

Ghosts, Ecology, and the Creativity of Plants

The Ghosts of Evolution: Nonsensical Fruit, Missing Partners, and other Ecological Anachronisms, by Connie Barlow, Basic Books, 2001, cloth, \$26.00.

Reviewed by Darlene Pagano

THOSE WHO APPRECIATE the image of life as a woven web or tapestry, will love exploring with Connie Barlow the consequences of a single thread gone missing.

Ghosts of Evolution takes on a botanical puzzle: abundant fruits whose characteristics do not appeal to any available dispersers of their seeds, abundant fruits that seem to have no strategy for moving seeds away from the parent to establish new growth. Yet these are species that have been in the historic record since previous to the Pleistocene. How had they once thrived and and hung on?

Science writer Connie Barlow follows up on a startling insight of ecologist Dan Janzen. Working in Central America in the 1970s, he noticed huge quantities of ripened fruit that seemed to be attracting no particular interest from any species of life that would be of use to the plant in spreading its seed. The fruit rotted, all that energy expended by the tree wasted.

Suddenly, instead of only thinking about how the plant was not in an advantageous relationship with any available disperser, he tried to think of what animal the plant might be trying to attract that may now be extinct. He found, with the help of paleontologist Paul Martin, a goodly number of animals from 50 to 13 millennia back in time that were perfectly co-evolved partners.

Here's the difference between Plant time and Primate time: When the megafauna of the Americas had been driven to extinction, all gone by 13,000 years ago, many species of plants were left without their primary and most effective seed dispersal agents. To humans, those animals have been so long gone that they live in no memory nor recounting. Their bones have had to be rediscovered to inform us of what one was. The plants, however, still have a perfectly clear image of the megafauna. As a matter of fact, to the plants there is no awareness that the animals won't be coming back; 13,000 years doesn't begin to test their patience. They continue to create their fruits in the ways those animals found most appealing. The plants expect them still.

The publication of their findings has become a classic in the science of ecology. In *Ghosts*, Connie Barlow takes that perspective of looking for missing relationships from the plants' point of view, and goes exploring in her own neighborhoods to see if she can notice fruits and seeds that are bereft of their primary dispersal agents. (The term used is Anachronistic fruits.) The list she accumulates is long and varied.

What I know about botany wouldn't overflow a thimble, so I am grateful for Connie Barlow's ability to give enough information to follow her inquiries, but not lose me in the language and protocols of the science. Also, while writing a book about the

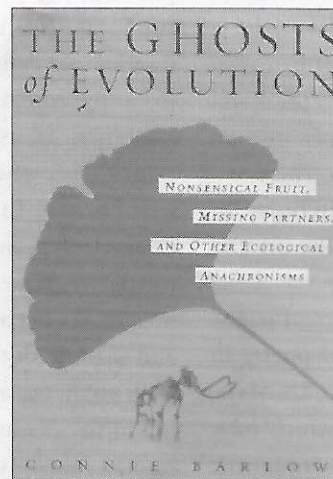
brilliance and creativity of plant species, Connie uncovers a great many stories about the lives of the missing creatures as well. These creatures, the ghosts of the title, are conjured back into their full and complex lives—camel, sloth, glyptodont, rhino, mastadon and mammoth, giant beaver, and armadillo; an

Age of Great Mammals that ended in the Western Hemisphere 13,000 years ago.

Getting a chance to understand the creativity unleashed by natural selection pressures on the plants was a high point for me of this book. The abundance of nature, the intertwining of needs and opportunities, the exploitation and reward that life forms take from and give

to each other, and the striving toward fitness of every species are all lessons I could never tire of. Connie gives story after story of the effect each species exerts on every other, stories not only for our entertainment (which they certainly are) but also to make us unforgettably aware of the importance of every species and form of life, and what devastation occurs whenever one is lost.

Most amazing are the ways in which we humans are exploited as dispersal agents after having caused the extinction of the original partner. Humans with our relatively small gape and short gut can't replicate the way the extinct megafauna transported, processed and deposited seeds. However, the plants don't care how we do it, as long as we can do it successfully for their reproduction. Think



Earth Literacy Web



Linking Companions in the Great Work

"The Great Work of our time is to carry out the transition from a period of human devastation of the Earth to a period when humans would be present to the planet in a mutually beneficial manner."

—Thomas Berry, cultural historian and geologist

What is Earth Literacy?

Earth Literacy is a field of study and movement of people working for personal and social transformation.

◆ **As a field of study**, it explores the mysterious unity and relationships binding Earth and the totality of life under the conditions out of which Earth has emerged within a single, unfolding Universe.

◆ **As a movement**, Earth Literacy catalyzes personal and social transformation, providing the understanding and energy needed to inspire and sustain the human capacity to love, conserve, and restore Earth's fragile web of life.

The Purpose of the Earth Literacy Web

The Earth Literacy Web (ELW) seeks to support, link up, and assist in the self-education of the growing community of people participating in the Great Work of creating a benign human presence on planet Earth. The three primary ways we seek to facilitate this are:

◆ building a sense of community among participants through the creation of a membership organization and a database of information to be shared among members;

◆ linking members to each other through the creation of an interactive website and a directory printed regularly in *EARTHLIGHT* Magazine;

◆ encouraging communication among members of the ELW community and providing information on available resources.

To learn more about how you can become involved, contact the Earth Literacy Web: e-mail: info@spiritualecology.org; website: www.spiritualecology.org; (510) 891-0478.

*Individual and organizational memberships include a subscription to *EARTHLIGHT* magazine. Individual rates: \$25-50 sliding scale; organization rates: \$50-100. Mail check made out to **Center for Sacred Ecology** to: Darlene Pagano, Earth Literacy Web Coordinator, 111 Fairmount Ave., Oakland, CA 94611.*

Avocado—we can't swallow the seeds, but we're happy to create orchards of them. Think Gourds—we'll adapt it into many soft skinned squash and plant them far and wide. Think Honey Locust—in this century urban landscapers have settled on the tree as ideal for city settings and extended it's range even wider than what it was when elephants sought it's pods. Think Ginkgo—nearly extinct in the wild, now propagated by humans for it's medicinal value.

Readers of *EARTHLIGHT* will find much in this book to your liking. The book both opens and closes with descriptions of ceremonies, inspired by deep ecologists, that attempted to bring forth the voices of plants speaking of their co-evolved animal partners, and that gave voice to the scientists who search for and study those creatures, who mourn the human-caused extinction of our native giants. Connie's exuberance at the chance to carry out experimentation to further her investigation will inspire you to, yes, Try This At Home. (And most of the experiments are ideally suited to any Middle Schoolers you may have in your life.) Finally, a sense of the place of the human in the community of Earth is always present.

Whether we can gain enough understanding of our actions so they can be for the better and not for ill is unclear. In *Ghosts of Evolution*, Connie Barlow has given us a few more insights to try and tilt us toward the better.

*Darlene Pagano is the administrative coordinator of the Earth Literacy Web, where she hopes to become more familiar with many *EARTHLIGHT* readers as they become ELW members.*