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Editorial and Business Offices  
1719 N St. N.W., Washington, D.C. 20036  
202-785-2255; [scinews@scisvc.org](mailto:scinews@scisvc.org)

Advertising Representative  
Lewis Edge & Associates, Inc.  
366 Wall St., Princeton, N.J. 08540, 609-683-7900

Subscription Department  
P.O. Box 1925, Marion, Ohio 43305  
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Cover: Frozen deposits of a substance called methane hydrate make up the greatest known reserves of fossil fuels. Geologists have recently started tapping these deposits, and investigators are synthesizing the flammable ice to study its properties. (Photo: Laura Stern, U.S. Geological Service, Menlo Park, Calif.)

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## Letters

### Sol y sombre

"Coffee can give many species a boost" (SN: 8/31/96, p. 132) gives the impression that open-sun coffee plantations severely reduce biodiversity among birds and other species in Latin America. As an economist working on trade and environment issues, I want to point out that the information offered is insufficient to reach this conclusion.

Sun plantations support less wildlife than shade plantations but at a higher yield of coffee. Thus, for any given quantity of coffee, less land is used and less rain forest is converted to coffee cultivation. Natural forest supports more wildlife than sun plantations and perhaps more than shade plantations.

To assess the net effect of sun plantations on biodiversity for a given quantity of coffee, one would need to know the difference in yield, the rate at which expanding shade plantations absorb land from rain forest and

other habitats, and measures of biodiversity for each type of plantation and each type of alternative habitat.

When land use decisions are taken into account, the net effect of shade-to-sun conversion is certainly less negative for wildlife than represented.

Michael J. Ferrantino  
U.S. International Trade Commission  
Washington, D.C.

If Dr. Ferrantino's scenario were correct, we would expect a landscape of small, highly productive sun farms and large, inefficient shade plantations. In fact, the opposite is generally true.

Certainly, under some conditions (large farm size, access to capital and credit, high coffee prices) sun farms are more profitable. However, if the many environmental costs (pollution, contamination, soil erosion) were internalized by the producers, sun planta-

tions would never be more profitable.

Our key point is that shade plantations form a refuge for biological diversity in many agricultural areas that have already lost their original forest cover. Therefore, in an overall strategy to protect biological diversity, it is critical that traditional coffee farms stay in business. This can be achieved by a market premium, paid by consumers, to eliminate the externalized environmental costs of coffee production.

Finally, attempts to set prices via international agreements and quotas essentially emphasize volume over taste and fuel the push toward sun coffee.

Russell Greenberg  
Director  
Smithsonian Migratory Bird Center  
Robert A. Rice  
Geographer/Policy Specialist  
National Zoological Park  
Washington, D.C.