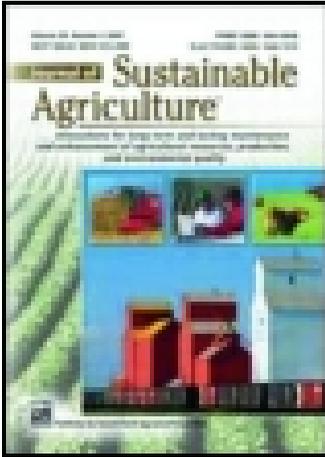


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Nature's Matrix: Linking Agriculture, Conservation and Food Sovereignty, by Perfecto, Ivette, John Vandermeer, and Angus Wright

Kathryn Fiorella^a, Christopher Gurney^a, Misha Leong^a & Timothy Stillinger^a

^a Department of Environmental Science, Policy, and Management, 137 Mulford Hall, University of California, Berkeley, Berkeley, CA, 94720

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BOOK REVIEW

Perfecto, Ivette, John Vandermeer, and Angus Wright. 2009. *Nature's Matrix: Linking Agriculture, Conservation and Food Sovereignty*. London, UK: Earthscan Publications Limited. \$34.95 paperback, 242pp, ISBN 978-1-84497-782-3

Nature's Matrix: Linking Agriculture, Conservation and Food Sovereignty is a thorough description of a new paradigm in biodiversity conservation. Through this well organized and easy to follow narrative, Perfecto, Vandermeer, and Wright present and explain how biodiversity conservation can focus efforts on understanding and managing the agroecological matrix that surrounds many important natural habitats. *Nature's Matrix* addresses a new and expanding paradigm on biodiversity conservation and is a worthwhile read that will bring readers up to date on this subject.

With an emphasis on novel agricultural landscapes' importance to biodiversity conservation, the authors discuss how various socio-political systems and agricultural practices affect the quality of the agricultural matrix for biodiversity conservation. Despite overwhelming evidence that the issues of agriculture, conservation, and food sovereignty are inextricably linked, a deficiency of integrated research persists amid mounting pressure to develop a comprehensive plan of action that addresses these three rapidly converging issues in unison. As the global human population continues to grow, pressure is mounting to develop a comprehensive plan of action that addresses these three rapidly converging issues in unison. The authors argue that this task may not be as daunting as it initially appears by virtue of the fact that agriculture, conservation, and food sovereignty can be largely compatible. In this book, the authors lay the foundation for a new paradigm centered on the importance of high-quality agricultural matrices.

The rationale behind the authors' new paradigm can be summarized as follows. First, extinction is unavoidable, even in very large habitat fragments, so species survival over a large area is ultimately determined by

All authors contributed equally to this review.

Address correspondence to Kathryn Fiorella, kfiorella@berkeley.edu

migration rates, which reflect the quality of the matrix habitat. Second, the majority of the matrix between habitat fragments has been converted to agriculture that varies both in its ability to support biodiversity directly and to facilitate animal migration. Third, smallholder farmers dominate the agricultural matrix, they struggle to survive in difficult political and economic conditions, and they would benefit from a worldwide movement towards agroecology.

This new paradigm calls for a shift in the priorities of the conservation community. The authors stress the need to change the focus from the status quo that emphasizes protected areas, large landowners, and pristine habitats. Instead, resources should be directed towards helping smallholder farmers promote food sovereignty in ways that maintain or increase the habitat quality of the agricultural matrix. In this way, biodiversity conservation could facilitate social and environmental justice and vice versa. The authors provide anecdotal evidence for this hypothetical synergy with case studies of coffee, cacao, paddy rice, and to a lesser degree *milpa* production in Latin America.

The authors have done an admirable job expounding the inextricable link between agriculture, conservation, and food sovereignty with a straightforward description of their matrix model making it accessible to non-scientific audiences. However, writing for a general audience and the breadth of the topic has limited their ability to delve into the nuances of the ecological and social arguments made here. We also hope further research will address its universality in relationship to all taxa, the role of sources and sinks within the matrix, and the role that protected areas may play.

With respect to the social argument, the authors draw from agrarian history, politics, and economics largely based on experiences in Central and South America. Issues of land rights, food sovereignty, and governance are entrenched in regional systems. So, too, are the history of development efforts, colonialism, and trade. The authors give a clear background of these factors as they relate to some past conservation efforts, and highlight potential solutions. Still, extrapolating these factors broadly is a challenging task, and regional complexity is sometimes oversimplified.

Similarly, recurring examples from tropical systems are relied on to make generalizations about the matrix model's extrapolation to other biospheres, geographic locations, agricultural systems, and peoples. The evidence presented makes a strong case for the biological integrity of select agricultural systems, but the extent to which all agricultural systems can be incorporated into a high quality matrix is not yet tested. The strongest case is made for particular agricultural systems – shade grown crops, like coffee and cacao, and paddy rice. The authors acknowledge that research has been focused largely on Latin American coffee systems and their matrix model is most developed for this system. While these systems are significant, the evidence is not yet convincing that other agricultural systems, namely the

majority of grain and vegetable crops, can necessarily support similar levels of biodiversity or provide such a high quality matrix.

Limitations aside, in context-specific situations, the authors present a solid argument that under proper ecological and socio-political conditions, biodiversity can persist and even thrive in productive agricultural systems. Importantly, this book also acknowledges that many large gaps still exist in our understanding of the links between agriculture, conservation, and food sovereignty and new integrated research on these topics in a variety of systems is sorely needed. By presenting diversified, small-scale agriculture as a necessary benefit to biodiversity conservation, *Nature's Matrix* gives hope for the long-term persistence of biodiversity in our increasingly fragmented agricultural landscapes.

Kathryn Fiorella, Christopher Gurney, Misha Leong, Timothy Stillinger
*Department of Environmental Science, Policy, and Management, 137
Mulford Hall, University of California, Berkeley, Berkeley, CA 94720*
(*kfiorella@berkeley.edu, cgurney@berkeley.edu, mishaleong@berkeley.edu,*
tstillinger@berkeley.edu)