other Amazonian controversies.

Mongabay: *What do you see as working and not working*

in current conservation efforts? Have you seen shifts in forest preservation strategies since you started working in the Amazon? Have perceptions change on the part of local people and governments toward conservation biologists?

Giant monkey frog (top), Amazon rainforest canopy
Photos by R. Butler

Fearnside: In practice, conservation is a mix of carefully planned strategies and quick actions to take advantage of opportunities as they arise. Academics tend to concentrate on plodding analyses to establish priorities. As one of the first to apply gap-analysis techniques to the problem of reserve creation in Brazilian Amazonia, I can be accused of this syndrome. However, opportunistic approaches can often result in much greater advances. The many early reserves created by Paulo Nogueira Neto followed this approach. Recent examples of this include creation of the Tumucumaque National Park (Brazil's largest) and the series of reserves created in the wake of Sister Dorothy Stang's assassination in February 2005.

Conservation biologists represent a growing profession, and there is plenty of work to be done in this area in Amazonia. Both local peoples and governments are becoming more savvy about the potential conflicts with those interested in conservation. Usually they make little distinction between researchers and activists, so suspicion of threatening "development" interests can sometimes be a significant impediment in the field. I believe that the

conservation value of forests for their environmental services offers a resource that will eventually prove more important to local peoples than are the profits of today's destructive activities. However, this is not something that can come about overnight. See **http://philip.inpa.gov.br** for information on environmental services as a development alternative in Amazonia.

Mongabay: *What are your thoughts on private conservation initiatives such as Doug Tompkins' efforts down in Chile? Can these ever succeed in the face of local and government opposition (when and where it exists)?*

Fearnside: Private conservation efforts that involve land purchases by foreigners are not useful options in Brazil. Foreigners would do better to invest in helping Brazilian groups to promote conservation, including helping both federal and state governments to create and defend their own protected areas. Both international and Brazilian non-governmental organizations (NGOs) are active in this process.

Mongabay: *What advice can you give students wanting to pursue a career in conservation? Are there specific degrees they should consider or is conservation so multi-faceted today that one could approach from a number of different disciplines?*

Fearnside: Conservation is a wide field that requires skills in many areas. Obviously, biology represents the core of most activities. However, geography is also much in demand, especially use of geographical information systems (GIS) and remote sensing techniques. Anthropological studies in the various kinds of sustainable development reserves and in buffer areas are also important. In general, however, the best advice is to learn the core science first, in this case conservation biology, and then pick up specific tools such as GIS as a complement, rather than the reverse.

Mongabay: *What can individuals do here in the United States do to protect rainforests? What about biodiversity conservation, both locally and globally?*

Fearnside: What individuals do for rainforests ranges from giving money to worthy causes to devoting their entire life's work to these problems. A variety of consumer options can help, such as using wood certified through the Forest Stewardship Council (FSC). Most basic for the United States, however, is cleaning up the country's own environmental act. With the US unwilling to stop cutting the last remnants of its virgin or "old growth" forest in the Pacific Northwest and in Alaska, calls for countries like Brazil to stop deforestation are naturally viewed as hypocritical, even though the basis of the argument for ignoring any suggestions from US sources rests on a logical fallacy: *argumentum ad hominem*, or attacking the man instead of the argument. Even more important is the disproportionately large US contribution to global greenhouse-gas emissions and the government's unwillingness to commit to serious reductions of emissions. Bush's withdrawal from the Kyoto Protocol in 2001 was a blunder the magnitude of which any in the US seem to be blissfully unaware. Rejoining the Kyoto process and making significant cuts in emissions would help to reduce the damage that the perception of hypocrisy does to US efforts on behalf of tropical rainforests. It would also have direct benefits, since global warming is one of the major threats to rainforest in places like Amazonia.

Mongabay: *What's your favorite spot in the Amazon Basin?*

Fearnside: My favorite spot is on top of the towers that INPA maintains with the LBA project north of Manaus. At 65 m you are well above the canopy and, for as far as you can see in any direction there is only rainforest. Not a clearing is in sight. That isn't likely to last for long if Manaus is connected to the Arc of Deforestation by the

BR-319 Highway. It is also totally different from what you would see anywhere in the eastern and southern parts of Amazonia, where the forest has already been reduced to fragments.

About Dr. Philip M. Fearnside

Dr. Philip Fearnside, Ph.D. is a Research Professor at the National Institute for Research in the Amazon in Manaus, Brazil. According to a September 2006 interview with Thomson, Fearnside is the second-most cited scientist on global warming topics, with 19 papers cited a total of 530 times.

Fearnside earned his Bachelor of Arts in Biology (1969) from Colorado College, his Master of Science in Zoology (1973) from the University of Michigan, and his Ph.D., Biological Sciences (1978) from the University of Michigan. Fearnside's extensive work is available at his web site: **http://philip.inpa.gov.br**