

# Book Reviews



## **The World in One Cubic Foot: Portraits of Diversity**

**By David Littschwager, foreword by E.O. Wilson. Univ. Chicago Press, Chicago, Illinois. Hard cover, 204 pages, \$45.00, 2012. ISBN 978-0-226-48123-4.**

A stunning tribute to biodiversity, *One Cubic Foot* is a photographic delight that resulted from a unique conceptual idea. We all appreciate the importance of diversity, from rain forests to tropical coral reefs, but the detailed parade of life in each of these biomes is often missed by the casual observer as well as the discipline-bound scientist. Through a series of brilliant close-up photographs and an accompanying text written by experts in each location, photographer David Littschwager takes us on a delightful journey into the incredible living communities that often lie undetected right beneath our feet, in the arboreal canopy above, and in nearby waters. It is a trip well worth experiencing.

In the insightful foreword, eminent biologist E.O. Wilson describes the grand diversity of life forms on the planet, many of which are still to be discovered and classified. Even without this knowledge from science, we do know that an amazing complexity of competing organisms is what provides the basis for life and resilience on a planet that continues to evolve. More than a scientific novelty that captures the interest of specialists in biology, the intact biosphere is essential for our own health and survival. We ignore this truth at our own risk as humans to be able to continue to harvest food, mine fossil fuels and exploit other resources, and maintain an atmosphere favorable to our existence through photosynthesis and other ecological and physiological processes. *One Cubic Foot* provides a window on biological complexity that can be inspirational to the observer who loves nature and compelling to the skeptic who believes that only humans can control our destiny.

The journey begins under the Golden Gate Bridge, where more water flows out with the tide each day than moves out of the Mississippi River in the same time. This is accompanied by an estimated 2.6 billion organisms moving through each cubic foot of space. The bay interacts with one of the richest near-shore habitats on the globe. Photos of myriad species of plankton, diatoms, jellies, worm larvae, and dozens of other

species illustrate the incredible diversity of this water system. The sea lions and seals we easily observe from a trans-bay ferry are but the tip of a food pyramid found below the surface.

The story moves to a cloud forest in Monteverde Reserve in Costa Rica, 100 feet up in the canopy where the photographer observed two dozen plant species, plus more than 500 insects of 100 different species in one cubic foot over a full 24-hour day. Washed daily by mist and clouds, this forest canopy is home as well to untold numbers of mosses, beetles, bacteria, fungi, ants, and even earthworms in small pockets of accumulated soil. The diversity of micro-organisms has barely begun to be identified by scientists.

A tropical coral reef off of Moorea in French Polynesia represents a unique oceanic habitat that is found around the tropics, often low in nutrients, keeping the water incredibly clear and the abundant life accessible to a photographer. In the cubic meter, there were 600 animals and plants more than one mm in size, including 190 crabs from 32 species, plus thousands of smaller organisms drifting through each day. Reefs are threatened by increasing carbon dioxide levels, a climate change that may cause them and their rich biodiversity to disappear.

The interested student need not travel farther than Central Park in New York City to observe a rich, biodiverse deciduous forest. In the undisturbed four-acre Hallett Nature Sanctuary, a one-cubic foot section of the forest floor revealed over 100 species in the layers of leaves and upper crust of soil, even in the dry season when observations were made. Likewise, an easily accessible section of the freshwater Duck River in Tennessee showed this to be one of the most biodiverse waterways in the U.S. The photographer found over 150 species of insects and other animals in the cube over a 24-hour period, more diversity than is found in all the rivers in Europe combined. Notable are the turtles, fish, birds, and larger insects such as dragonflies, but the vast bulk of diversity is found in the shallow silt of the riverbed. For example, there are 55 species of mussels in the river, including seven in the cubic foot sample.

Finally the author travels to South Africa to Table Mountain National Park, to a *Mountain Fynbos* in the Cape Floristic Region that is characterized by nutrient-poor, rocky soils. Yet this seemingly inhospitable area is home to 9,000 species, many of which are found nowhere else and evolved here over millennia. In one cubic foot, the observer with camera found 90 species including 25 types of plants, 200 seeds of some five species, plus 70 invertebrates in this Mediterranean-type climate. He explained that moving the cube a few meters to a new location would likely reveal at least a 50% change in the resident biota.

To be sure, this is a delightful table-top book to skim for its beautiful photography. But it is much more – a fascinating sampling of six distinct biomes with their luxurious biodiversity presented in an accessible and interesting layout. Each is accompanied by cleverly-written text that breathes life into the illustrations. In *One Cubic Foot*, photographer Littschwager provides us a window on the unbelievable diversity of life on the planet, and an incentive for the biologist as well as the interested observer to get outdoors and observe the life around us on which we all depend. The lesson is also clear to those in agriculture who continue to pursue monoculture cropping systems as the ideal, without considering the long-term increased resilience and sustainability that could result from multiple cropping, permaculture, or prairie polyculture systems.

Submitted by:

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## **Food Politics: What Everyone Needs to Know**

**By Robert Paarlberg. 2010. Oxford University Press, New York, NY. 240 pages, \$16.95. ISBN 978-0-19-538960-9.**

The fragility and flaws in the world's food and agricultural policies have become increasingly apparent during the first decade of the twenty-first century. Designing appropriate food and agricultural policies is essential in countries where food is barely enough for subsistence and rural poverty is widespread. In high-income countries, where agricultural subsidies and related trade policy have played an important role in the political arena for decades, new challenges have brought food and agricultural policies back to the front burner of policymaking [from Pinstrup-Andersen and Watson, *Food Policy for Developing Countries*, 2011, p. 26]. The challenge for most of us is to understand the complexity of food policies and how they differ around the globe.

Robert Paarlberg's *Food Politics: What Everyone Needs to Know* is an articulate discussion in a digestible language that can help the informed lay person begin to understand this critical area of international concern, as well as how appropriate change can be designed for the future.

*Food Politics* explains the multidimensional and complicated issues of political involvement in the food system in an easily understood format using language the lay reader can absorb. Author Robert Paarlberg examines many important dimensions associated with food such as famine, chronic hunger, obesity, farm subsidies, food aid, environmental impacts, Green Revolution, food safety, organic foods, transgenic breeding methods and products and fast food. As a true academic, the author discusses these issues based on facts, and often challenges some of the popular wisdom and beliefs about food. This is a fact-based, question-answer book on global and local impacts of food politics. The book is divided into 14 chapters around these key issues, and each chapter addresses the current situation, historical events, and their many interactions with food around the world. It is a good primer for students and others interested in delving into global realities and how they are impacted by policy.

The politics of food have gone through drastic changes over the past several decades. Both policy and consumer demand in the early part of the last century were focused on producing and delivering sufficient energy to satisfy basic human needs, while in the last 60 years the emphasis has shifted to safe, cheap and convenient food. Today's post-agricultural consumer demands fresh, safe, high nutritional content, and low carbon footprint foods along with increasing attention placed on animal welfare. In Africa, the situation is the opposite. Many people remain malnourished due to poverty and lack of food. Such drastic differences among countries and their availability of food can be attributed in part to implementation of science-based advances that have been spectacular in the North and often absent in the South. In the U.S., for example, average maize yields have increased from 46 bu/acre in the 1940s to 156 bu/acre in 2007. Many African countries on the other hand have lacked access to critical and appropriate agricultural technologies and in some areas have seen a decline in yields over several decades.

Informed readers are well familiar with the food crisis in 2007-2008, where international food prices increased substantially compared to a decades-long pattern of real price decline. Most people assume that such an event originated in the food and farm sector, just as in the previous price spike in the 1970s. In fact, the author claims that the cause lies with governments and their key role in attempting to stabilize local markets

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through management of food imports. Such decisions allow governments to benefit producers by taxing imports when local prices are low and buying more imports at lower price when domestic prices are high to benefit consumers. Inevitably it drives instability from the international into the local market place. When several governments do this at the same time, a sense of panic develops. Many countries respond by accelerating the timing of purchases, thus creating the perception of low product availability. The world does face a real food crisis, but the best way to measure this crisis is not in food price but in actual hunger. Most of the world's hungry do not get their food from international markets.

Unlike chronic hunger, famine results when large numbers of people die from lack of food. These events may be triggered by drought, disease, flooding, war, change of government, or combination of factors. Food aid timing is critical when other governments or international agencies respond to famine. When governments act too early, local farmers will relocate to feeding stations and abandon their farms. Such events can leave farmers unable to plant when the situation improves. Only when all non-essential items have been sold off and people are forced to sell even essential equipment should food aid be administered, a drastic but proven solution. When the situation improves, a one-time distribution of equipment, animals and operating funds should be given to help people return to a productive lifestyle.

In total numbers, obesity is currently a greater human health concern worldwide, with estimates of twice as many overfed as underfed people on the planet. So much political attention has focused on those who have too little food that governments are unable to generate policies to adequately monitor and control the obesity situation and help educate the public about this growing crisis. Obesity comes with a barrage of health problems and medical costs of treating obesity-related diseases have doubled over the past decade to \$147 billion annually in the U.S. alone. Causes of this problem include increased caloric intake and lack of physical labor due to many technological advances that make our lives easier. Among the largest culprits are introductions of fast food, junk food and sweetened beverages. Individual meals at fast food outlets may exceed 1000 calories per serving. In addition, food industries design their products to be more difficult for unwary consumers to resist by manipulating the sugar, fat and salt contents as described in the 2001 best seller *Fast Food Nation* by Eric Schlosser.

As consumers begin serious evaluation of their food, there is confusion about the value of unique sources such as organic, local, or GMO-free foods. Some believe that

organic food is more nutritious and safer to eat, while an article in the American Journal of Clinical Nutrition in 2009 found no evidence of nutritional benefits compared to conventional products. In one study in 2003, the Food and Drug Administration tested several thousand samples of domestic and imported foods and found only 0.4 to 0.5% with any detectable levels of pesticide that exceeded tolerance levels. Food activists are now pushing consumption of local foods and surveys indicate consumers are willing to pay a premium for this produce. Local market numbers have increased from 1,755 in 1994 to 4,385 in 2006. Some healthier products in a farmers market can help consumers avoid temptations of oversalted, oversweetened and microwavable foods of the supermarket.

However, the local food scenario may contribute to problems of climate change. Driving to farmers markets to bring home small amounts of food can result in a large carbon footprint. Carnegie Mellon University researchers found that transportation only accounted for 11% of the greenhouse gas emissions for food, and the best way to reduce the carbon footprint is to eat less red meat. Transgenic foods have received considerable scrutiny since their introduction in the late 1990s. As of 2009, according to the author there has been no documented evidence of human health or environmental risk from GMO foods, although recent data contradict this statement. Opposition to GMO foods appears to be the result of a technology in which success has not been transferred to the consumer, but rather the profits have been captured by companies that hold the patents and the producers who save money by using less pesticide. These issues continue to foster contentious debate.

In summary, *Food Politics* is a valuable compendium of information around the issues of food today, bringing up opposing points of view that will stimulate valuable debate. It is a book well worth reading to gain an analytical foundation for discussion of key food issues of the day. Although many readers will not agree with the information or interpretations presented, the book raises key questions about agriculture, consumer health, and the politics behind government and industry decisions about food. The author brings impressive credentials to this report as professor at Wellesley College, an Associate in the Weatherhead Center for International Affairs at Harvard University, and an acclaimed authority on food policy. *Food Politics* could be a valuable resource for courses in agriculture, nutrition, economics and public policy, as well as for the general consumer public.

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