

book | *news*

from North Carolina

The University of North Carolina Press

116 S. Boundary St. | Chapel Hill, North Carolina 27514-3808

A conversation with Jennifer Frick-Ruppert

Author of *Mountain Nature: A Seasonal Natural History of the Southern Appalachians*

Published April 15, 2010

\$45.00 hardcover, ISBN 978-0-8078-3386-5

\$20.00 paperback, ISBN 978-0-8078-7116-4

Q: How did you come to write this book?

A: I seem to have been born with a lively curiosity for, and appreciation of, nature. This natural instinct was cultivated by my upbringing in a close-knit, mostly farming-based family in rural South Carolina, whose chief pastime was and still is the telling of stories, most often about encounters with animals and plants. From my earliest years, I listened to these adventures and wanted to join in the dialog to create and eventually write my own story. I centered my story on a natural community, and identified the players, their roles, and interactions. But I also wanted to explore the source or sources of beauty in wild things and landscapes.

Q: How is this book different from other guides to the natural world of the Appalachians?

A: This book is different because it focuses on cycles of nature, particularly the seasonal cycle. I think that is what people experience when they step outside—they see it is spring, with birds singing, flowers blooming, and trees leafing out. Since all those things happen together in springtime, the spring chapter describes them together. Cycles are also deeply engrained, perhaps fundamentally so, in the fabric of nature.

I chose cycles as a conceptual theme for this book because they provide a temporal context, a time signature, against which natural events can be measured and related. Perhaps the most obvious cycle is the seasonal cycle. When I take my students outside in September, I know we will see different plants and animals than we will in May. If it is autumn, reading the fall chapter should point out to the reader what she or he can expect. If you step outside in October, you are likely to see pretty tree leaves, monarch butterflies, and woolly bear caterpillars. And, yes, I teach "Plants and Animals of the Southern Appalachians" in the spring and in the fall when we observe and study these seasonally different organisms

Q: How are the southern Appalachians different from any other ecological system in North America? And why is it important for people to know about them?

[more]

Contact Gina Mahalek for review copies/author interviews [919] 962-0581

Fax [919] 966-3829 | E-mail: Gina_Mahalek@unc.edu

2-2-2 Mountain Nature

A: The Southern Appalachians are ancient, geologically complex, biologically diverse, and wet! Biologically speaking, they are as significant as the Great Barrier Reef of Australia, but they are right here, surrounded by dozens of cities and millions of people. Too often, we ignore the world right outside our door in favor of something more "exotic." I think that people should know their neighbors, and not just the human ones. What native plants grow in your yard? What lives in the stream or river closest to you? If you live in or even visit the Southern Appalachians, this book should help you answer those questions.

Q: Why were you drawn to the Appalachians? What is your relationship to this area?

A: I was raised on the coastal plain of South Carolina. The biodiversity there is reduced compared to the Southern Appalachians, but my family spent many vacations at the coast, where some new animal inevitably washed up from the sea. These sea creatures captivated me for awhile and I eventually studied one of them for my PhD degree, in Zoology, at Clemson University. Clemson is at the foot of the nearby Appalachian Mountains, and I soon developed an interest in the life of the mountains. My husband and I bought some land and built a tiny cabin there, which further stimulated my love and appreciation of the area.

Q: This book has over 50 color and 40 black & white photographs. Is there a story about how you took these?

A: I wrote a column for my local newspaper, *The Transylvania Times*, which I called "Appalachian Almanac." Like this book, the column described common plants and animals during the season readers could expect to see them. I took pictures to illustrate the columns because I firmly believe that showing someone the organism helps them to understand it better and to remember what they have learned. I enjoy writing and trying to engage readers both with style and knowledge, but I recognize the power of an image to teach.

Q: You make quite a few artistic and musical references in your book, which seems surprising for a scientist. Why?

A: Because nature is harmonious. I am a scientist, but I see nature as something to appreciate for its beauty, not just as one cog meshing with the next. The source of this sense of beauty and repose, our aesthetic response, is likely to be our shared heritage with the cosmos in general and with our environment in particular. E.O. Wilson has called it "biophilia:" a love of living things. I enjoy the intellectual challenge of understanding why male cardinals are redder than the females, sing more, and help to care for young, but I also enjoy seeing and hearing a beautiful red bird in my yard.

Q: In more than one place, you talk about the importance of fungi. Why are fungi important?

A: Fungi are generally underappreciated organisms, probably because we only notice [more]

Contact Gina Mahalek for review copies/author interviews [919] 962-0581

Fax [919] 966-3829 | E-mail: Gina_Mahalek@unc.edu

3-3-3 Mountain Nature

them when they make mushrooms or produce spores as they decompose the old food in the fridge. Most of them are quite helpful and much more common than we realize. The main body of the fungus lives underground and the whole forest is linked through their bodies. It is now estimated that 95% of forest trees have a mutualistic partnership with fungi, in which the trees receive nutrients and water in exchange for some energy and a few carbohydrates. As the fungi decompose dead plants and animals, they release some nutrients into the soil—they, along with bacteria, are the ultimate recyclers that convert large molecules into small ones that plants can take back up and use again. Plants probably colonized land with the help of fungi. So the whole structure of the forest community depends on the presence and partnerships of fungi.

Q: How can there be non-photosynthetic plants? Don't all plants have chlorophyll?

A: It's those fungal partners again! Non-photosynthetic plants are parasites. Some of them, such as squawroot, directly parasitize their host tree, plugging into the host's tissues and transport system. Others, like orchids, are parasites on their fungal partners. These plants have enslaved the fungi, withdrawing nutrients from them while providing nothing in return, at least as far as we know. Even though they lack chlorophyll, they are still plants, with flowers, leaves, stems, roots, and transport systems.

Q: Why do you consider orchids to be somewhat devious members of the plant world?

A: Orchids are so beautiful that you just have to admire them. And they are so diverse that you have to appreciate them. But, to really understand them biologically is an intellectual challenge. They are a perfect example of the blending of science and art. Most, if not all, orchids have a lifelong dependence on fungi, which are required by the orchid for seed germination, growth, and maintenance. Little or nothing is provided to the fungus by the orchid, so orchids, as engaging as they may be, actually are freeloaders on their fungi. Many of our local species can't be moved from their habitat because their fungal partners don't survive. At another level, the striking colors and symmetry of orchid flowers are used to attract and engage pollinator insects for the sake of transferring pollen between two or more orchid flowers. But the charms of the flower are hollow for the insect, because the orchid provides no nectar or pollen reward. Instead, the insect is duped into service of the orchid and receives nothing in return. So orchids are freeloaders on their pollinators, too: attractive, irresistible, but devious freeloaders.

Q: Can you describe some of the tricks that certain plants use to survive in locations where most plants cannot survive?

A: They form partnerships! Mutualisms are symbiotic relationships in which both organisms benefit. Mutualisms allow for new structures in ecosystems, new forms of life, and colonization of new areas. Lichens are an example of a new form of life—a mutualism between an alga and a fungus that looks nothing like either parent organism and grows where neither parent can. The fungal partners of many plants in the heath family, such as sourwood, mountain laurel, and trailing arbutus, break down the proteins

[more]

Contact Gina Mahalek for review copies/author interviews [919] 962-0581

Fax [919] 966-3829 | E-mail: Gina_Mahalek@unc.edu

4-4-4 Mountain Nature

in soil humus, allowing their plant partner to take up amino acids directly from the soil. These plants can grow in areas that have poor soils, but abundant sunlight and little competition from other plants. Similarly, plants in the legume family have formed partnerships with bacteria to do basically the same thing—supply them with nitrogen when there is little nitrogen in the soil. Interestingly, alders also have a bacterial symbiont, but the bacterium is different from those that form partnerships with the legumes. Mutualisms are often overlooked with regard to the important part they play in the structure of biological communities.

Q: You talk convincingly about the value of mosquitoes, which most of us consider a pest that the world would be better without. Can you explain why we are better off with mosquitoes?

A: First off, we don't know enough about how the earth works to know the importance of most of the creatures with whom we share the earth. A mosquito is just as important as a bluebird or an orchid, but nobody asks whether we'd be better off without bluebirds. All these organisms exist together, work together, to create a functional earth system. We have barely begun to understand how ecosystems function. How can we say an organism is unimportant to that harmonious whole? Whether tiny or huge, every form of life on earth has a part to play. We just have yet to hear it. For humans to be the cause of a species' extinction is, to me, the height of hubris.

Q: You are an environmental scientist. Are you also an environmentalist?

A: Yes, I study our environment as a scientist, but I also advocate for its protection. My focus is mainly on the preservation of biodiversity, and this book is part of that focus. By teaching others about the organisms that live here with us, I hope that my readers will come to love and appreciate them. Before anyone will go to the trouble to preserve a species or habitat, they must first understand it. Protection implies that we care about something, and how can we care about something if we don't even know it is there? That is why I believe in the power of education. We can learn, and by learning, make a difference.

Q: In your discussion of global warming, you mention that it raises the average daily temperature of the earth but does not change day length. How does this wreak havoc with natural cycles?

A: In a 2005 study in Great Britain, scientists showed that caterpillars hatched earlier and matured faster at warmer temperatures, but birds were less affected by warming. The birds laid eggs about 2 days earlier than previous years, but the caterpillars were 6 days ahead. Many caterpillars were already moths by the time the chicks hatched, meaning less food was available for the birds.

Q: What is the biggest threat facing the Appalachians today? And what do you think they will look like in 100 years?

A: Climate is changing and we can quit arguing about how much is human caused and
[more]

Contact Gina Mahalek for review copies/author interviews [919] 962-0581

Fax [919] 966-3829 | E-mail: Gina_Mahalek@unc.edu

5-5-5 Mountain Nature

how much is natural. Frankly, if we were in a natural cooling cycle and were pouring carbon into the atmosphere, it wouldn't be such a big deal. The real problem, and the reason we need to act now, is we are literally pouring fuel on the fire because we are already at the peak of a natural warming period, so every bit we add is pushing us over natural limits. We need to focus on how to mitigate the effects of a warmer earth, because that is happening now and is the reality for the near future.

In the distant past, when climate changed, animals and plants could use the Appalachian mountain chain as a natural highway for migration to better habitats, but now, human development stands in the way. Imagine a turtle trying to cross a 10-lane highway with a concrete barricade in the middle of it—it just can't happen—and we have miles and miles of just such barriers. We need to be designing corridors of migration so that plants and animals can move up and down the chain and get to where they need to be to survive. Roads are probably the biggest barrier, but all types of development need to be considered. And the Appalachians are extremely important as a biological reservoir for the whole of the east and midwest.

In the absence of human restraint, the Appalachians will be biologically simpler, hotter, and much more populated by people rather than by other organisms. We just can't all fit into the same finite space.

###

This interview may be reprinted in its entirety with the following credit: A conversation with Jennifer Frick-Ruppert, author of *Mountain Nature: A Seasonal Natural History of the Southern Appalachians* (University of North Carolina Press, (Spring 2010). The text of this interview is available at www.ibiblio.org/uncp/media/frick_ruppert/.

PUBLISHING DETAILS

ISBN 978-0-8078-3386-5 \$45.00 cloth; ISBN 978-0-8078-7116-4 \$20.00 paper

Publication date: April 15, 2010

Approx. 264 pp., 50 color and 41 b&w illus., 1 table, 1 map, appends., index, 16-page color insert

For more information: <http://uncpress.unc.edu/books/T-8539.html>

The University of North Carolina Press, www.uncpress.unc.edu

116 South Boundary Street, Chapel Hill, NC 27514-3808

919-966-3561 (office) 1-800-848-6224 (orders) 919-966-3829 (fax)

[more]

Contact Gina Mahalek for review copies/author interviews [919] 962-0581

Fax [919] 966-3829 | E-mail: Gina_Mahalek@unc.edu

6-6-6 Mountain Nature

CONTACTS

Publicity: Gina Mahalek, 919-962-0581; gina_mahalek@unc.edu

Sales: Michael Donatelli, 919-962-0475; michael_donatelli@unc.edu

Rights: Vicky Wells, 919-962-0369; vicky_wells@unc.edu

Contact Gina Mahalek for review copies/author interviews [919] 962-0581

Fax [919] 966-3829 | E-mail: Gina_Mahalek@unc.edu