Letters to the Editor

Letters (~300 words) discuss material published in *Science* in the previous 6 months or issues of general interest. They can be submitted through the Web (www.submit2science.org) or by regular mail (1200 New York Ave., NW, Washington, DC 20005, USA). Letters are not acknowledged upon receipt, nor are authors generally consulted before publication. Whether published in full or in part, letters are subject to editing for clarity and space.

Gender Differences and Performance in Science

ON 14 JAN., HARVARD UNIVERSITY PRESIDENT Lawrence Summers, speaking at a meeting of the National Bureau of Economic Research, suggested that since fewer girls than boys have top scores on science and math tests in high school, genetic, rather than social, differences may explain why so few women are successful in these fields ("Summers's comments draw attention to gender, racial gaps," News of the Week, A. Lawler, 28 Jan., p. 492). Well-accepted, pathbreaking research on learning [for example, (*1*, *2*)] shows that expectations heavily influence performance, particularly on tests. If society, institutions, teachers, and leaders like President Summers expect (overtly or subconsciously) that girls and women will not perform as well as boys and men, there is a good chance many will indeed not perform as well. At the same time, there is little evidence that those scoring at the very top of the range in standardized tests are likely to have more successful careers in the sciences. Too many other factors are involved. Finally, well-documented evidence demonstrates that women's efforts and achievements are not valued, recognized, and rewarded to the same extent as those of their male counterparts (*3*).

> "[W]e are concerned by the suggestion that the status quo for women in science and engineering may be natural, inevitable, and unrelated to social factors."
>
> –*MULLER* ET AL.

As leaders in science, engineering, and education, we are concerned by the suggestion that the status quo for women in science and engineering may be natural, inevitable, and unrelated to social factors. Counterexamples to this suggestion are drawn from the fields of law and medicine. In 1970, women represented just 5% of law school students and 8% of medical school students (*4*). These low percentages have increased substantially in response to social changes and concerted institutional and individual effort and are now about 50% in each case. Obviously, the low rates of participation in 1970 were indicative of social, and not genetic, barriers to success.

We must continue to address the multitude of small and subtle ways in which people of all kinds are discouraged from pursuing interest in scientific and technical fields. Society benefits most when we take full advantage of the scientific and technical talent among us. It is time to create a broader awareness of those proven and effective means, including institutional policies and practices, that enable women and other underrepresented groups to step beyond the historical barriers in science and engineering.

CAROL B. MULLER, SALLY M. RIDE, JANIE FOUKE, TELLE WHITNEY, DENICE D. DENTON, NANCY CANTOR, DONNA J. NELSON, JIM PLUMMER, ILENE BUSCH-VISHNIAC, CAROLYN MEYERS, SUE V. ROSSER, LONDA SCHIEBINGER, ERIC ROBERTS, DAVID BURGESS, CRAIG BEESON, SUSAN STAFFIN METZ, LUCINDA SANDERS, BEVLEE A. WATFORD, ELIZABETH S. IVEY, MARY FRANK FOX, SHELDON WETTACK, MARIA KLAWE, WILLIAM A. WULF, JOAN GIRGUS, PHOEBE S. LEBOY, ELEANOR L. BABCO, BETTY SHANAHAN, CATHERINE DIDION, DARYL E. CHUBIN, MONIQUE FRIZE, SUSAN L. GANTER, E. ANN NALLEY, JUDY FRANZ, HÉCTOR D. ABRUÑA, MYRA H. STROBER, JANE ZIMMER DANIELS, EMILY A. CARTER, JEAN H. RHODES, IRIS SCHRIJVER, VIRGINIA A. ZAKIAN, BARBARA SIMONS, URSULA MARTIN, JO BOALER, KATHERINE ROSE JOLLUCK, PURNIMA MANKEKAR, ROBERT M. GRAY, MARGARET W. CONKEY, PETER STANSKY, AIHUA XIE, PINO MARTIN, LINDA P. B. KATEHI, JO ANNE MILLER, AMELIA TESS THORNTON, ANDREA LAPAUGH, DEBORAH L. RHODE, BARBARA C. GELPI, MARY JEAN HARROLD, CHERRILL M. SPENCER, CARLA SCHLATTER ELLIS, SUSAN LORD, HELEN QUINN, MARGARET MURNANE, PATRICIA P. JONES, FRANCES HELLMAN, GAIL WIGHT, RUTH O'HARA, MARY PICKERING, SHERI SHEPPARD, DAVID LEITH, ADINA PAYTAN, MATTHEW H. SOMMER, AUDREY SHAFER, DAVID GRUSKY, SHERRY YENNELLO, ASHIMA MADAN, DENISE L. JOHNSON, SYLVIA YANAGISAKO, JENNIFER M. CHOU-GREEN, SANDRA ROBINSON

Authors' affiliations are available in the Supporting Online Material at www.sciencemag.org/cgi/content/full/307/5712/1043b/DC1.

References

1. J. Bransford *et al.*, *How People Learn: Brain, Mind, Experience, and School: Expanded Edition* (National Academies Press, Washington, DC, ed. 1, 2000).
2. C. M. Steele, *Atlantic Monthly* **284** (no. 2), 44 (Aug. 1999).
3. V. Valian, *Why So Slow? The Advancement of Women* (MIT Press, Cambridge, MA, 1999).
4. Trends in Educational Equity of Girls and Women: 2004 (National Center for Education Statistics, Washington, DC, 2004) (available at http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2005016).

Amazonian Deforestation Models

DEFORESTATION PREDICTIONS FOR AMAZONIA presented by W. F. Laurance *et al.* in 2001 (*1*) are based on the assumption that the road infrastructure is the prime factor driving deforestation. Much has already been said by the scientific community about their model—its apocalyptical results are based on simple extrapolation of past patterns, disregarding the region's enormous biophysical and socioeconomic heterogeneity (*2*, *3*)—but recently the authors reinforced their arguable results ("Deforestation in Amazonia," Letters, 21 May 2004, p. 1109), blaming planned infrastructure and the land speculation it provokes for the current high deforestation rates in the Amazon, which we consider an oversimplified view of current deforestation causes (*4*).

Deforestation rates have increased significantly in the last two years (*5*), but in spite of the ambitious infrastructure plans announced in the mid-1990s, very few federal investments on roads have been made since the 1980s. Therefore, this overall rate increase cannot be explained by those plans even if land speculation is one of the factors in areas such as BR-163. For instance, the municipality that has had the highest deforestation rates in recent years, São Felix do Xingu, Pará, is not even served by a paved road. São Felix is an entrée to the area between the Xingu and Iriri rivers, a recent deforestation hot spot, where cattle farmers and local municipal governments build unpaved roads themselves (*4*). The Laurence *et al.* model fails to capture this type of new frontier (see figure in Supporting Online Material) (*6*, *7*).

Although we do not dispute the fact that in the past most of the deforestation has happened along the major highways (*8*), there is an urgent need to understand the genesis of the new Amazon frontiers, and the hypothesis that they are more localized and much less dependent on federal government infrastructure investments than in the 1970s and 1980s (*9*). Even in the 1970s and 1980s, the effect of roads was not homogeneous across the region (*10*), depending on proximity to national markets in the south, climatic restrictions, official settlements sites, agrarian structure differences, and technology access.

Simplistic models such as that of Laurance *et al.* (*1*) may divert attention from real deforestation causes, being

potentially misleading in terms of deforestation control, even if, as proposed in (*2*), Brazilian infrastructure plans are completely undermined.

GILBERTO CÂMARA,[1]*† ANA PAULA DUTRA AGUIAR,[1]* MARIA ISABEL ESCADA,[1]* SILVANA AMARAL,[1]* TIAGO CARNEIRO,[1]* ANTÔNIO MIGUEL VIEIRA MONTEIRO,[1]* ROBERTO ARAÚJO,[2]* IMA VIEIRA,[2]* BERTHA BECKER[3]*

[1]Instituto Nacional de Pesquisas Espaciais (INPE), Avenida dos Astronautas 1758, São José dos Campos, SP, Brazil. [2]Museu Paraense Emílio Goeldi (MPEG), Avenida Magalhães Barata 376, Belém, PA, Brazil. [3]Universidade Federal do Rio de Janeiro (UFRJ), Cidade Universitária, Rio de Janeiro, RJ, Brazil.

*GEOMA Network, Ministry for Science and Technology

†To whom correspondence should be addressed. E-mail: gilberto@dpi.inpe.br

References

1. W. F. Laurance *et al.*, *Science* **291**, 438 (2001).
2. B. Becker, "Revisão das Políticas de Ocupação da Amazônia: é possível identificar modelos para projetar cenários?," *Parcerias Estratégicas*, Número 12, Setembro, pp. 135–159 (2001).
3. G. Câmara, "O Geoprocessamento e o Futuro da Amazônia," *InfoGeo*, Jan./Feb. 2001, p. 17.
4. S. Margullis, *Causas do Desmatamento na Amazônia Brasileira* (Banco Mundial, Brasília, ed. 1, Julho 2003).
5. INPE, The Amazon Deforestation Database, available at www.obt.inpe.br/prodes (INPE, São Jose dos Campos, 2004).
6. See Supporting Online Material on *Science* Online at www.sciencemag.org/cgi/content/full/307/5712/1043c/ DC1.
7. Figure and other supporting information also available at www.dpi.inpe.br/gilberto/lucc.html.
8. D. S. Alves, *Int. J. Remote Sens.* **23** (no. 14), 2903 (2002).
9. B. Becker, *Geopolítica na Virada do III Milênio - Amazônia* (Ed. Garamond, Brasilia, Brazil, 2004).
10. D. S. Alves, "O Processo de desmatamento na Amazônia," *Parcerias Estratégicas*, Número 12, Setembro, pp. 259–275 (2001).

Response

CÂMARA *ET AL.* CHALLENGE OUR assertion that the unprecedented, planned expansion of highways and other transportation projects in Amazonia that was originally proposed under the "Avança Brasil" (Advance Brazil) program is likely to lead to a dramatic increase in forest loss and degradation, and they argue that our earlier spatial models (*1*) were overly simplistic and "apocalyptic" in their projections. Three points about our models merit emphasis.

First, the projections of our models—that 28 to 42% of Brazilian Amazonia would be deforested by 2020 if all the Avança Brasil projects proceed immediately—are in fact very plausible and do not differ greatly from simple extrapolations using the current high rate of forest loss (*2*). Second, our models incorporated key components of regional heterogeneity in Amazonia, including spatial variability in forest vulnerability to fire, logging, and mining. Third, independently derived scenarios of future forest loss (*3*, *4*), including a recent model that incorporates much of the region's biophysical and economic heterogeneity (*5*), also indicate that new and planned highways are likely to play a central role in determining future patterns of Amazon deforestation.

If a new highway penetrates into a large forest tract and promotes spontaneous colonization by farmers, loggers, and ranchers, is the forest loss caused by the highway or the other drivers? Clearly, it is both—but the crucial point is that such transportation projects play a pivotal role in determining where forest destruction occurs. The truly alarming aspect of the Avança Brasil program is that it will crisscross the Amazon with some 7500 km of paved highways and many other transportation projects that will penetrate deep into the heart of the basin. The net effect will be not only increased deforestation, but also fragmentation of forests on an unprecedented spatial scale (*1*). Rather than concentrating development in the vast expanses of land that have already been deforested, the projects that promote frontier expansion will do precisely the opposite.

Contrary to the claim by Câmara *et al.*, the dramatic upsurge in Amazonian deforestation in 2002–03 includes many areas associated with highways and roads, including the notorious Santarém-Cuiabá Highway. Even the deforestation hot spot (São Félix do Xingu) emphasized by Câmara *et al.* is closely associated with privately financed roads (*6*). The point of our recent Letter is that Brazilian-government efforts to slow rampant Amazon deforestation are unlikely to succeed if the government proceeds with its most environmentally damaging transportation projects. We stand by this assessment.

The charred remains of logging slash in the Brazilian rainforest.

WILLIAM F. LAURANCE,[1]* PHILIP M. FEARNSIDE,[2] ANA K. M. ALBERNAZ,[3] HERALDO L. VASCONCELOS,[4] LEANDRO V. FERREIRA[3]

[1]Smithsonian Tropical Research Institute, Apartado 2072, Balboa, Panama. [2]Departamento de Ecologia, Instituto Nacional de Pesquisas da Amazônia, C.P. 478, Manaus, AM 69011-970, Brazil. [3]Museu Paraense Emílio Goeldi, Avenida Perimetral 190, Belém, PA 66077-530, Brazil. [4]Instituto de Biologia, Universidade Federal de Uberlândia, C.P. 593, Uberlândia, MG 38400-902, Brazil.

*To whom correspondence should be addressed. E-mail: laurancew@tivoli.si.edu

References and Notes

1. W. F. Laurance *et al.*, *Science* **291**, 438 (2001).
2. If the deforestation rate in 2002–03 (2.35 million ha $year^{-1}$) continues indefinitely, then 100 million hectares of forest will have disappeared by the year 2020. This is about 25% of the original forests in Brazilian Amazonia.
3. G. Carvalho, A. C. Barros, P. Moutinho, D. C. Nepstad, *Nature* **409**, 131 (2001).
4. B. Soares-Filho *et al.*, *Global Change Biol.* **10**, 745 (2004).
5. B. Soares-Filho *et al.*, "A spatially explicit simulation model of deforestation for the Amazon Basin" (3rd Scientific Conference of the LBA Program, Brasília, Brazil, 2004).
6. A. Alencar *et al.*, *Desmatamento na Amazônia: Indo Além da Emergência Crônica* (Instituto de Pesquisa Ambiental da Amazônia, Belém, Brazil, 2004).

A Delicate Balance in Amazonia

IN THEIR LETTER "DEFORESTATION IN AMAZONIA" (21 May 2004, p. 1109), W. F. Laurance *et al.* cogently summarize the threats that roads and other infrastructure development projects pose to Amazonian forests. However, their implicit suggestion that the best way to prevent forest loss is by halting these projects ignores important political and social constraints faced by the region (*1*), as well as evidence that land-use patterns can change when viable alternatives to deforestation are presented (*2*). There is no doubt that roads and other infrastructure projects are conduits for agents of forest loss. However, they also provide important benefits, such as access to markets without which community-based timber management, the extraction of non-timber forest products, and other strategies for slowing deforestation advocated by the conservation community would not be economically viable.

Laurance *et al.* argue that the Brazilian government should "curtail" their expansion, and we agree that without their doing so, the region's forest will certainly be degraded. However, we also believe that progress on the issue of balancing Amazonian infrastructure needs and environmental conservation will not be made by

CREDIT: STEPHANIE MAZE/CORBIS

advocating a sweeping rejection of further development, which is at best unrealistic and at worst counterproductive. Instead, the question must be rephrased as, "Given our goal of minimizing deforestation, what projects are necessary and will be most beneficial?"

EMILIO M. BRUNA* AND KAREN A. KAINER
Tropical Conservation and Development Program, The Center for Latin American Studies, University of Florida, Gainesville, FL 32611–5530, USA.
*To whom correspondence should be addressed.
E-mail: brunae@wec.ufl.edu

References
1. M. Schmink, C. H. Wood, *Contested Frontiers in Amazonia* (Columbia Univ. Press, New York, 1992).
2. D. Nepstad *et al.*, *Science* **295**, 629 (2002).

Response

BRUNA AND KAINER IMPLY THAT BRAZIL'S Amazonian road building could help to promote "community-based timber management, the extraction of nontimber forest products, and other strategies advocated for slowing deforestation." Our collective experience in Amazonia over the past quarter century suggests otherwise. Although their optimistic view may apply in a few, rather rare situations, it seems entirely foreign to the major hotbeds of deforestation.

For example, when completed, the Cuiabá-Santarém Highway (BR-163), one of the top priorities of the Brazilian federal government, is likely to create an 800-km-long swath of forest degradation across southern Amazonia. The highway will transport soybeans from Mato Grosso to the Amazon port of Santarém, almost entirely for the benefit of large corporations and landholders (*1*). The planned route is already swarming with land speculators, cut-and-run loggers, cattle ranchers, and soybean investors—hardly the cast of characters likely to promote a "community-based" utopia focused on maintaining forest for nontimber products. BR-163 typifies the ecological impacts that often accompany major new highways in the Amazonian frontier (*2–4*).

Moreover, we do not advocate a "sweeping rejection" of proposed transportation and infrastructure projects in Brazilian Amazonia. We do, however, believe that a limited subset of the proposed projects—particularly those that would create major corridors between densely populated areas and the remote Amazonian frontier—will be so damaging environmentally that their potential societal and economic benefits are clearly outweighed (*1–5*).

The notion that society has "needs" for new infrastructure, whereas it merely has concerns for the environment and its services, is a false dichotomy that implicitly will always lead to choices in favor of infrastructure. The implied conclusion that planned projects should never be rejected or delayed, but only "balanced" with environmental add-ons, would clearly imperil Amazonian forests (*5*). Current efforts to reduce rampant forest loss are likely to fail, we believe, unless the Brazilian government addresses one of the most fundamental causes of forest destruction: the dramatic proliferation of new transportation projects throughout the heart of the Amazon basin.

PHILIP M. FEARNSIDE,[1]* WILLIAM F. LAURANCE,[2] ANA K. M. ALBERNAZ,[3] HERALDO L. VASCONCELOS,[4] LEANDRO V. FERREIRA[3]
[1]Departmento de Ecologia, Instituto Nacional de Pesquisas da Amazônia, C.P. 478, Manaus, AM 69011-970, Brazil. [2]Smithsonian Tropical Research Institute, Apartado 2072, Balboa, Panama. [3]Museu Paraense Emílio Goeldi, Avenida Perimetral 190, Belém, PA 66077-530, Brazil. [4]Instituto de Biologia, Universidade Federal de Uberlândia, C.P. 593, Uberlândia, MG 38400-902, Brazil.
*To whom correspondence should be addressed.
E-mail: pmfearn@inpa.gov.br

References
1. P. M. Fearnside, *Environ. Conserv.* **28**, 23 (2001).
2. W. F. Laurance *et al.*, *Science* **291**, 438 (2001).
3. P. M. Fearnside, *Environ. Manage.* **30**, 735 (2002).
4. W. F. Laurance *et al.*, *J. Biogeogr.* **29**, 737 (2002).
5. W. F. Laurance, P. M. Fearnside, *Science* **295**, 1643 (2002).

Underlying Causes of Deforestation

IN THEIR LETTER "DEFORESTATION IN Amazonia" (21 May 2004, p. 1109), W. F. Laurance *et al.* present an outdated argument for some of the causes of deforestation in Amazonia. Although the expansion of highway infrastructure can explain part of the deforestation in the 1970s and 1980s, it does not explain deforestation in the 1990s, when this expansion basically came to an end, but the rates of deforestation remained high.

The current expansion in infrastructure is probably a consequence (rather than a cause) of the agricultural and agroindustrial expansions toward northern Brazil (*1*). Blaming the Brazilian government's plans to dramatically expand highways and other major infrastructure projects in the region hides the real causes behind the problem. The underlying forces behind deforestation in the region are complex and involve an interaction of cultural, demographic, economic, technological, political, and institutional issues (*2*–*4*).

The active and passive participation of the Brazilian government in deforestation occurs in many different ways: government investments and financing granted to the private sector for gross fixed capital formation, boosting production capacity over the long term; underwriting investments in areas that have been recently cleared for farming and ranching purposes; the lack of a firm policy for transferring unused government lands with lapsed titles to the private domain (along with complacency or even connivance in the takeover of vast tracts of these unused government lands with lapsed titles through claim jumping and counterfeit land titles); acceptance of large tracts of land lying fallow and property speculation; large-scale expropriations of land for agrarian reform; and the ineffectiveness of the Rural Land Tax (ITR) as a mechanism for regulating the land market.

For products involving high technology that have become competitive in international markets, such as soybeans, with significant expansion spurred by international demands, the easy availability of land makes Amazonia a natural setting for this expansion. For low-technology activities, such as open-range grazing, rising domestic beef demands are met largely through extending pasturelands rather than higher productivity, with severe direct consequences on deforestation. In brief, the underlying government policies (economic and environmental), as well as institutional (fragility), agritechnological and socioeconomic factors (i.e., population, income, food demands) interact among themselves and function together, driving deforestation in Amazonia (*5*).

ROBERTO SCHAEFFER AND RICARDO LEONARDO VIANNA RODRIGUES

Energy Planning Program, COPPE, Centro de Tecnologia, Bloco C, Sala C-211, Federal University of Rio de Janeiro, Cidade Universitaria, Ilha do Fundao, Rio de Janeiro 21941-972, Brazil.

References

1. S. Margullis, *Causas do Desmatamento da Amazonia Brasileira* (World Bank, Washington, DC, 2003).
2. H. J. Geist, E. F. Lambim, *BioScience* **52**, 143 (2002).
3. A. Angelsen, D. Kaimowitz, *World Bank Research Observer* **14** (no. 1), 73 (1999).
4. R. L. V. Rodrigues, Ph.D. dissertation, Federal University of Rio de Janeiro, Brazil (2004).
5. R. L. V. Rodrigues, R. Schaeffer, in preparation.

Response

Schaeffer and Rodrigues list a plethora of socioeconomic and societal factors that likely influence Amazonian deforestation, many of which we have previously assessed in detail (*1*–*9*). Nonetheless, despite the seeming complexity of deforestation driv-

ers, it is dangerous to obscure the central role of new highway and infrastructure expansion in promoting rapid forest loss.

New deforestation drivers in Amazonia (such as soybeans) have not replaced the "old" drivers that were promoting deforestation 25 or more years ago. Rather, they have been added to the list of existing drivers. Evidence indicates that the relationship between road building or paving and burgeoning forest loss along highway routes is as strong today as it was decades ago (*3*, *5*–*7*).

Moreover, Brazilian plans for infrastructure expansion in Amazonia are readily amenable to policy modification (*5*), whereas many of the endemic societal and institutional problems cited by Schaeffer and Rodrigues are less so. Despite weak frontier governance, the Brazilian federal government is pushing ahead with a dramatic expansion of Amazonian highways, roads, and other transportation projects. The net result, we believe, will be further acceleration of already rampant rates of forest loss and degradation.

In addition, Schaeffer and Rodrigues misunderstand the key role of highways and roads in promoting past deforestation, especially during the 1990s. Contrary to their claims, the 1990s did see significant expansion of highways and roads, such as paving of the 800-km-long Manaus-Boa Vista Highway (BR-174) that is promoting dramatic changes in central Amazonia, highway paving in Acre and Mato Grosso, and a proliferation of many secondary roads ramifying out from existing highways. Moreover, highway and road construction not only has an immediate impact on deforestation, as they imply, but also longer and more pervasive effects that persist for many years. Forest loss in the 1990s would certainly have been less severe were it not for the infrastructure created in preceding decades.

Finally, it is vital to emphasize that new highways and roads exacerbate many current development pressures. By continually opening up new frontiers for colonization, such projects promote land speculation, weakening incentives for more sustainable land uses, such as perennial crops and plantations (*3*, *5*, *6*). Abundant, cheap land means that destructive, fire-based agriculture, such as cattle ranching and slash-and-burn farming, will continue to thrive. In Brazilian Amazonia, an area the size of France has already been deforested, a large fraction of which is now degraded cattle pasture with minimal benefit for Brazilian society. A vital step in promoting more sustainable development is to intensify land-uses in these already degraded areas, rather than opening up immense new tracts of primary rainforest for exploitation.

WILLIAM F. LAURANCE,[1]* ANA K. M. ALBERNAZ,[2] PHILIP M. FEARNSIDE,[3] HERALDO L. VASCONCELOS,[4] LEANDRO V. FERREIRA[2]

[1]Smithsonian Tropical Research Institute, Apartado 2072, Balboa, Panama. [2]Museu Paraense Emílio Goeldi, Avenida Perimetral 190, Belém, PA 66077-530, Brazil. [3]Departamento de Ecologia, Instituto Nacional de Pesquisas da Amazônia, C.P. 478, Manaus, AM 69011-970, Brazil. [4]Instituto de Biologia, Universidade Federal de Uberlândia, C.P. 593, Uberlândia, MG 38400-902, Brazil.

*To whom correspondence should be addressed. E-mail: laurancew@tivoli.si.edu

References

1. P. M. Fearnside, in *The Future of Amazonia: Destruction or Sustainable Development?*, G. Goodman, A. Hall, Eds. (MacMillan, London, 1990), pp. 179–225.
2. P. M. Fearnside, *Ambio* **8**, 537 (1993).
3. W. F. Laurance, *Trends Ecol. Evol.* **13**, 411 (1998).
4. L. V. Ferreira *et al.*, *Áreas Protegidas ou Espaços Ameaçados?* (World Wide Fund for Nature, Brasília, Brazil, 1999).
5. W. F. Laurance *et al.*, *Science* **291**, 438 (2001).
6. P. M. Fearnside, *Environ. Conserv.* **28**, 23 (2001).
7. W. F. Laurance, A. K. M. Albernaz, C. Da Costa, *Environ. Conserv.* **28**, 305 (2001).
8. W. F. Laurance *et al.*, *J. Biogeogr.* **29**, 737 (2002).
9. P. M. Fearnside, *Environ. Manage.* **30**, 748 (2002).