

Practice for the Care and Use of Animals for Scientific Purposes, and that it is legally binding in most of the states of Australia.

Section 4 comprises four papers on the replacement of live animals for student teaching purposes and it was concluded that although animals were not essential where the purpose of the teaching is to convey facts, they were essential in medicine and veterinary science, where training rather than simply facts were involved. Computer-based teaching minimizes animal usage and in some situations would replace animal experiments entirely. Another paper emphasized the importance of animal care, while the fourth paper explored the delicate balance between the educational value of animal usage and animal welfare.

The next section consisted of a single paper by the recipient of the ANZCCART Student Award and concerned the use of animals in psychology, with reference to the importance of good design in reducing stress, reducing the number of animals used, and increasing the validity of results.

The final section (6) looked to the future; the first paper emphasized the importance of really considering the ethics of animal usage. This was followed by a paper about sentience and thinking in animals; the final paper was a very thought-provoking one on the relationship between animals and man.

Altogether, then, a fascinating and thought-provoking book from both the purely scientific angle and from the angle of ethical and moral dilemmas; don't miss it!

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#### ***Managing Vertebrate Pests: Foxes***

Glen Saunders, Brian Coman, Jack Kinnear and Mike Braysher (1995). Australian Government Publishing Service: Canberra. 141pp. Paperback. Obtainable from the publishers, GPO Box 84, Canberra, ACT 2601, Australia (ISBN 0 644 43157 1). Price AUS\$24.95.

Generally, there is no conflict of interests between the welfare and conservation of wildlife. In Australia, however, the conservation of native fauna and the widespread reduction of fox numbers by humane techniques, appear at first sight to be incompatible goals, and that one will have to be sacrificed for the benefit of the other. Yet despite these apparent difficulties, this book aims to provide a framework to achieve both objectives.

Foxes were first introduced to Australia in the 1860s and 1870s so that they could be hunted with horses and hounds. Their spread was rapid, and within 30 years of the initial release in southern Victoria, foxes were declared a pest in the northern part of the state. Whilst still relatively little is known about the ecology of foxes in Australia, their impact on the native fauna is becoming increasingly apparent, largely due to studies undertaken in Western Australia.

Compared to the other continents, the damage to Australian wildlife since European settlement has been catastrophic and largely unparalleled. In the last 200 years at least 20 species of Australian mammal are known to have become extinct; these are about half the known mammal extinctions worldwide during that period. A further 43 are endangered or vulnerable. Foxes, assisted by habitat changes that make some species more vulnerable to

predation, have played a major role in these losses. This book lists a further 19 marsupials, 4 rodents and 7 birds that are known to be at risk from fox predation, although the authors add that this list is far from comprehensive. Foxes are also thwarting attempts to reintroduce native wildlife: of 45 Parma wallabies (*Macropus parma*) released in eastern New South Wales, for instance, all were taken by foxes within three months.

When faced by such a serious problem, it would not have been too surprising if any and all available techniques were used to try to reduce fox numbers in Australia, irrespective of any welfare considerations. However, whilst the Australian and New Zealand Federation of Animal Societies accepts the need for fox control, it argues that this should only be undertaken using humane methods, conducted under the supervision of the relevant government authorities, and within sound long-term population reduction programmes. The authors of this book have laid out the national guidelines that are needed to fulfil such a common-sense approach.

To help understand the difficulties associated with trying to control fox numbers, Saunders and his colleagues first review the published information on fox biology from around the world, and discuss the factors that could complicate fox control programmes. One of these is the role of foxes in limiting rabbit population growth, and whether the benefits of rabbit control outweigh the damage to native wildlife. Another is that feral cats are also a major predator of native wildlife, and cat numbers increased four-fold in one area following fox control. Clearly, for a properly managed and effective fox control programme, more information is needed on the impact of foxes on the numbers of both rabbits and feral cats.

The relative merits of different methods of fox control are then discussed and rationally evaluated. Recreational hunting is considered to have minimal effect on fox numbers and to do little to reduce the impact of fox predation on native wildlife or young lambs. The use of terriers to flush or dig foxes out of their dens is rejected as being of little practical use and unacceptable on animal welfare grounds, as are leg-hold traps. Neck-hold snares are not used in Australia; leg-hold snares are considered to be more humane and acceptable in certain situations eg in urban areas, but only if they are checked every 4–8 hours to minimize animal suffering. Neither of the fumigants available for gassing dens is acceptable on welfare grounds. So for widespread fox control, poison baits are recommended, with 1080 (sodium mono-fluoroacetate) as the preferred toxicant. Foxes are highly susceptible to this poison; death results from progressive depression of the central nervous system. The amount of suffering by foxes poisoned by 1080 is uncertain but appears to be within acceptable limits. In some circumstances cyanide may be preferable, but 1080 has the advantages of being relatively target-specific, degrading rapidly in the environment, and having no significant long-term accumulation in body tissues.

The other option, which is intuitively attractive from a welfare perspective, is fertility control; this is currently the subject of a large-scale research programme in Australia. However, even if this proves to be successful, delivering fertility control drugs to wild foxes is likely to be expensive and may be less effective than poisons for population control. In the meantime, therefore, conventional fox control strategies still need to be developed and employed, and even if fertility control techniques can be implemented in the future, conventional control will continue to be used in parallel. Thus fertility control is unlikely to be the panacea hoped for by many welfare organizations.

Having decided upon the most acceptable means of fox control, the authors then stress the need for the strategic management of fox control programmes at both the local and regional level; random fox control is pointless. There are four parts to strategic management: defining the problem; developing a management plan; implementing the plan; and monitoring progress. All four are essential for effective fox control, and the book provides clear guidelines on how they should be achieved.

Overall, the whole approach of the book, from both a welfare and a practical perspective, is refreshing, and there are many lessons to be learnt by other countries, not least Britain. Unlike in Australia, foxes are native rather than introduced, and the problems they cause in Britain are more localized and much easier to manage. Yet in Britain fox 'control' is random and widespread, using techniques rejected by Saunders and his colleagues as both ineffective and unacceptable on welfare grounds. Furthermore, attempts at the strategic management of foxes, such as defining the extent of a particular problem, and monitoring the progress of a fox culling programme in terms of measurable benefits, are virtually unknown in Britain. Whilst it is to be hoped that this book provides the stimulus for a major improvement in the standards of fox management and welfare in Britain, experience to date suggests that unfortunately this is likely to be a forlorn hope, and that we will continue to lag a long way behind the welfare standards set in Australia.

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***The Horse Shoeing Book: A Pictorial Guide for Horse Owners and Students***

Martin Humphreys (1995). J A Allen: London. 113pp. Hardback. Obtainable from the publishers, 1 Lower Grosvenor Place, Buckingham Palace Road, London SW1W 0EL, UK (ISBN 0 85131 617 4). Price £14.95.

This slim volume of some 100 odd pages is aimed at the non-specialist horse-owner, and by means of text, photographs and diagrams, attempts to explain the basics of horse shoeing.

I think the difficulty for this type of book is the uncertainty as to the level it should be pitched. I tried it out on one of my teenage horse people, and got what used to be known as an 'old-fashioned look'. I suppose she felt that she does not need platitudinous remarks such as 'all horses have the same number of bones, muscles and other biomechanical [?] parts . . .' (page 16). On the other hand, if it is aimed at the less sophisticated end of the market, some of the ideas are too complex. If you have little knowledge of horses it is difficult to see what would be made of the seated-out shoe on page 23. Without a good bit of thought, it might be difficult to understand the concave shoe, too.

The chapter on taking off a shoe is good – if you are inclined to learn this type of skill from a book – and putting it back on is also useful, although the majority of people could have gleaned most of this from watching a farrier in action.

Chapter 5 on surgical shoeing shows the difficulty of demonstrating lameness by means of drawings. Nowadays, one good video could sort this out quickly, but I am not sure that the diagnosis of lameness is of much real interest to most farriers, nevermind the average horse owner. However, I did find the idea of having a diagram parallel to and explaining the photograph very useful, and this technique should be explored more fully in a later edition.