and further along at every turn of the
dime. It's easy to pop in to check on
just a few of one's favorite snake
questions, and then one question just
leads to another.

As herpetologists, we make re-
search and education in snake in-
tegrative biology our business, but even
we were unaware of the facts at the
heart of many questions that are
answered by the authors. Snake body
size is thoroughly detailed in Appen-
dix 2, which is a superb resource.
Similarly, Appendix 4 provides ama-
ter and professional alike with a
wealth of detailed facts about snake
reproduction. The simple but impor-
tant issue of parity modality (i.e.,
egg-laying or live-bearing) is also
included in every example. And those
topics are explained in easy-to-un-
derstand language and are illustrated
with great supporting drawings and
photos.

We enjoyed many sections of the
narrative text. If only more people
were aware of facts that determine
just when and where snakes may
turn up—on your front door step,
for example—the phone bills at virtu-
ally every college and university
biology department in the United
States would be significantly less each
spring! We have lost count of the
number of questions, such as "Why
are these intimidating creatures sud-
ddenly at the doorstep or under the
house?" and "What can be done
about this 'serious' situation?" that
we have fielded from concerned citi-
zens and from our students. As the
deluge of questions begins, we inevi-
tably find ourselves launching into
our best possible "mini-herpetology
course." These little sessions almost
always turn our positively and call-
ers are pleased, which illustrates yet
another important, fundamental re-
ality about these marvelous reptiles:
People are fascinated by them.
Once you learn more about snakes,
it's hard to stop. Likewise with
this book.

We also enjoyed the sections ad-
dressing folklore, venin biology, and
anatomy and physiology. Indeed, we
found almost nothing in the book
that we disliked or with which we
strongly disagreed. The handful of
minor typos and oddities were trivial
and did not detract at all from the
quality inherent in this solid contri-
bution to general vertebrate biology,
herpetology, and human-snake an-
thropology. Our bet is that a wide
readership will enjoy and profit from
Snakes in Question. We certainly
did.

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CONSERVATION OF
TROPICAL BIODIVERSITY

Forest Patches in Tropical Land-
sapes. John Schelhas and Russell
Greenberg, eds. Island Press, Wash-
ington, DC, 1996. 426 pp. $30.00

In the 1970s and 1980s, the SLOSS
(single large or several small) debate
raged among conservationists. The
question was this: If a conservation
organization has the choice between
obtaining one large reserve or sev-
eral small reserves, which option
would better preserve biodiversity?
The question may have become aca-
demic. Although a few large, unbro-
ken areas of tropical forest remain,
such as that in western Amazonia,
natural forests in most of the tropics
have, for the most part, been re-
duced to patches surrounded by plan-
tations, cropland, or secondary for-
est that are relatively low in species
diversity. Given this reality, the ques-
tion for conservationists has now
become this: How do we best pre-
serve the remaining forest patches as
sanctuaries for biodiversity? Address-
ing this question is the objective of
this book.

In the introduction, the editors
lay out four challenges for conserva-
tionists: to learn more about which
species can survive and thrive in dif-
ferent types and arrangements of forest patches; to understand the
social and economic conditions that
support forest patch conservation
as well as how government policies
can promote or harm forest patches;
to develop management schemes that
improve the capacity of forest patches
to protect biodiversity and that si-
multaneously increase the value of
forest patches to local people; and,
most important, to apply this infor-
mation to develop programs and in-
stitutions that support and promote
forest patch conservation.

The book is divided into four parts.
Part I, "Changing Forests," deals with
the ecology of forest patches. For
example, studies from a variety of re-
ions show that forest fragmentation
usually results in loss of diversity and
in extinction. However, gallery (non-
flooded riverbank) forests, agroecosys-
tems, and managed forest patches
can be effective in helping to con-
serve biodiversity. In chapter 2, Car-
olina Murcia raises the important point
that the extinction of insect-pollinated
trees may not become evident for many
years because the mature trees will
survive for decades without reproduc-
ing. Most of the information presented
in part I is not new, but this section of
the book is an important first step in
theme development.

Part II, "Regional Landscapes," is
partly a continuation of part I. Chap-
ter 8, by Virgilio Viana and André
TabaZe, presents data showing that
forest fragments in the Atlantic For-
est of Brazil are not likely to be self-
sustainable, but in chapter 9, Carlos
Guinodn maintains that fragments
are critical for maintaining regional
biodiversity in Costa Rica. The chap-
ters on land use change in the Ama-
zon (chapter 10, by Richard Bier-
regard and Virginia Dale) and on
education for conservation in Belize
(chapter 11, by Jonathan Lyon and
Robert Horwich) touch on the ques-
tion of which social, economic, and
political conditions help or hinder
forest patch conservation.

Part III, "Human Dimensions,"
deals with the need to develop man-
agement schemes that would improve
the capacity of forest patches to pro-
tect biodiversity and, at the same
time, to increase their value to local
people. The chapters in this section
point out that land use patterns and
forest patches are a product of the
social, economic, cultural, and policy
context in which they occur. Ex-
amples are given from the Amazon,
October 1997

627

The specific goals of the editors are to explain how energy use has changed as society has evolved and to assess the ecological consequences of trends in energy supply and use. The editors define energy use in much broader terms than the conventional number of kilowatt hours used or the amount of wood, coal, or oil burned. Rather, they follow societal changes from early hunter-gatherers through modern industrial times, as well as speculative on future trends.

This book is a revision of an earlier (1979) edition. Besides updating the relevant scientific information, the editors have added text that clarifies the interdependencies among food, land, water, and energy—a welcome addition because these interdependencies make the study of energy use challenging from both the scientific and policy perspectives.

The editors are well qualified to produce a book about energy policy. In fact, they wrote most of the 21 chapters and were coauthors on the few that were written by others. Much of the material has been refined in earlier publications over the years, and these earlier publications are reflected by the high editorial quality of the book.

This book covers the evolution of human use of energy and agricultural crops; livestock production; fisheries and aquaculture; grain, fruit, and vegetable production; irrigation; biological diversity; food processing, packaging, and preparation; transportation; fuels; environmental effects of energy production; and public policy. The editors summarize a vast literature, but the book is relatively short, considering the range of material that it covers.

The main message of Food, Energy, and Society is the often counterintuitive complexity and interdependence among public policy, individual decisions, and energy use. The consequences of these interdependencies, especially on ecological resources, are rarely clear, the time lags are often long, and competing individual and societal values are not often easily reconciled. These interdependencies are important messages. For example, looking at current vegetable farming or fishing from an energy perspective, as the editors do, may well change the reader's

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ENERGY POLICY AND ECOLOGICAL SUSTAINABILITY


Two important but controversial public policy questions are: how to sustain ecological resources and what, if anything, to do about the number of humans inhabiting the planet. These policy questions are the focus of Food, Energy, and Society. Answering both questions involves complex science and a mix of clashing fundamental individual values and preferences.

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Costa Rica, Peru, Thailand, and several African countries.

Part IV, “Management,” provides examples of management techniques that are sustainable within limits, such as forest gardens in Peru and Indonesia, forest patches in Guatemala, and community forests in India. The final chapter, “Challenges in Promoting Patches in Rural Development Efforts” (chapter 19, by Larry Fisher and Roland Bunch), is the only chapter that attempts to address the challenge of developing programs and institutions that support and promote forest patch conservation. The authors suggest several programs, including agricultural intensification, reduction of migratory agriculture, agroforestry, use of forest products, and off-season labor. Program management strategies include developing farmer-centered programs, building non-governmental organizations (NGOs), and coordinating government agencies. Policy issues include land tenure, trade and marketing, infrastructure development, subsidies and credit, population problems, and community education.

This book reflects what many conservation ecologists have already realized: Each situation is unique in time and space, not only ecologically, but also culturally, economically, and politically. To effect conservation, scientists must deal with each of these problems “on the ground,” by working with local people at various levels to help redirect harmful political actions before they have a chance to damage forest reserves. Are scientists from developed countries in a position to devote the necessary time? Can scientists be effective if they visit their field site for a few months each year but then have to rush home to write papers and participate in academic activities?

The narrow academic focus of many scientists sometimes causes them to be counterproductive. In chapter 12, Janis Alcorn states (p. 253):

An Asian NGO leader once told me several years ago that the NGOs in his country were sorry to see international conservation experts coming into their country, because “they don’t understand the causes of deforestation, they don’t understand the dark side of the government, and as a consequence they fund things that actually undermine conservation.” International conservationists who fuss that local people cannot be trusted to conserve forests are not seeing the forest for the trees. They are failing to understand livelihoods and politics in the countries where tropical forests are found.

Forest Patches in Tropical Landscapes overemphasizes what conservation ecologists already know: the relationship between patch size and diversity. It acknowledges that there are social, political, and economic barriers to effecting conservation, but scientists already know that, too. What it touches on only briefly in the final chapter are political and economic issues, such as trade, marketing, subsidies, and credit. These problems are usually dealt with at the highest levels of government. It is at the level of national policy that there is the greatest opportunity to save tropical forests. Local people destroy forests not because they particularly want to, but because they are acting in their own rational self-interest, given the economic and political situation in which they find themselves. Only when the economic and political situations change can lasting conservation of tropical forests be achieved.

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