

3) the animal should show signs of health improvement on consumption of the material (backed up, if possible, by some positive change in the quantifiable tests); and 4) the material should, on laboratory examination, show the presence of sufficient active ingredients to bring about possible changes in the animal's health. The author's emphasis on these guidelines indicates how critically she approaches the scattered published evidence on "the actions animals take to stay well" and especially on the possible action of self-medication.

In looking at the material presented to back up the claim that animals perform behaviours which guard or enhance their health status, one has to remember the golden rule of the careful scholar: "the plural of anecdote is not necessarily data". And, of course, negative findings are by their very nature in these cases not usually noticed and are, if noticed at all, very rarely documented!

There is much relevant evidence quoted in this book. Some is anecdotal, some even of traveller's tale status, but there are also a fair number of cases based on sound observation. There are also a few instances of self-medication which largely fulfil Michael Huffman's guidelines and there are a few laboratory-controlled behavioural experiments showing that animals will, at times, take in "needed" pharmacologically active compounds. My overall impression is that some (perhaps even much) of the material discussed in this publication is beginning to look like real data.

Cindy Engel is to be congratulated on producing a most interesting, wide ranging, well written, fully documented and clearly indexed volume. There are, as predicted in her Introduction, oversimplifications in particular specialist fields. These oversimplifications, however, seem to be few and of relatively minor importance.

This is a unique and important book. It is a must for the libraries of all biomedical, environmental, agricultural and veterinary colleges, universities and institutes. It will also, I suspect, be widely purchased in its paperback form by a whole range of scientific workers and field investigators and by general readers interested in the overall area of health ecology.

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The Trade in Wildlife: Regulation for Conservation

Edited by S Oldfield (2003). Published by Earthscan Publications Ltd, 120 Pentonville Road, London N1 9JN, UK. 255 pp. Hardback (ISBN 1 85383 959 0); Price £48.00. Paperback (ISBN 1 85383 954 X); Price £17.95.

There is increasing concern over conservation of habitats and species, yet the wildlife trade is often not seen as an important factor in the loss of biodiversity. The regulations covering the wildlife trade are even less well understood, although we need to be aware of what protection wildlife has. The book is based on a seminar on the subject held in 2001, and editor Sara Oldfield introduces the topics and how the issues are related in regulation, enforcement and disparities in implementation.

The background section explores the structure of wildlife trade and what regulation is meant to achieve. Broad *et al*, in their chapter, are concerned with cost and benefits, the relationship between biodiversity and sustainable development, and the important role of middlemen in the trade. Dickson argues that trade measures may not be the best way to achieve species conservation, but he does not explore areas that might be more effective. He notes that the goals of the Convention on International Trade in Endangered Species (CITES) differ between participants. For example, developed countries have an interest in ethics,

whereas developing countries' interests lie in sustainable use of wildlife. In contrast to Dickson, Moyle proposes that regulation could convert a conservation problem into a law-enforcement one. He concentrates on simple versus complex views, and on why simple views lead to problems. Moyle makes good use of examples to illustrate issues, with an interesting view on the ivory ban. The lack of references caused me, as a scientist, to be a little concerned as to how the conclusions were drawn. Sinclair-Brown gives an overview of the management of difficult issues, and of responsibility and decision-making. He separates regulatory design into allocation of authority and competencies and mechanisms of transmitting policies between international and local levels. He notes that the increasing number of international conventions could become a problem, although I understand that CITES working with the International Whaling Commission is an example of how such bodies can work together for common good. Murphree hopes for sustainable use through a balance of supply, demand and competition. He points out that in 'social history', regulation is seen as a set of positive and negative incentives, with scale on a local to international level becoming increasingly complicated and costly. His chapter is from a 1998 lecture, and I feel that it would have been enhanced by newer references.

Vasquez begins the section on systems of regulation and enforcement by explaining the need for a multifaceted approach to the relationship between them. He notes that social and economic incentives, rather than enforcement alone, are vital in order for regulation to function. Vasquez points out that most countries rely on their general wildlife, customs or foreign trade legislation to control CITES-listed species, and often these are not suited to this purpose. The background to European Community wildlife trade regulations is given by Morgan. He found that an assessment of the effectiveness of the measures did show some signs of altering international trade, but that it was difficult to separate cause and effect. Morgan notes that these regulations are stricter than CITES, as Misra found for the Indian domestic policy. Misra gives a history of the wildlife trade in India, noting the effect of porous borders, like the EC, and legislation. The weak level of enforcement in developed countries such as in the UK and Europe, in contrast to the USA, is of great concern and it would have been helpful to point this out, perhaps in comparison with Indian domestic policy.

The section on case studies illustrates successes and failures for particular species and situations. Leader-Williams describes a number of methods attempted for the rhinoceros in different countries, leading CITES to extend its mandate to new roles. It is difficult to tackle all issues in a short article, but habitat type and need, as well as differences in behaviour, must also play a part in the success of particular rhino species. Jachmann examines elephant poaching and suggests that resource allocation, in particular of manpower and budget, significantly affects the amount of poaching. He concludes that the killings are exclusive of external influence, including the ivory ban. Hutton and Webb suggest that legal trade could displace illegal trade, but they note that conditions for legal trade need to be well designed and managed for this to work in the case of crocodiles, alligators and caimans.

The main trade problem is in timber, and Oldfield reports that inadequate resources for enforcement, corruption and poverty drive this illegal trade. The scale and extent of illegal logging affects environmental, fiscal and basic governance. Importantly, the role of CITES is restricted in the timber trade, and timber appears to be treated differently between countries to other endangered species and their products. Oldfield suggests that other international means are required besides CITES.

The basis of the bushmeat problem, the area where I have been most recently involved, is outlined by Bowen-Jones. It lies in direct hunting, habitat destruction and fragmentation, all of which can lead to species extinction. Bowen-Jones notes that the major issues that need to

be addressed are land ownership, land use and protected areas. He argues that the only way forward is in allowing sustainable trade at all levels, excluding endangered species, while meeting ecological, social and economic criteria. Interestingly, he examines parallels in fisheries and the multiple measures needed to regulate trade, a good model to work with. Lombard and du Plessis describe how a plant used for medicinal purposes by indigent people has not had a good relationship with CITES, and Jepson explains how conservation politics can impede the work of science and local consensus in trying to uphold regulations for an Indonesian parrot.

Description of case studies of illegal trade in non-wildlife goods is a good exercise in demonstrating how useful methods can be derived from these studies. Lowe describes the narcotics trade and Brodie explains the trade in illicit antiques, noting the interesting distinction whereby illegal goods become legal through a portal country. Brack examines ozone-depleting substances, fisheries and timber, the last two items better served in the previous section. He notes that reducing supply and demand, and controlling illegal trade, are the main areas on which it is most profitable to concentrate. He quotes an estimate that 40% of timber is illegally felled in Indonesia, compared to Oldfield's quote of 70%, highlighting the difficulty of obtaining meaningful figures in the wildlife trade.

Cooney concludes by discussing three points. She suggests that the aim is to stop detrimental trade, not just to make it illegal, and she points out the attractiveness of regulation to authorities. She notes that a ban is set when there is a limited/finite source. Bans can reduce demand in some cases, but they are not always necessary. As with several of the authors, Cooney points out that regulations work when there are positive incentives for compliance, and that stakeholders need to be involved in decision-making steps. She suggests that there is a lack of awareness of CITES objectives, obligations and procedures, although she does not give any examples or references for her conclusion. It was a little confusing when she then stated that CITES has a high level of legitimacy and acceptance as a negotiating forum.

The book is very readable and provides an overview of the issues involved that is understandable, without resorting to long quotes of regulations and conventions. There are a few editorial issues that might have been addressed, but the main suggestion would be that a short explanation of the important players, such as the Convention on Biodiversity, multilateral environmental agreements, UN Environment Programme, as well as CITES, is needed in the Introduction or Background section to place them in context. The list of acronyms and abbreviations and the index do aid navigation of the terminology and text. The examples and case studies allow an appreciation of how complex the problems are and why quick fixes so desired by governments and people alike cannot work.

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Defending Animal Rights

T Regan (2001). University of Illinois Press, 1325 South Oak Street, Champaign, IL 61820, USA. 179 pp. Hardback (ISBN 0 252 02611 X). Price \$24.95.

Tom Regan has already earned himself a reputation as one of the key philosophers within the field of animal ethics. In *The Case for Animal Rights* (University of California Press, 1983), he presents an alternative view to the utilitarianism of Peter Singer and others. Like most utilitarians he argues that we have extensive duties to non-human animals, duties in which we are failing given the conditions in which animals are currently kept and used in modern, intensive animal production and animal-based research. However, the way in which he