

this is 'widely flouted' due to the huge numbers of birds managed by each worker. The authors are also disparaging about some promotional habits used by the poultry industry such as invention of the term 'livability' (which avoids any need to mention 'mortality'), the inaccuracy of figures for livability, and welfare 'dilemmas' such as food restriction and eye abnormalities created entirely by the industry's emphasis on production.

The final part of the book, 'Practice', initially describes the different sectors that make up the structure of the poultry industry. This chapter will be particularly useful for readers familiar with the production stage of, for example, the laying hen's life cycle but who have less idea about how these hens are bred, reared or slaughtered and the extra welfare issues that can arise during these stages. The next chapter discusses the various production systems for poultry meat and eggs, and helpfully explains confusing terms such as 'aviary', 'perchery', 'barn' and 'deep-litter' within a regulatory context. To complete the picture, the last two chapters explore the political (including legislative) and economic factors influencing poultry husbandry and welfare, mainly comparing attitudes in the USA and Europe. I thought these chapters provided a wealth of useful information, although I was slightly disappointed to find UFAW's full title incorrectly reported in a section on Animal Protection Societies.

Overall, the book's easy-to-follow structure, simple layout and well-written text make this an accessible and highly useful book for anyone with an interest in the production, behaviour or welfare of poultry. I suspect the imbalance in species-specific information could be, at times, frustrating for non-chicken enthusiasts. However, the book is not solely about providing bird-related facts. It also highlights how the interaction of so many variables — the bird's biology, the physical and social environment, economic and commercial considerations, our concepts of animal welfare, our attitudes and ethical stance, and politics — influence how we keep and treat poultry, and ultimately influence the birds' welfare. Current practice in all the major poultry production systems has yet to achieve an acceptable compromise between the quality of life experienced by poultry and the priorities of the other stakeholders. This book makes a valuable contribution towards our understanding of the challenges ahead, and for this reason I thoroughly recommend it to all who have a commercial interest in poultry as well as legislators, animal science students, veterinary surgeons and animal scientists.

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Wildlife Tourism: Impacts, Management and Planning

Edited by K Higginbottom (2004). Published by Common Ground Publishing Party Ltd, PO Box 463, Altona Vic 3018, Australia, ABN 66 074 822 629, in association with the Cooperative Research Centre for Sustainable Tourism, <http://www.crctourism.com.au>. 294 pp Paperback (ISBN 1 86335 545 60 [print] and 1-86335-548-0 [pdf]). Price AUD\$89.95.

This is a collection of thirteen chapters written by Australian academics focusing on themes relating to the increasingly important and growing phenomenon of wildlife tourism. Wildlife tourism is defined as "tourism based on encounters with non-domesticated (non-human) animals" (p 2). The term 'non-domesticated' is preferred to 'wild' because it is unclear whether the latter term relates to the species or to its setting (for example a tiger in a zoo represents a non-domesticated species but it can be argued that the individual animal is no longer wild). This gives an important clue to the scope of this book, which may surprise many readers. Indeed, four classifications of wildlife tourism are identified in the first chapter of the book for further study: 'Wildlife-Watching Tourism' (viewing free-ranging animals); 'Captive Wildlife Tourism' (viewing animals in confinement, such as in zoos, wildlife parks and aquaria); 'Hunting Tourism'; and 'Fishing Tourism'. The justification for adopting this broad focus is that distinctions between all four categories have become increasingly blurred in recent times. A large, fenced nature reserve, for example, might vary little in practice from an open-range zoo, which may be specifically designed to resemble the animals' natural habitat and be almost as large in size. In both cases the enclosed animals are effectively captive and similar tourism experiences may be offered in both contexts. The decision to include hunting and fishing tourism, meanwhile, rests on the view that distinctions between 'consumptive' and 'non-consumptive' tourism activities are largely illusory. Indeed, it is argued that "poorly managed wildlife watching can cause serious negative impacts on wildlife, while well-managed hunting or fishing can be ecologically sustainable" (p 4). Not all readers will be comfortable with these arguments, particularly from an animal welfare perspective. On the other hand, the decision to include zoo, hunting, and fishing tourism does serve to bring to the fore a number of animal welfare considerations that might otherwise have not been included in the book.

Another important consideration in terms of the animal welfare implications of this book is the adoption of the concept of 'Triple Bottom Line' sustainability as a theoretical construct to link the practice of wildlife tourism with its impacts, management and planning. This view of sustainability places equal focus on economic prosperity, environmental quality and social justice, and therefore requires the impacts on the host community, the natural environment, the tourism industry and tourists all to be

considered simultaneously in the planning and management of wildlife tourism. Such planning and management activities should also be integrated into national, regional and local strategic planning frameworks. These are wise words indeed but the difficulty comes when these are translated into practice. Inevitably in any such process of translation, some interests rise to the surface while others become buried. In the case of this book it is clear that what emerges is an essentially tourism-centric approach to planning and managing wildlife tourism. Thus, for example, the editor argues in the introductory chapter that “wildlife tourism should be planned and managed to maximise net benefits to society or stakeholders” (p 5). This serves to downplay the animal welfare considerations, which enter into the equation only in so far as they might be reflected in the aspirations of other (ie human) stakeholders, such as environmental managers and the staff of non-governmental organisations.

The book is organised into three parts. Part 1, entitled ‘The Wildlife Tourism Industry’, opens with an introductory chapter by the editor. This establishes the focus of the book, develops definitions of the key terms, and sets out a simple framework for the planning and management of wildlife tourism that forms the basis for much of what is to follow. There then follows a chapter by Peter Valentine and Alastair Birtles on wildlife watching. This chapter tends to focus mainly on bird watching and marine tourism, which is greatly to its detriment.

It is the following three chapters that are perhaps going to be of greatest interest to readers of this journal. The first, by Andrew Tribe, examines zoo tourism, charting the historical development of the zoo from menagerie to, increasingly, a centre for conservation, education and recreation. Indeed, it is this essential dilemma that Tribe principally focuses on, ie how best to balance the needs of the visitor with the wider purposes of zoos. Animal welfare issues are briefly mentioned in this context. Indeed, Tribe recognises that the welfare of zoo animals is still a highly controversial issue. However, in the final analysis the reader might be excused for thinking that the chapter tends to treat the issue of animal welfare more as an impediment to the financial performance of zoos than as an issue of importance in its own right.

The last chapter in Part 1, by Johannes Bauer and Alexander Herr, is potentially the most controversial in terms of its inclusion in the book. The content does not, however, live up to such expectations. It is true that the authors do start by stating the highly contentious view that hunting and fishing tourism are perfectly compatible with the notion of ‘Triple Bottom Line’ sustainability: “by ... being socially, economically and environmentally accountable ... hunting/fishing can contribute to a holistic and sustainable conservation approach” (p 59). Perhaps inevitably, the CAMPFIRE programme (a community-based safari hunting scheme that has been running for some time in Zimbabwe) is held up as an example of how this vision of sustainability can be achieved. However, disappointingly this proposition is not further developed in the chapter, the veracity of the statement presumably being taken to be self evident.

Moreover, the animal welfare dimension is largely ignored in the remainder of the chapter, apart from a brief acknowledgement that hunting and fishing are conceptually no different to one another in terms of their animal welfare implications, both involving “taking the lives of animals ... for what many people would term trivial entertainment and sport” (p 73). Thereafter, the issue of animal welfare is dismissed as being “outside of the scientific wildlife management debate” (p 73).

Part 2 opens with a chapter by Ronda Green and Melissa Giese on the negative impacts of wildlife tourism on wildlife. Although this is a relatively short chapter, almost all of it is highly relevant to the subject of animal welfare. Following a brief description of the kinds of stimuli that can affect wildlife, the chapter launches into detailed consideration firstly of the short-term impacts of wildlife tourism on the physiology and behaviour of individual animals and secondly of various impacts on key behaviours, including interference with feeding and breeding, the supplementary feeding of wildlife, and habitat modification. Finally, impacts involving the direct killing or injury of animals are considered. Included here are discussions of the effects of hunting and fishing on communities and populations (although the more obvious impact on individual animals is downplayed), specimen collection, collision with vehicles, and the introduction of disease. Also included is a very brief mention of the killing of animals for the safety or comfort of tourists. This can include, for example, the removal of even harmless species of spiders and snakes in order to avoid incidents with tourists. Evidence is even presented to suggest that the deliberate killing of snakes is one of the two main impacts of tourism on these animals (the other being accidental roadkill). Another incidence of the killing of animals simply for the perceived safety or comfort of tourists that is noted is the heavy use of insecticide in certain areas in order to reduce populations of mosquitoes and other ‘nuisance’ insects. This perhaps represents the most blatant abuse of animals for the benefit of tourists and the tourism industry. A major weakness of this chapter, nevertheless, is that it too often resorts to relativistic arguments when considering the animal welfare implications of wildlife tourism. For example it is argued that wildlife tourism is often “far more conducive to wildlife conservation than most alternative uses of the same land” (p 81). Such arguments tend to ignore the sometimes absolute nature of moral arguments pertaining to the impacts of wildlife tourism.

The remainder of the book touches occasionally on animal welfare considerations. Chapter 6, by Karen Higginbottom and Andrew Tribe, considers the contributions of wildlife tourism (both wildlife watching and zoo tourism) to nature conservation. However, the chapter is strangely reticent in identifying any contribution to be made by hunting and fishing tourism in this respect. Meanwhile Chapter 7, by Georgette Leah Burns, looks at the host community and wildlife tourism. Chapter 8, by Clem Tisdell and Clevo Wilson, presents a somewhat predictable discussion of the economics of wildlife tourism, majoring on the determination

of its economic values and the use of economic-incentive based approaches to regulating wildlife tourism activities.

Part 3, meanwhile, focuses on planning and managing wildlife tourism. Four chapters are included. Chapter 9, by Gianna Moscardo and Rebecca Saltzer, examines the markets for wildlife tourism while Chapter 10, by Sue Beeton, considers business issues. However, ethical considerations are not considered in this chapter, presumably because they are considered elsewhere in the book. Chapter 11, by the editor, develops the management framework for wildlife tourism first presented in Chapter 1 while in Chapter 12 Gianna Moscardo, Barbara Woods and Rebecca Saltzer discuss the fundamental role of interpretation in wildlife tourism. The final chapter, by Karen Higginbottom and Noel Scott, then rounds off proceedings by attempting to synthesise the lessons developed previously in the book, using the destination-based strategic planning process as an organising framework. While these chapters will be of considerable interest to tourism and wildlife management specialists, their relevance to animal welfare is relatively limited.

This book comes as a very welcome addition to the hitherto rather sparse literature on wildlife tourism. Indeed, almost a decade has elapsed since the last major work in this area (Shackley 1996), and the literature base has been in severe need of being updated for some time. I will certainly be using this book in my own teaching. However, my major disappointment with this book is the absence of any form of index — this might have been useful. Indeed, some would argue that the inclusion of a decent index should be seen as a basic courtesy to readers.

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The Laboratory Mouse

Edited by H Hedrich and G Bullock (2004). Published by Elsevier Academic Press, UK. Available in Europe, Middle East and Africa from Elsevier, Customer Services Department, Linacre House, Jordan Hill, Oxford OX2 8DP, UK, and in the USA and Canada from Elsevier, Customer Service Department, 11830 Westline Industrial Drive, St Louis, MO 63146, USA. 656 pp Hardback (ISBN 0 12 336425 6). Price £134.95.

The aim of this book is to provide a concise handbook where new and/or established researchers can easily track down the most up-to-date information on the laboratory mouse. Much emphasis is put on mouse genomics, the generation of mouse mutants and on the genetic map of the mouse, providing useful information on a topic that has become an important issue in the biological sciences, but which may be a bit over-represented (110 pages). Other aspects, in particular the 3Rs, are less-represented. Only a

minor part is spent on methodology, alleviation of pain, behaviour and housing.

The book is divided into six parts:

1. *History, development and genetics of the mouse as a laboratory model.*

Besides the chapters in the above-mentioned section, a small part deals with the mouse as a model for human diseases, focussing on transgenic mice and the role of mice in pre-clinical safety studies.

2. *Anatomy and developmental biology.*

The anatomy part consists of a series of drawings, followed by useful short descriptions of the histology of organs, focussing on features characteristic to the mouse in general. This chapter also includes early mouse development and a nicely illustrated part on imaging techniques.

3. *Pathophysiology and non-infectious diseases.*

This part provides a wealth of information on, for example, the cardiovascular system, the respiratory system, the skin, the gastro-intestinal tract, models for auto-immune diseases, haematology and spontaneous neoplasms in inbred strains. The small chapter on the social behaviour of mice, which is the only part on 'normal' behaviour in the book, is a bit disappointing especially as the references are rather outdated — the majority older than 1996.

4. *Infectious agents and diseases.*

This part specifically deals with viral infections, as the editors state that these are the most frequent infections in genetically modified mice, and pose the greatest risk to mouse facilities. This has resulted in a comprehensive chapter on murine viruses including clinical symptoms, infection routes and diagnostics.

5. *Husbandry and production.*

Although attention is paid to special housing conditions such as Individually Ventilated Cages and Isolators, important topics, such as environmental enrichment, are limited to just a few lines under 'Refinement' and focus mainly on the unwanted increase in variation in experimental results, ignoring the type of enrichment used by the cited authors. Even the provision of nesting material is advocated only for pregnant females.

Gnotobiology, breeding techniques and cryopreservation are also discussed in this chapter. However, it is rather surprising that for vasectomy in male mice "shaving of the ventral abdomen is not considered absolutely necessary", injection anaesthesia seems to be preferred to inhalation anaesthesia and the need for post-operative pain relief is not discussed. The references in this chapter also seem to be a bit outdated.

In the clearly written health monitoring section, the Federation of European Laboratory Animal Science Associations (FELASA) recommendations for health monitoring are followed. The informative part on nutrition pays attention not only to nutritional requirements, types of diet and *ad libitum* feeding versus food restriction but also to individual versus group housing and possibilities for enrichment.