



SUSTAINABILITY FOOD WEBS

Global climate change, unsustainable development, and industrial waste are all **disrupting local food webs—** and **threatening the global web.**

Predator-prey cycles are being decoupled as insects emerge out-of-sync with bird migrations. In the United Kingdom, mothers' milk is contaminated with 40 times the acceptable amounts of industrial chemicals. The colony collapse disorder of bees foreshadows the long-term effects of, among other things, introducing non-native, highly competitive species into the landscape. Over the next century, these cascading disruptions will restructure the human food landscape—but the next 10 years will lay the groundwork.



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CULTIVATED OR WILD: **"IT'S ALL GARDENING NOW"**

While environmental scientists record the rapid extinction of species, the food industry enjoys a sense of immunity to what's happening in the wild. Yet the boundary between wild and cultivated is breaking down, as feedback from industrial agriculture—for example, the carbon production of the meat industry—feeds the cycles of climate change that disrupt the timing of predator-prey cycles.

Mainstream environmental science still embraces a strong "hands-off" ethic when it comes to wilderness food webs. Yet an "interventionist" perspective is gaining adherents. Noting that human influence is now ubiquitous, ecologists like Daniel Janzen argue that we need to become "gardeners" of wild ecologies. And this gardening is likely to look very different from today's agro-industrial practices.

SHORT-TERM RESPONSES: **BOTTOM-UP INNOVATION**

Meanwhile, worries about food webs are driving innovation in human food management at a distinctly local level, using bottom-up processes. In Japan, 20% of the population belongs to food cooperatives. They form short and flexible local supply chains and demand ecologically friendly production methods; they reject packaging as advertising; and they foster community connections between and within producers and consumers. In China, experimental bottom-up cooperatives are testing domestic fair trade practices that provide an alternative to national and international organic certifications, which have very low credibility there. In the United States, artists and activists are claiming farming as a creative act, cultivating urban food systems, and fostering a new appreciation for farming and food production.

Many of these innovations are values-driven. They emerge from shared perspectives of the relationship between environment, health care, and our diets. Drawing on rich information and communication networks, they cast a wide net—building alternative infrastructures for food production and distribution while attending to both global and local impacts. While locally focused, they are not isolationist. Rather they are building a more layered, flexible, and responsive system for human food production.

LONG-TERM STRATEGY: **ECOLOGICAL INTERVENTIONS**

In the long term, the threats to the global food web will most likely require a coordinated international response, drawing on the science of ecosystem management. This response is likely to engage many of today's top-down institutions: governments, transnational organizations, corporations, universities, and NGOs, who will all shoulder responsibility for protection of the various fragile systems—whether for reasons of altruism, power, or profit.

The food-web ecosystem crosses industry silos and geopolitical boundaries, and management strategies will demand collaboration, adaptation, and flexibility. It will need to integrate not only emerging bottom-up food infrastructures but also various bio-tinkering efforts—bio-engineered agriculture, genetically modified animals, even developments in lab-grown meat. Meanwhile, many international bodies will explore methods of "biosphere backup," preparing for catastrophes ranging from food-web collapse to massive species extinction. These all form a dynamic ecosystem of strategies for addressing the challenges posed by an unsustainable food web and threats of disruption.