Contentious issues in human-wildlife encounters: seeking solutions in a changing social context

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ABSTRACT

Wildlife management is, in our view, as much about education, and managing people's attitudes, as it is about the science of populations of animals. The successful koala management program for Victoria, outlined by Peter Menkhorst, has only been possible because of his firm grasp, and that of his colleagues, of the divergent attitudes towards koalas. Among the many benefits provided to humans by the wildlife resource, we have tackled just one value in this book - recreational. Wildlife can also cause problems for people. Among the negative values of wildlife, we selected but one topic, namely roadkill. The plenary sessions to this forum were filled with interesting details and some provocative challenges, such as that by Des Cooper, "…this discussion is really being conducted with a particular set of assumptions, which are assumptions made by rich, well-to-do people who live in cities…" We need much more of such cut-and-thrust to avoid the narrow viewpoint that is possible from the comfort of mid-city life. On the other hand, do we really think that those in immediate contact with a wildlife problem are always the best informed to manage our wildlife? Arthur White delicately touched a subject that shows just how fast matters are changing. He entitled his paper, "Can I touch that frog?" He asked, "With limited exposure to the natural world will future generations still be prepared to defend global ecosystems?" From the gentle approach of whale-watching and the attention to seals and dolphins, and the careful research that underpinned all the recommendations, to the as yet nearly-impenetrable problem of roadkill, the issue that is central is that of communication. We are not isolated in Australia from world problems, but the converse also applies – our solutions and our communication endeavours can make an international contribution. Harry Recher posed the question in his foreword: "How do you make people care and therefore willing to share with others, and other species?" The authors in this book have made a positive contribution to seeking answers to that question.

Key words: wildlife management; wildlife tourism; roadkill; communication; education; research; media; koala; frogs; whales; dolphins; cats; possums.

"I think most people are ignorant of the wildlife they share their lives with" (Recher 2008)

Harry Recher was a member of the audience when this forum was held on 26th October 2006. As an ecologist, teacher and environmental critic, he listened intently, formed strong opinions and has shared those views in his provocative foreword to this book. Consider his reflective statement: "Not only has our society lost touch with nature, but fear and awe have replaced familiarity and understanding. Emotion has replaced knowledge and reason." Where, you might ask, do we go from here?

Recher had another idea for a forum at the conclusion to his most challenging foreword: "… people and their desires are more important than wild animals and their needs. This is the contentious issue in the encounters of wild animals and people. How do you make people care and therefore willing to share with others, and other species? It would make a good, but very contentious forum." We agree. If we had covered all the dimensions to the debate, the book would be far larger, more diverse and more argumentative. It may not, however, have met Recher's criteria for his proposed forum. There is, in our view, some ground to cover as a precursor because seeing how to resolve our relationship to wildlife, let alone being willing to do so, needs further exploration as to what the issues are, where the blind spots are, and how research might be conducted on this theme. This forum was intended to help fill that gap. We confined ourselves to three conspicuous issues: wildlife management, roadkill and wildlife tourism. The rich contributions on this range of topics have been rewarding indeed. We can see many next steps, but our immediate task was to interpret the current state of play, with all its limitations, as well as its promises.

Harry Recher was disappointed with the limited perspective of the current range of topics, animals and attitudes. He opened his piece with the following opinion: "I am constantly intrigued by the attitudes of people to wild animals. Partly this comes about because I think most people are ignorant of the wildlife they share their lives with and see or hear only the most conspicuous animals, mostly large, noisy birds, about which they may have strong feelings, but cannot name. This level of ignorance is not restricted to the common citizen, but is rife among those of us who profess concern for wildlife, as well as those who devote their lives to the study, management and conservation of native fauna." "The attitudes I refer to are well reflected by the subjects of the papers presented at this Forum of the Royal Zoological Society of NSW: Koalas, possums, kangaroos, bandicoots, flying

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foxes, dolphins, sea lions, whales, eagles, magpies, dingoes, cats, roadkills, tourism, and zoos, all with a strong urban emphasis. Even the roadkill issue was all about vertebrates, mostly mammals, as is almost all wildlife tourism, including zoos, aquariums and marine wildlife parks."

So, what did we have in mind as organisers and editors of this forum and this book? Three items stand out. Wildlife management is, in our view, as much about education, and managing people's attitudes, as it is about the science of populations of animals. What is needed is a range of attitudes canvassed and discussed by wildlife professionals from a range of backgrounds. Michael Conover (2002), in his comprehensive and thoughtful book, entitled "Resolving human-wildlife conflicts. The science of wildlife damage management", noted that organising a book on the resolution of human-wildlife conflicts can take many directions. He chose the path of fundamental concepts and principles. What illuminates his concepts are the examples, although we are happy to see koalas, possums, magpies and sea lions replace coyotes, bison, beaver and elk.

We elected to cover the wildlife management ground from the perspective of the people who have been managing or researching the issues. Our aim was to make the matter very much Australian. Koalas did receive a double dose, both heavy with the difficulties of managing public perceptions. The successful program outlined by Peter Menkhorst has only been possible because of his firm grasp, and that of his colleagues, of the divergent attitudes towards koalas. Sarah Wilks took this matter one step further, and only explored attitudes. By selecting the management dilemma on Kangaroo Island, she was able to find deep contrasts and divisions in our attitudes to dealing politically with the matter, especially as the politics overtook the recommendations of a representative committee to drastically reduce the island's koala population. Here indeed is a clash – animal icon versus the science of managing numbers. Wilks and her co-authors have also tackled attitudes to urban populations of the brushtail possum. They saw a link between people's underlying values and their attitude and behaviour towards brushtail possums, and drew the conclusion that if change is to be effected then education also needs to target underlying values towards animals and the environment, rather than just filling fact voids. Now that is a challenge indeed, and it does reflect Recher's insights from a lifetime of going beyond facts to tackle attitudes. His foreword is a neat example.

Recher is right; emotion has replaced knowledge and reason. The question then is how to go forward. Our answer here is to present case studies that highlight where the clashes lie. Then we can contemplate a forum that delves into Recher's aspiration of making people care and therefore be willing to share with others, and other species. Recher identifies with Arthur White's problem of "may I touch that frog", and in doing so he has unerringly recognised a good teacher in Arthur White.

Robert Johnson has spent his working life as a veterinarian with a passion for wildlife, and a penchant for reptiles. He presents in his paper the all-too-infrequent crossover between vets and zoologists. He has strong views, which are most welcome in a subject where weak views mean inaction, and he has taken a stand against wildlife as pets. This matter is proving to be a dividing line, and yet it is rife with inconsistency and the values of the subject have not yet been well-enough explored to dismiss it in an age where ignorance is the greatest enemy of wildlife conservation. The veterinarians' views are vital here, but we do need more people speaking and writing on this subject where the wildlife regulations have remained locked in place for decades. It may be that Recher's outlook will be the one that will prevail, namely, "For me, every day is a close encounter with native animals, whether it is the bats I watch emerge each evening or the magpie carolling at my kitchen door for a handout[1], wild animals are always close." It is the one where the most valuable contacts are made, but it does take skill and training to have such a perceptive approach. Here, Darryl Jones is also most entertaining in the summary of his masterful appreciation of magpies. One does realise that magpies are clever and engaging animals, except for the occasional horror of a peck from an aggressive individual.

Maggie Lilith and Mike Calver have produced the only entry that deals with an introduced species, the domestic cat. Yet much of the subject of wildlife management is concerned with dealing with pest species, especially the invaders. Here, with the cat, we are trying to manage an introduced predator as a pet, yet stop it from being a marauder of the local native fauna. Michael Archer (Archer 2002, and Archer and Beale 2004) would far prefer that one was managing a quoll under such circumstances, and it would be amusing to see a quoll bib. However, the argument would run that the local wildlife could cope better, and the benefits of quoll conservation need to be added to the equation, whereas cats are not at risk of extinction. Rather, they are a threatening process.

The grey kangaroo *Macropus giganteus* that lives in the forests of eastern Australia is not only roadkill, it presents a challenge in people management, and management of a population at a location. Guy Ballard, on the one hand, and Danielle Inwood, Helen Catanchin and Graeme Coulson on the other, have tackled the management of the grey kangaroo from two different perspectives, the former as a researcher interested in perceptions and their management, the second team as keen observers of grey kangaroos. It is fascinating to see the convergence of their conclusions, and it does highlight the value of different approaches to a problem.

Conover (2002) lists seven benefits or positive values provided to humans by the wildlife resource: physical utility; monetary; recreational; scientific; ecological; existence, and historical values. From that list, we have tackled just one value in this book - recreational. Wildlife

[1] "Yep. That is what they do! They sing for their supper; sometime all 3 together. That alone keeps us ready with handouts. To get a song like that for a handful of cat food is bargain enough." Harry Recher had added this comment when he was critically reading this chapter. It is does enrich the personal dimension of his observation in the foreword, so we have added it here.

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can also cause many problems for people, Conover pointed out, and these negative values include loss of agricultural productivity, destruction of property, and human injuries or fatalities caused by wildlife-related diseases or wildlife-automobile collisions. We selected but one topic from this vexatious list, namely roadkill, a word that is now comfortably lodged in the Macquarie Dictionary. We hasten to point out that previous forums of the Royal Zoological Society of NSW have tackled some of these trying topics, including flying-foxes, dingoes, kangaroos, pest species, and invertebrates, which have their share of species that conjure up negative values. Thus, in one sense, in this book we have spanned the subject of wildlife management, with Australian case studies from practitioners, then one from the list of positive values, and one from the list of negative values. There is ample scope for many more forums on this theme, yet we have gone headlong into dealing with the central tenet of Recher's concern by endeavouring to replace fear and awe with familiarity and understanding derived from research, reflection and a willingness to communicate.

Another feature of this collection of papers, that will not necessarily be apparent to many readers, is the novelty of the subjects. This forum could not have been conceived 38 years ago when the first wave of environmental concern swept across the world and took Australia with it. In the 1970s, both the states and the Commonwealth set up departments of the environment and enacted new laws to curb the newly-recognised scale of environmental destruction. Wildlife was, in part, protected, and some species were managed, but the scope of the subject has vastly increased in the six decades since WWII, and increasingly so since 1970. One could mount a case that the rate of progress has eased in the last decade, in that there are no major initiatives to conserve wildlife that were not well underway by the mid-1990s. One could also make a case that the concern has eased, tragically, because of the overwhelming concern for an even bigger environmental issue, the impact of climate change. The immense scale of that problem seems to be overshadowing local efforts to manage wildlife, tackle roadkill or put enough effort into researching and managing ecotourism. That effort will need to include a willingness to deal with the public and therefore the media, as Lunney and Moon pointed out in their chapter. The science of the numbers is just not enough.

Among the most rewarding features of the contributions to this forum and the book was the range of backgrounds from which the contributions were drawn. The considerable effort that has gone into researching and managing marine mammals is characterised by many new researchers. Michelle Blewitt (nee Lemon), Kasey Stamation, Terijo Lovasza, and the two papers by Alex Burleigh, are all from new graduates and post-graduates, in some cases ably helped by more experienced players as co-authors, namely David Croft, Peter Banks, Tracey Rogers and Tim Lynch. They were able to draw on some first rate Australian and overseas research on their subject animals, but the point of their studies was new. Such studies are indispensable if we are to overcome the ignorance of the wildlife with which we share our lives and space. Narelle King is another example of a new entrant to this new field, and with experienced co-author Karen Higginbottom, a novel management thesis is aired. The more experienced researchers are able to cross the world seeking examples that both broaden the basis for managing wildlife tourism, and illuminate Australia's issues in an international perspective. David Newsome has covered this topic admirably, and that is why we encouraged him to submit so many foreign photos. It is gratifying to see a local problem with another animal in a land with a different set of wildlife laws and traditions. Megan Price gives a detailed dimension to this subject by focusing on birds through an international review. It places Australian birds - and Australian researchers - in an international context.

The zoo world is rapidly evolving to adapt to the changes within society for seeing animals up close and, in an important sense, this is leading to new ways of viewing and understanding wild animals. Zoos have their vociferous detractors, but they are few in number compared with the crowds that visit, and revisit, our zoos. Both Simon Duffy's and Stephen Jackson and Matthew Crane's papers have given us insights that are not apparent from walking around zoo grounds, and not at all visible from outside the walls. We do need more papers that cover the evolution of zoos, especially in an Australian context, as well as hearing from those with critical comments. Any war of words through the newspapers or television is sure to be too truncated for others to see what really is at issue. These authors have made an important contribution to this rapidly shifting debate.

The roadkill matter is among the most brutal of subjects. Conny Harris, thoughtfully assisted by her co-authors Jacqui Marlow and Anthony Harris, has arrived at the core of the problem by a route well-recognised by any teacher. They have seen the issue locally, documented it, thought about it, then communicated their horror at its implications. As Recher points out, it is the big vertebrates that have received attention, but you start at what you see first. Harry Recher will be pleased to know that approval from an ethics committee is not needed for a dead animal but, in NSW at least, a Scientific Licence (from DECC) is required if you intend to collect the animal for science. One can also note that it is the big vertebrates that are the most visible and capture the most media attention, and we need to acknowledge that they do convey the message sharply to a wide audience. Doug Beckers, as a diligent ranger, shows that real use can be made of the dead animals.

Enhau Lee and David Croft have gone about as far from the urban environment as is possible to investigate roadkill and road impacts, and they have pointed out a new series of issues, in novel and numerical ways, that is most encouraging. Notably, they have included lizards, and Shelley Burgin and Meredith Brainwood included turtles. These authors looked at the subject systematically, with a range of taxa and road widths, in urban, peri-urban and rural areas. Scott Lassau, and his considerable team of experts in koalas, looked at the Pacific Highway, well away from Sydney, and tried to find an answer to one of the terrible consequences of our deep reliance on the

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motor vehicle. Dan Ramp, with co-author Erin Roger, demonstrated that by penetrating the problem, we can see patterns across the landscape on a vast scale. Here they took the novel angle of seeing road-related issues in Conover's term of wildlife-damage management, but their profound interest was in conserving wildlife. It may be peak oil that becomes the driving force in setting in motion solutions to this problem of too many cars, driving too fast and too often, and too many roads. The problem of roadkill does not seem so far to have yielded to any ethical need to tackle the issue, nor does it seem that the primacy of roads and motor vehicles is about to be seriously challenged by current national priorities in climate change, let alone wildlife management.

Climate change may bring about a holistic reappraisal of the roadkill matter; road engineers cannot carry the burden. In the meantime, we do need local studies, the moral accent that it brings – drive more slowly – and the educational value that it invokes – know your local wildlife, as well as the academically skilled focus as exemplified by Lassau, Burgin and Ramp and their co-workers.

Insights and challenges in the plenary sessions

The very mention of the word conflict seems to produce more conflict. However, if conflict is seen as a demand to think more broadly, be more inclusive and come to grips with seeking new solutions in a changing social context, then we are well served if we can accept the contest of ideas. The plenary sessions to this forum were filled with interesting details, gems of insights and some provocative challenges. Consider this challenge by Des Cooper from the University of New South Wales: "… this discussion is really being conducted with a particular set of assumptions, which are assumptions made by rich, well-to-do people who live in cities. If you were to have this sort of discussion in other parts of Australia - for example, on Kangaroo Island - you would discover that most of the Kangaroo Island natives believe that the Kangaroo Island problem with koalas can be solved by shooting the koalas. In fact, they say these koalas aren't even South Australians, they're Victorians, and so they should all be shot, they're not native to the island." Des Cooper concluded with the view that "… any discussion of this kind really has to be set in a particular social context, and the social context in which we have set this one is really one which is very narrow indeed. It is the set of assumptions which people who have been raised on a diet of wildlife shows on televisions make when they talk about this sort of issue."

The immediate context of Des Cooper's opinions can be seen in the plenary transcript, but his confronting views do summarise one response to the topics in the papers and posters on the day. A careful reading of the paper by Sarah Wilks on the koalas of Kangaroo Island, South Australia, leaves the reader with no illusion that there is a deep divide on this issue. We took up Cooper's challenge. The first response is to look at the issue on Kangaroo Island, and that response is the one recorded in the plenary session. The witty Paul Willis, as chair of the session, immediately picked up an important point when he said: "It's interesting you should mention Kangaroo Island. I was down there a couple of years ago looking at the sea lions, and we went out on a cray boat with one of the locals, and of course the New Zealand fur seal also breeds on Kangaroo Island, and he said New Zealand fur seals, they've got to be feral, they should be cleaned out. So, thank you". The paper by Terijo Lovasz and co-authors has given a far more refined view of the marine mammals on Kangaroo Island, but that is not the real point here. Cooper knows full well that, from a welfare point of view, all animals should be treated equally, pest or not. He was not putting the point that shooting is only for feral and pest species, he was going straight to a sensible answer to deal with reality of dealing with too many animals. His lateral thinking has provided both good humour and important insights.

Cooper has thrown out the challenge that we are being discriminatory in our outlook on wildlife. Paul Willis picked this up instantly in his parody about feral seals. Let us consider Cooper's proposition further. The public expression of the dilemmas on how to manage the burgeoning population of koalas on Kangaroo Island was explored by Lunney *et al.* (2007) in an RZS book on the issue of overabundant animals. It has been a major feature of the national koala debate for more than a decade, and opinions are divided, and are strongly held on a wide range of koala matters, and that does impact on policy (Stratford *et al.* 2000). Cooper knows all these arguments as well as the public debate, so it is a neat lure for the unwary to sympathise with the poor koalas and not see the management context. We can immediately see that Peter Menkhorst has clearly seen the limits to which koalas should be tolerated in specific locations and he recognised that managing koalas in Victoria is a major problem of social context.

We may well have formed our opinions about whaling from documentary wildlife shows on television, as Des Cooper asserts. How else, might one ask, could we form an opinion, because only a few of us will ever see whales in the Antarctic Ocean. What is the next best thing to first hand knowledge? One option is to listen to those who have mulled over this problem at length. In response to some skilled questioning by Paul Willis, Michelle Lemon spontaneously offered the following thoughts in the plenary: "I work on whale-watch boats out of Sydney, and so many of the local people didn't even realise you can see the whales just straight outside Sydney Harbour. So you're educating the general public right there, the local communities and the like. But, they often don't even know what species they're looking at. So if they can walk away just by knowing that, particularly with the whaling issue with Japan. The thing that we really push here is that, if the Japanese start whaling these humpbacks down in Antarctica, they're our humpbacks, they're the ones that go past the coast. So you're building up that conservation idea for the general public."

We are witnessing rapid social change on this subject. Cooper has made a powerful point, and Lemon has given a strong contemporary reply. We need much more of such cut-and-thrust to avoid the narrow viewpoint that

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is possible from the comfort of mid-city life. On the other hand, do we really think that those in immediate contact with a wildlife problem are always the best informed to manage our wildlife? The laissez-faire 19th century attitude of European settlers to wildlife, land clearing and our natural resources is hardly a useful model for management into the 21st century. What we also need to guard against is an over-reaction, to a total hands-off position, to an animal-rights straightjacket, to wildlife management where no animal may be deliberately killed. Cooper was not advocating that at all, he would shoot the overabundant koalas, but he acknowledges political reality by undertaking studies on contraceptives on marsupials. He remains a staunch advocate of hands-on research on wildlife as a major prerequisite for informed adaptive management. We acknowledge that the subject of human-wildlife conflict is set in a social context, what we need to recognise is the extent and power of that context, the conflicts it contains and how that context changes with time and place.

Japanese whaling – a rising test of wildlife conflict management

Our title, "Too close for comfort" took on a sharper meaning in the year or so following the forum over the matter of Japanese whale hunting. It became a contentious issue in human-wildlife encounters writ large, and we can now look at it in the light of the Royal Zoological Society's 2006 forum on this theme.

The care with which Kasey Stamation assessed the impact of whale watching in New South Wales waters presents a stark contrast to the battle through 2007 about the Japanese whaling fleet harpooning whales in the southern oceans. As editors, we were crisply aware of the yawning gap, as seen by the Australian public, in the treatment of the very same whales that migrate along our east coast. There was a widespread sense of outrage at the treatment of these whales and the Japanese use of the term "scientific research" to give the operation legitimacy. If we pause for a moment, we can see from the historical records that whaling was a legitimate industry in Australia. In Eden, on the south coast of NSW where Kasey Stamation carried out some of her research and Michelle Lemon has also spent much time with the whales, Twofold Bay had sustained a major whaling station for over a century. It was only during the Great Depression that the whaling ceased. Among the many observations that one can draw from these contrasts is the fact that there have been profound changes in attitudes as to how we have seen and managed our wildlife since 1788. This book has explored one element of that topic for marine mammals – how to judge what is too close for comfort.

By Boxing Day in 2007, the editorial in the *Sydney Morning Herald* weighed into the debate by calling for calm under the heading, "Whaling clouds deeper relationship" (SMH 26 December 2007). The opening paragraph read as follows: "Despite Japan's decision not to kill the 50 humpback whales it had scheduled death for this year, there is blood in the water in Australia's relationship with Japan. As Japanese whaling ships hunt and slaughter whales in the Southern Ocean, the anti-whaling language coming from the new Australian Government has become much sharper, just as the mood of the Australian public and media have moved from exasperated to belligerent. What complicates this anger is that Japan is a true friend and ally of Australia." In a later paragraph, the editorial stated, "After ineffective diplomacy and rhetorical silence by the Howard government, which was met with an increase in whaling operations by Japan, the Rudd Government's support for legal action against those operations in our region is also welcome." The editorial concluded with the view that, "The Japanese Government's ridiculous charade that its whaling ships are engaged in 'scientific research' should be treated with the disdain it deserves. But the growing dispute over whaling and conserving the environment should not be seen as more than what it is, or obscure the larger reality that Japan is a great democratic nation and a staunch and valued friend."

At first glance, we can see from the text of the editorial that strong words were employed, such as, "scheduled death", "slaughter", "ineffective diplomacy and rhetorical silence" and "ridiculous charade'. This is not the language of zoologists in scientific texts, yet it is the language of an editorial asking the reader to keep the matter from obscuring a larger reality, namely living respectfully with our neighbours. What this yellow journalism[2] highlights is that zoologists, producing scientific writing on this subject, are constrained do so in a political world that is short on compromise and long on tough language and "ineffective diplomacy and rhetorical silence". So, how do zoologists produce their science and opinions in such a charged atmosphere? Our answer is three-fold. Firstly, as zoologists, we need to stand back and look at the questions from the point of view of the long-term management of the wildlife populations. Secondly, we need to look across the taxa to seek consistency so that we can save working ecosystems with multiple species. Thirdly, we need to recognise that neighbours may have different backgrounds in their attitude to wildlife, and that their attitudes may also be changing to see the value of a conservation ethic. To achieve such a balanced approach to wildlife management, we advocate a sustained research effort to provide the best information for decision-makers, coupled with education and communication so that others can see the point of the research, its policy and management applications, recognise that wildlife serves many functions in both Australia and the world, and understand that one strident point of view will never fulfil all the aspirations that constitute wildlife management.

One point we do push is that the time-frame to conserve our wildlife is short, so ignoring matters, or as the SMH editorial put it, the "rhetorical silence by the Howard government", is not an option. As an ecologist with a social conscience, David Lindenmayer arrived at that same point at the same time. Lindenmayer's (2007) book, *On Borrowed Time,* made the same general point that the scale of the environmental problems is now so

[2]Words that inflame emotions and selectively influence conclusions.

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large as to be overwhelming the planet and robbing us of options for the future, and there is a moral line in their message, a welcome and non-aggressive moral stance that we must change to conserve our world. What draws us to Lindenmayer is that he is Australian in his outlook, thereby putting Australia in an international ecological context, while pointing to the urgency and profundity of the matter.

May I touch that frog?

Arthur White has delicately touched a subject that shows just how fast matters are changing. He entitled his paper, "Can I touch that frog?" The problem arises because it is easy to touch a frog, and thereby potentially easy to transmit the dreaded chrytrid fungus. Thus the issue arises, "may I" and "should I" touch that frog? For the sake of the frog, the answer is moving more and more to "don't touch", unless you are using the hygiene protocols for frog handling. What may not be apparent now is that frogs only became protected by law in NSW in 1992. Before that, frogs were not mentioned by the *National Parks and Wildlife Act 1974*, that is, they were unprotected fauna, and 1974 was the first year that reptiles were protected in NSW. Frogs became protected under the *Endangered Fauna (Interim Protection) Act 1991*, which passed through parliament in December 1991. The law came into force from the end of February 1992 when the schedules of threatened fauna (then called 'endangered fauna') were promulgated (Lunney and Ayers 1993), with the details of all the assessments given in Lunney *et al.* (2000). In 1992, 19 of the 71 frog species in NSW were recognised as threatened. (The NSW *Endangered Fauna (Interim Protection) Act 1991* was replaced by the NSW *Threatened Species Conservation Act 1995* and the schedules of threatened frogs were transferred to the new Act.) Frogs now are in a dire state internationally, with many species being threatened.

Consider this dramatic press release from Species Survival Commission on the IUCN Red List of threatened species: "14 October 2004 (Washington, DC, USA/ Gland, Switzerland) – The world's amphibian species are under unprecedented assault and are experiencing tens of thousands of years' worth of extinctions in just a century, according to the most comprehensive study ever conducted. More than 500 scientists from over 60 nations contributed to the Global Amphibian Assessment (http://www.iucn.org/themes/ssc/biodiversity_assessments/gaa/gaa_pressrelease.htm; accessed 26.12.2007). Amphibians are widely regarded as "canaries in the coal mine," since their highly permeable skin is more immediately sensitive to changes in the environment, including changes to freshwater and air quality." The status of the frogs became clear to a group of Australians who gathered in Adelaide in August 2005 to participate in the mammal equivalent of IUCN effort for frogs. The IUCN personnel had explained to the group, which included one of us (DL), that the status of frogs was looking grim. It also became clear that there is much value in looking at the world picture while simultaneously looking at your own country, and the world picture of frogs is one of a great leap backwards. So, "may I touch that frog" might be recast in the not too distant future as "will I ever see a frog". The point here is that the whole of humanity is 'too close' for the survival of frogs. That recognition starts, we suggest, with the most simple of statements, "may I touch that frog".

Arthur White is crisply aware of this international state of affairs, and its implications for Australia. What we are dealing with is an international crisis, but there is a human dimension that Arthur has put his finger directly on, namely education. He asked, "What experiences are available for today's children? With limited exposure to the natural world will future generations still be prepared to defend global ecosystems?" Arthur has put forward some practical suggestions for ways of making contact with frogs. This critical element is essential if wild animals are going to be part of our world. For some creatures, it is not imaginable that most people can touch them, but they can get close. Zoos provide just that opportunity, and education is arguably their greatest long-term contribution to wildlife conservation. Simon Duffy has opened up this theme in his paper. Duffy describes balancing the approach to managing close encounters with wildlife and the educational philosophy behind the Taronga Conservation Society Australia's visitor programs. The current approach to changing from the traditional passive zoo visit to a more interactive experience is explained. This change in approach is to support the zoo's important aim to be a significant influencer of community attitudes towards the environment, conservation and wildlife. Duffy argues that to maximise the educational impact, and to generate long-term behavioural change in zoo visitors, a close experience with animals, delivered in an appropriately engaging and meaningful context, is necessary. Such an experience allows the visitor to connect with animals on a more active, personal and emotional level. However, it has proved difficult to quantify the effectiveness of long-term attitudinal change of visitors arising from such encounters, and research into the effectiveness of interpretation and visitor experience as a means of assessing behavioural change is assuming greater importance for zoos.

Nearly all animal interactions, especially those with humans, are associated with differences in opinions or societal conflict. Jackson and Crane contend that there has been a marked improvement in the display of animals in New South Wales brought about, in part, by legislation. Using examples drawn from some high profile issues within the zoo industry, they outlined the evolution of the *Exhibited Animals Protection Act*, Regulations and Standards since their introduction in 1989. Unfortunately standardised assessments of community attitudes are not undertaken such that the effectiveness of the bureaucratic response to emerging issues, or their statement that 'The New South Wales Government attempts to reflect community opinion…', can be measured.

The authors pose the question, 'Are the changes due to community attitudes arising from an increasing knowledge about, and concern for, animals or are they due to an increasing interest in conservation and education?' The regional zoo association, the Australasian Regional Association of Zoological Parks and Aquaria, indicates that

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zoos throughout Australia and New Zealand attract 14.5 million visitors annually. This large visitation represents a potentially important opportunity for conservation messages to be provided. However, the effectiveness of their programs represents an interesting field of study that might help address Jackson and Crane's question. Similarly, research on the effectiveness or otherwise of the Standards established under the legislation upon animal welfare would be desirable to address this perceived contentious aspect of zoos.

Wildlife tourism

In 2000, the Royal Zoological Society of NSW ran a forum entitled, A Zoological Revolution. Using native fauna to assist in its own survival, and one of the contributions was on wildlife and tourism (Braithwaite and Reynolds 2002). It was not the hot issue of the day, that was focussed on Archer's (2002) more sweeping and radical approach to conservation, and Grigg's (2002) detailed summary of the conservation benefit of harvesting kangaroos. Nevertheless, wildlife tourism is an internationally powerful approach to conservation which, as Braithwaite and Reynolds pointed out, can be made both to build support for conservation and to provide funding for it. In their paper, Narelle King and Karen Higginbottom examined the novel subject of reintroduction programs that have been used to help redress serious declines across species' former ranges. They note that they often suffer from high expense and low success rates. Tourism is one tool, they argue, that could be used to support such programs. In this forum on "too close for comfort", the issue of wildlife and tourism came into sharper focus than it did in A Zoological Revolution, with a particular current emphasis on marine mammals, and a striking review of human disturbance on birds. Here Megan Price made the telling point that as both predation risk and human disturbance redirect time and energy from other fitness-enhancing activities such as reproduction and feeding, perceived predation risk is useful in the understanding of the impact of human disturbance. Higher-impact human behaviour can have devastating effects on habitat use, community composition, reproduction and fitness. Birds tend to overestimate the risk associated with humans rather than to underestimate it, Price pointed out, thereby avoiding injury, but expending much energy in doing so. Here Price has done for birds what her marine mammal counterparts have done by pointing to the direct and deleterious impacts of being too close to the animals in question.

In the context of an urban setting, Howard and Jones (2004) studied wildlife feeding and found that managers expressed their opposition to feeding as a threat to welfare, while feeders claimed that the practice improved the welfare of wildlife. They then drew a more telling conclusion, namely that the different attitudes towards wildlife by the two groups could be linked to the way in which wildlife knowledge is acquired – being either knowledge-based for wildlife managers or experienced-based for feeders. This background set the scene for a more detailed examination of this debate.

In "To feed or not to feed: a contentious issue in wildlife tourism", David Newsome and Kate Rodger note that there is an increasing interest in viewing animals in the wild. Feeding has arisen, they point out, as a means of achieving improved viewing experiences, as well as fostering a sense of nurture for wild animals, stimulating awareness and knowledge of wildlife, particularly by children. The authors then identified the perceived disadvantages of feeding wild animals for human interests, and point to the range of attitudes towards wildlife that lead to conflict as to whether feeding is desirable. They also note the problems of inappropriate feeding, risks to wildlife, and public safety. These are issues faced, they point out, by many local authorities, councils and land management agencies, and they provide a wide range of examples. Feeding wildlife seems to have been a simple act, but Newsome and Rodger demonstrate that the issue is complex and certainly contentious. One can have little difficulty imagining that it is hard to both produce rules and to police any formal regulations in relation to feeding. However, you will not leave their paper without seeing that the matter is fraught with difficulty and opportunity.

Responsibilities towards the natural world

In a thought-provoking book entitled *Communicating Nature*, Corbett (2006) makes a series of observations on how we see nature, how we create and understand environmental messages, and how animals are central to most of the messages about the environment. Corbett points out that we manage animals based on those we like, those that threaten or annoy us, and those we hunt and fish. One can readily think of Australian examples within each of these groups, although Corbett had North American animals in mind. As she saw the need for new ways to communicate environmental messages, the struggle is not only how we use or treat things like trees or frogs, but over the meaning we attach to physical things. In essence, she says, it is a struggle to have your values prevail in all the clamour. Managing wildlife tourism is proving to be vexatious enough, and yet there is at least a widespread recognition that there is a real problem to be resolved at a local and national level.

Corbett arrived at a crucial point when she stated that we need new ways of doing, seeing, and communicating on the subject of human relationships and responsibilities towards the natural world. We agree, and this forum and this book is just one endeavour to simultaneously address all these issues. From the gentle approach of whale-watching and the attention to seals and dolphins, and the careful research that underpinned all the recommendations, to the as yet nearly-impenetrable problem of roadkill, the issue that is central is that of communication. Without it, one's sense of responsibility cannot take hold and opinions cannot be formed based on reliable and testable information. Corbett argues that the environment needs to be reconnected to our everyday lives, in work and leisure, and words and action. We agree, and the subject of this book, conflict, does bring the subject home because a problem already exists and people have taken sides.

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In the casting of the forum, we encouraged a defined selection of contested issues, and we sought a wide range of Australian examples. To Australians, these are more immediate and pressing than issues in North America, and we can more readily see who could act, and how we might consider acting. What is so absorbing is that an analysis of the issues in North America has so much resonance here in Australia. One can assume that the problem definitions in Australia, and our local examples, could be applied in North America. We are not isolated in Australia from world problems, and the climate change challenge has rammed that home like no other issue, but the converse therefore also applies – our solutions and our communication endeavours can make an international contribution. Our fantastic suite of native animals can help carry that message. The kangaroos, seals, koalas, magpies, dolphins and whales all have media profiles, and we all have some grasp of where they live, what they eat, what threatens them and how they might annoy us. They are rapidly becoming international icons for a larger cause – the conservation of all species and the habitats that they occupy.

Our aim as zoologists at the beginning of the 21st century is to conserve our wildlife while at the same time recognising that wildlife means different things to different people at different times. The matter of how to manage wildlife is beset by perennial problems seeking new solutions if we are to address the question of what is “too close for comfort”, “too close” here referring to both people and wildlife as the reference point. Many of the answers so far are qualified by the need to know more about the wildlife, how to assess the human dimension to the problem, and how others, both in the past and elsewhere, manage this matter. Harry Recher posed the question in his foreword: “How do you make people care and therefore willing to share with others, and other species?” The authors in this book have made a positive contribution to answering that question. In doing so, they have identified a long list of new issues that demand our attention. This matter is far from closed. It will, as Harry Recher asserts, need an even larger forum in the future.

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