

So what is missing? Really, very little. I could not find a chapter on marine reserves, but there is a useful section on this in the Nature Reserves chapter. GMOs get relatively little coverage. It would have been nice to have a chapter on all those international ecological and conservation organizations that hide behind a web of abbreviations and yet engage in such valuable work. But such a chapter would make tough reading unless spiced with details about how these organizations should, could, or occasionally do, work together.

The only truly disconcerting thing about the *Encyclopedia* is the price: \$ouch! I'm told that a paperback version might eventually appear (hopefully this could also be made available in other languages). Similarly, a significant volume of material might appear on the web. So what to do? Well, it is Christmas, or Hanukah, or Quanza; so you could persuade Santa to be nice to you, or add one volume to each limb of your menorah. Failing that, petition your public library. It is essential that the general public (whoever we are) understands more about biodiversity, and wide access to this *Encyclopedia* could make a major difference. In particular, some organization should donate copies to *The Economist*, *The Washington Post*, and even *The Guardian*; they desperately need a more balanced understanding of ecology than they are getting from their latest contrarian rent-boy.

So petition your public library for the sake of all those essays that need to be written on biodiversity, and all those confused pensioners, economists and politicians who have been told that biodiversity creates economic constraints. Frustrated academics, who would write whole courses using this as a text, could also borrow volumes repeatedly from their university library, thus encouraging them to purchase more than one set. Eventually, if there is enough library demand, then a paperback edition will appear and the price will come down. You could even try for a review copy, but I am informed that they are in strictly limited supply!

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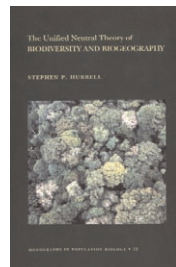
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Species diversity and relative abundance in metacommunities

The Unified Neutral Theory of Biodiversity and Biogeography

by S.P. Hubbell. Princeton University Press, 2001. £19.95 pbk (375 pages)
ISBN 0691021287



Community ecologists have long debated whether local or regional processes control the structure of natural systems. With arguments rooted in classic theoretical ecology, proponents of local control argue

that deterministic processes, such as competition and niche differentiation, limit species diversity and relative abundance in communities. By contrast, proponents of regional control argue that dispersal, migration and biogeographical processes constrain community structure. Although these differing perspectives have fuelled controversy over the past several decades, many ecologists seem to agree that the 'correct' explanations for species richness and relative abundance lie somewhere in between.

But not Stephen Hubbell. In his well-written Princeton Monograph, *The Unified Neutral Theory of Biodiversity and Biogeography*, Hubbell suggests a general theory of biodiversity that makes the boldest case yet for regional control over community structure. The theory is radical in that it explains the most essential patterns of community structure through 'ecological drift' rather than through interspecific differences in per capita birth, death, dispersal and competitive rates. In essence, this theory ignores what most ecologists spend their careers studying.

The book begins with excellent reviews of island biogeography theory and theories of relative abundance, and then describes the failure of the 'niche assembly paradigm' to explain these patterns. Although I found this paradigm somewhat outdated, the interweaving of old-school ecological patterns, such as rank abundance curves, with contemporary issues in community ecology is outstanding.

Over the next several chapters, Hubbell describes his neutral model, a more rigorous and comprehensive version of his now classic earlier work. The model assumes that local communities are saturated with individuals, and that these individuals belong to functionally identical species. Local communities are embedded into a larger metacommunity, which serves as a source of migrants. Species dynamics are a random walk with times to extinction so long that diversity at the metacommunity scale is generated by speciation. Ultimately, speciation and community size prove to be key determinants of species richness and relative abundance, as well as of macroevolutionary divergence patterns. The clear mathematical formulation of the model coupled with excellent verbal explanations makes this book manageable for graduate seminars.

A theory resting on the assumption that species are equivalent might not be taken so seriously were it not for the remarkable job that the theory does at predicting important features of rank abundance and species area curves. The question then becomes how do we relate this theory to what we already know about how ecological communities operate?

To this end, Hubbell describes how one tests his theory and attempts to reconcile his assumptions with more conventional niche-assembly ideas. This section might be the most difficult for more traditional community ecologists to accept. Hubbell argues that the equivalency assumption might be realistic because tradeoffs and recruitment limitation make species more equal than is commonly believed. However, whether these factors 'equalize' species seems more complicated than is presented. Incorporating these tradeoffs into the model and demonstrating that the results still hold would be more convincing. In addition, I had hoped Hubbell would be more explicit about defining the spatial scales of the local- and metacommunity. As is demonstrated by his response to previous challenges to

the model, unless the local and metacommunity are more carefully defined, disproving the ecological drift paradigm can be extremely difficult.

Rarely do we have the opportunity to hear an eminent ecologist's worldview. Even rarer are theories that attempt to explain so much in ecology with just a few basic assumptions. For these reasons, every ecologist will benefit from reading this book. Even for those sceptical of the theory, the process of tackling its shortcomings will hone their justification for how they approach ecology.

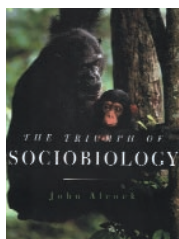
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Sociobiology alive and kicking

The Triumph of Sociobiology

by John Alcock. Oxford University Press,
2001. £16.95/US\$25.50 hbk (x + 257 pages)
ISBN 0 19 514383 3



With Ullica Segerstråle's *Defenders of the Truth* [1], we were given an excellent analysis of the sociobiology debate, at least from the American and British

research regimes. What readers of Segerstråle's book might miss, however, is a general overview of the scientific field of sociobiology – in short, what the status is of sociobiology today. *The Triumph of Sociobiology* is such a book (hereafter *Triumph*) and the author, John Alcock, is an experienced and well-respected animal behaviourist who is not ashamed of or hesitant towards calling himself a sociobiologist. Alcock's textbook *Animal Behavior: An Evolutionary Approach* [2], was released in 1975, the year when all hell broke loose when Edward O. Wilson dared to speculate about human behaviour in the last chapter of his otherwise monumental and excellent synthesis *Sociobiology* [3]. However, Alcock's book received less attention and sparked no controversy. *Animal Behavior*

has informed biologists about animal behaviour for decades, being one of the leading textbooks on the market (now in a sixth edition [4]). By keeping updated on the impressively broad field that his textbook covers, Alcock is in a unique position to evaluate evolutionary studies of animal behaviour, including human behaviour, and the criticisms that are raised.

In *Triumph*, in addition to presenting the scientific field, he discusses and debunks many myths and misunderstandings about sociobiology that have arisen since the sociobiology debate began. The misconceptions addressed include the incorrect propositions that:

- sociobiology is a novel and idiosyncratic theory of E.O. Wilson;
- sociobiology is primarily concerned with human behaviour;
- sociobiology deals with the evolution of traits that benefit the species;
- sociobiology is a reductionist discipline based on the proposition that some behavioural traits are genetically determined;
- sociobiology makes use of capricious and selective comparisons between human behaviour and that of other animals;
- sociobiology is a purely speculative endeavour, specializing in the production of untested, and untestable, just-so stories;
- sociobiology cannot account for learned behaviour or human cultural traditions, only rigid instincts; and
- sociobiology is a discipline that, by labelling certain actions 'natural' or 'evolved,' makes it possible to justify all manner of unpleasant human behaviour.

By dealing with key misunderstandings, Alcock hopes 'to demonstrate that the discipline employs a basic research approach that deserves our interest, respect, and even admiration as a potential source of improved understanding about ourselves and all other social species, from ants to antelopes'.

One name appears regularly throughout the book, that of Stephen Jay Gould – America's 'Nobel laureate' in evolutionary biology, whom Alcock considers to have caused major damage to the lay public's understanding of evolution in general and sociobiology in particular [5]. As a sociobiologist, Alcock argues that Wilson and his fellow researchers have

essentially won the debate with Gould and his academic allies.

The book is well written, entertaining, and hits its lay audience with interesting examples and thought-provoking discussion. It is ideal as background material for undergraduate students and seminars for graduate students. An important audience would be all those people who are involved in social sciences and humanistic disciplines – from undergraduates to professors. Misunderstandings flourish, but Alcock clears the road.

He goes head on, never afraid of discussing human behaviour in sociobiological perspective. Actually, a large part of the book is devoted to the species that sparked the sociobiology debate.

Let it be clear: this is a partisan book, but a highly needed one. Although the author is rhetoric at times, he is seldom uncritical or unnuanced. If the general arguments of *Triumph* could be taken as a point of departure and a minimum common ground, we would be spared all kinds of unnecessary controversies about misunderstandings or use of strawmen and instead be able to focus on the real disagreements and differences. Too much time and labour have been devoted to unnecessary discussions since 1975, and it is high time that we move towards the remaining problems concerning evolution and behaviour that are unsettled, interesting and challenging [6]. With *Defenders of the Truth* [1] and *Triumph* at hand, it will hopefully be possible for the lay public, students and academics in the social sciences and humanities to better understand what sociobiology is all about and the debates that it has raised.

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