

# Between the Turnstiles: Zoos as Agents of Environmental Education

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## A B S T R A C T

Since the middle of the 20th century, zoological gardens have endeavoured to assist in the restoration of global, regional and national biodiversity. To help realise these conservation goals zoo professionals rely on formal and informal education schemes to enhance zoo visitors' awareness of environmental conservation issues. A questionnaire was administered at eight Australian zoos to elicit information regarding visitors' environmental knowledge and attitudes. Data from several open-ended questionnaire items were consistent with data from closed questions which intimated that zoo respondents appreciated zoos' conservation activities. However, a gap existed between visitors' endorsement of conservation and their level of conservation activism. This suggests that educational and interpretive materials used in zoos should include comprehensive and clearly intelligible information about a range of environmental values and means of involvement in action for conservation.

The international zoo community has been addressing the sustainability and appropriateness of maintaining 'wild' animals in captivity since the early 1960s (Mazur 1997, Mullan & Marvin 1987). This ideological shift is demonstrated in Western zoos by a re-orientation of animal management practices and education programs so that these activities support the conservation of biological diversity. On the following page Table 1 lists several international and national strategies which provide zoos with explicit roles in conservation. Collectively, these policy instruments designate the following key priority areas for zoos:

- breeding of endangered species in captivity—ex-situ conservation
- supporting field conservation programs—in-situ conservation
- raising public awareness of the decline in biodiversity.

Zoo professionals aim to teach people about conservation by encouraging awareness of the "irreplaceable value of the entire biological system of our planet and all of its constituent components" (CBSG & WZO 1993). Education in zoos can be broadly categorised into formally organised programs for schools and communities, and the informal experiences of visitors viewing exhibits (Mazur 1997). Both the appeal of live animals and collective reach of the world's zoos constitute their purported impact on public awareness of environmental issues. According to Blakely (cited in Kelsey 1991) people are more likely to take action about animal conservation issues having had the opportunity to appreciate the range of behavioural activities and the ecological roles of the animals they see in zoos. The wide-spread appeal of zoos—they attract millions of visitors per year (CBSG & WZO 1993)—affords zoo educators the opportunity to influence the views of many people.

Zoo educators' efforts to increase visitors' environmental awareness and action and to find the best means to achieve these goals are part of a broader debate about what are appropriate and effective messages and methods for environmental education. That is, should environmental educators merely encourage students to assimilate and reproduce factual knowledge in pursuit of a set of 'truths', or encourage students to become more politically astute and socially critical in relation to environmental issues (Stevenson 1992, Blaikie 1993, Fien 1993). Few members of the zoo community debate the need for zoo education to support biological diversity (CBSG & WZO 1993, Rabb 1994, Hutchins & Conway 1995). However, a number of sources (Kellert & Dunlap 1989, Hancocks 1995, Healesville Sanctuary 1996, Jamieson 1995, Mazur 1997) provide divergent views of educational issues in zoos including, for example, about:

- what constitutes sufficient levels of institutional commitment for education programs
- means of selecting suitable themes and methods for programs
- whether zoo programs have the capacity to significantly impact on public consciousness and to instil behavioural change
- whether zoos ought, in fact, to be agents for social change.

Given these debates within zoos, and the broader community, regarding zoos' role in environmental education there is a need to evaluate how the education programs offered by zoos influence their visitors, or fail to do so. This paper, part of an account of a broader inquiry into zoos' conservation role (Mazur 1997), reports the results of an attitudinal survey used to examine what conservation messages were being conveyed to zoo visitors by zoos' interpretive environments.

**Table 1: International and national strategies relevant to the role of zoos in conservation**

<b>Convention on Biological Diversity (1992)</b>	Each contracting party shall...., predominantly for the purpose of complementing in situ measures (a) adopt measures for ex situ conservation...; (b) establish and maintain facilities for ex situ conservation of and research on plants, animals, and micro-organisms...; (c) adopt measures for the recovery and rehabilitation of threatened species and for their reintroduction...; (d) regulate and manage collection of biological resources from natural habitats for ex situ conservation purposes...
<b>Global Biodiversity Strategy (1992)</b>	Action 69: Strengthen the conservation role of zoological parks ... a conservation strategy should be developed to help set priorities and strengthen collaboration among zoos. Action 71: Strengthen collaboration among off-site and on-site conservation institutions, partly to enlarge the role of off-site facilities in species reintroduction, habitat restoration, and habitat rehabilitation.
<b>World Zoo Conservation Strategy (CBSG &amp; WZO 1993)</b>	The overall aim is to help conserve Earth's fast-disappearing wildlife and biodiversity. Zoos should support the objectives of the World Zoo Conservation Strategy (and related documents) by: (1) actively supporting through coordinated programs the conservation of populations of endangered species in situ and ex situ and, through these, the conservation of natural habitats, biotypes, and ecosystems; (2) offering support and facilities in order to increase scientific knowledge that will benefit conservation, and lending support to the conservation community by making available relevant knowledge and experience; (3) promoting an increase of public and political awareness of the necessity for conservation, natural resource sustainability, and the creation of a new equilibrium between people and nature.
<b>National Strategy for Ecologically Sustainable Development</b>	Embracing ESD ultimately rests on ability of all Australians to contribute individually through modifying everyday behaviour, and through opportunities open to us to influence community practices ... Objective 9.1 :- To develop effective mechanisms to achieve the conservation and ecologically sustainable use of biological resources, including ... establishing measures for in situ and ex situ conservation.
<b>National Strategy for the Conservation of Biological Diversity</b>	Objective:- as part of meeting obligations under the UN Convention on Biological Diversity includes government responsibility for establishing measures for in situ and ex situ conservation Objective:- increase public awareness of & involvement in conservation of biodiversity ... accessible personal action guides explaining ways individuals & groups can help
<b>The National Strategy for the Conservation of Australian Species and Communities Threatened with Extinction (1992)</b>	Objective 1:- To develop and implement a national education program on endangered and vulnerable species and ecological communities directed towards all sectors of Australian society; Objective 6:- To prepare and implement recovery plans for all endangered species and ecological communities and selected vulnerable species and communities; 6.4:- Coordinating efforts by zoos, botanic gardens, gene banks and related organisations to assist in ex-situ breeding or propagation programs for those endangered and vulnerable species that would benefit from such measures, re-establishment in the wild being the ultimate objective. Objective 11:- To promote and participate in the international efforts directed to the conservation of endangered and vulnerable species and ecological communities; 11.7:- Encouraging zoos, botanic gardens and other living museums to develop conservation priorities at an international and regional level and then coordinate management of their collections to reflect those priorities.

**Questionnaire design and procedures**

Attitude studies are valuable to zoo professionals because they can provide some information about public support for and belief about zoos' policies and programs (Heberlein 1989, Reading & Kellert 1993). Kidder & Judd (1986) warned intending users about some of the inadequacies of attitudinal questionnaires. They suggested that respondents might give unconsidered responses if they had not previously thought about the issue. Furthermore, attitudes can vary in intensity, and a person might not have a single,

overall attitude towards a complex matter. These and other factors make the task of reliably assessing and measuring attitudes particularly challenging. However, when supplemented by research on the kinds and extent of visitors' environmentally-oriented behaviours, attitudinal data should help zoo professionals design more appropriate interpretive and educational programs.

A questionnaire was used in this study to redress the paucity of data in the Australasian region about zoo visitor's environmental knowledge and attitudes.

Questionnaires can limit research in that they tend to be rigidly structured and are not able to establish causal connections between variables, to elucidate meaningful aspects of social actions or provide for a dynamic picture (Wadsworth 1991, de Vaus 1990). Despite these weaknesses questionnaires can be useful tools: when measuring a wide variety of variables (Stone 1978); when substantive knowledge of what are relevant questions to ask can be demonstrated (Wadsworth 1991); and when used in conjunction with a variety of other research tools. The data generated by the zoo visitor questionnaire was part of a larger interdisciplinary analysis of conservation policies in zoos and included the use of structured and in-depth interviews, participant observation and content analysis.

Many Australasian zoo professionals are under increasing pressure to produce quantitative indicators that demonstrate their conservation programs' success (Mazur 1997). Given that the Australasian zoo community provided substantial financial and administrative support for the research, it was necessary to incorporate some of these needs into the questionnaire design. The numerical data produced by the visitor questionnaire used in this study intimated that some areas of zoo performance warranted further investigation, and might assist the zoo community in creating some measurements of the region's and individual organisations' capacities for environmental education. These issues are highlighted in the paper's data analysis and conclusion.

Qualitative and quantitative components were built into the questionnaire design by using closed and open-ended items. This strategy minimised the disadvantages of either kind of item (as discussed in Babbie 1989, de Vaus 1990). In considering the advantages of closed items, Babbie (1989) suggested that they provide greater uniformity in and incidence of responses and were clearer and more easily processed. Stone (1978) noted that closed items present uniform stimuli to all subjects. However, according to Patton (1990) open-ended items: produce qualitative information that more fully encompasses the complexity of the issue(s); provide an important supplement to information generated by the closed items; and facilitate access to respondents' perspectives without predetermining those views through prior selection of questionnaire categories.

Ten Australasian zoos were the focus of the broader study: Adelaide Zoo, South Australia; Perth Zoo, Western Australia; Currumbin Sanctuary, Queensland; Territory Wildlife Park, Northern Territory; Taronga and Western Plains Zoos, New South Wales; Melbourne and Werribee Zoos and Healesville Sanctuary, Victoria; and Auckland Zoo, New Zealand (Mazur 1997). These zoos were chosen because of their diverse characteristics. They are some of the more influential zoos in the region, and all have made an explicit policy commitment to conservation (see Mazur 1997). They represent different geographical regions and are of different sizes and ages. Some collections feature

only Australian native species, while others have a traditional mix of Australian and exotic animals. This sample also included public metropolitan zoos, a private wildlife sanctuary and a public open-range zoo. The questionnaire was administered in eight of the ten zoos. Visitor data were not collected for Auckland and Western Plains Zoos as the necessary organisational support could not be arranged. A random sampling strategy was used to increase the likelihood that data collected were representative of a national population of zoo visitors and to determine what variety, if any, existed within this group. Some of the challenges of this method of sampling are mentioned below. Approximately 200 completed questionnaires were collected from each zoo.

Zoo volunteers and paid staff helped distribute the self-administered questionnaire. While this kind of questionnaire administration can facilitate a high incidence of incomplete and/or insufficient responses, it tends to provide greater anonymity for the respondent who may, in turn, be more open or truthful when answering questionnaire items (Stone 1978, Fowler 1984, Kidder & Judd 1986). The relative speed, ease and convenience in which self-administered questionnaires can be collected proved invaluable, given the considerable time and resource constraints affecting this research. Other challenges of this method include ensuring that the sample is truly random, given that assistants' biases will ultimately influence their choices (Moser & Kalton 1971). In order to minimise selection biases, assistants were instructed to recruit respondents of all ages above eleven years and to approach equal numbers of males and females. When approaching groups, assistants were instructed to designate one person to complete the questionnaire unaided by other group members. Despite these precautions some respondents were observed answering items out of sequence or being assisted by family members or friends while they completed their questionnaires.

## Results

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### *'[a] low level of activism.....consistent with findings from other studies'*

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The results which follow represent highlights from the full set of data generated by the zoo visitor questionnaire (see Mazur 1997) and provide a partial 'conservation profile' of a sample of Australian zoo visitors. Of the visitors surveyed across the zoos, about 70 percent indicated that they did not belong to any environmental or conservation groups, nor did they contribute time to local conservation organisations. Of the respondents who were affiliated with environmental/conservation groups 64% defined their involvement as donating money to groups such as Greenpeace or the World Wide Fund for Nature. This low level of activism was consistent with findings from other

studies which have categorised zoo visitors as a group whose interests in and knowledge of environmental issues are distinct from other wildlife-related interest groups (Kellert & Dunlap 1989). People attending zoos are predominantly motivated by an interest in having a family-based recreational experience in an urban, park-like setting, rather than seeking to increase their knowledge or understanding of wildlife (Kellert & Dunlap 1989).

***‘respondents were asked whether they were ‘taking away’ any new ideas with them’***

In an attempt to appraise the nature and effectiveness of zoo visitors’ learning experiences for imparting a conservation message, respondents were asked whether they were ‘taking away’ any new ideas with them, and whether they recalled anything in particular. They were given the choice to respond to one or both of two prompts: ‘I didn’t know/never realised that’ and ‘It reminded me that.’ The questionnaire form provided several blank lines for their answers.

Content analysis was used to analyse the responses. Open coding was used to group visitors’ comments into six broad themes as shown in Table 2. Another coding frame was used to subdivide a section of these data into more specific categories. They are summarised in Table 3. All categories were derived from an inductive inference concerning the patterns that emerged from the data according to their manifest and latent content (Berg 1989). An independent reader was recruited to conduct the same exercise and results were compared and contrasted for inconsistencies.

**Table 2: Categories for responses to qualitative questionnaire item**

	<b>Didn’t know/realise ...</b>	<b>It reminded me ...</b>
No response of any kind	52 % (838)	60% (958)
Taxonomic/behavioural information about certain animals/species—e.g. ‘lizards use their tongues to smell’	21% (337)	3% (43)
Awareness of conservation/environment-specific issues and role of zoos in conservation—e.g. ‘we might not see many of the species that exist today because of human disregard’	10% (165)	23% (372)
Appreciation of zoo/physical surroundings—e.g. ‘this place is so relaxing’	11% (174)	7% (108)
General appreciation of animals—e.g. ‘all animals are beautiful’	3% (52)	5% (82)
Any kind of negative response	3% (55)	3% (45)

The most common category of responses to this questionnaire item was ‘no response’. A majority of the sample of visitors failed to respond to either prompt:

‘I didn’t know/never realised that’ or ‘It reminded me that’. This low response rate might have resulted from the effects of placing this question at the end of a long survey containing 60 questions, rather than from respondents not learning or being reminded of anything during their zoo visit. Other influential factors might have been respondents’ varied ability or willingness to articulate their thoughts about zoos and conservation.

For the first prompt, ‘I didn’t know/never realised that’, the next most common category after ‘no response’ was that containing answers about taxonomic/behavioural information. This finding may be a consequence of an historical and continuing emphasis on taxonomy in zoo education and interpretive materials.

***‘A small percentage.....of the replies.....were conservation-oriented’***

A small percentage (10%) of the replies to ‘I didn’t know/never realised that’ were conservation-oriented. However, for the second prompt, ‘It reminded me that’, conservation-oriented comments comprised about a quarter of the total. This difference between responses may have resulted from the items’ wording and placement which in turn exacerbated the survey’s content-bias. Respondents could have been affected by the numerous conservation-related items encountered while completing the survey, reacting to what they believed they were *expected* to say. Additionally, the wording of the second prompt may have been more appropriate than the first for eliciting a ‘conservation’ response if we assume that many people today possess some environmental awareness or ‘conservation knowledge’ before they come to a zoo. The remaining categories of responses to both prompts comprised approximately 15% of the total responses.

The following analysis concentrates on the conservation responses. Despite their small number relative to the total quantity of comments and the presence of questionnaire biases they warrant further examination. These data provide insight into the kind of conservation information which zoos impart and, possibly, embody a range of meanings of relevance to zoo educators trying to appreciate the effects that zoo environments have on visitors. The conservation-oriented replies to both prompts have been grouped into eight sub-themes as shown in Table 3. This table also lists the number of responses occurring in each group. The eight sub-themes are set out in fuller detail in tables 4-12 and are accompanied by a brief discussion. The analysis begins by focusing on respondents’ specific references to zoos’ roles and features, proceeds to issues regarding respondents’ appreciation of biological diversity and conservation, and finishes with respondents’ broader comments about environmental responsibilities and the need for further actions.

**Table 3: Zoo visitors' conservation-oriented replies**

Conservation themes	Didn't know/realise ... no. of replies	It reminded me ... no. of replies	Total no. of replies	Shown in Table-
1. Zoos' conservation role	26	56	82	4
2. Exhibits' features	44	40	84	5
3. Appreciation/non-human nature	13	20	33	6
4. Value/non-human nature	4	38	42	7
5. Environmental problems awareness	59	40	99	8
6. Importance of conservation	2	17	19	9
7. Human role in environmental issues	8	34	42	10
8. Individual responsibility/environmental issues	2	33	35	11
9. Prescriptions/future conservation actions	7	94	101	12
<b>Total</b>	<b>165</b>	<b>372</b>	<b>537</b>	

*Conservation theme 1—Perceptions of the role of zoos in conservation*

Table 4 provides a sample of zoo visitors' responses which referred to zoos' role in conservation. More of these replies were elicited by the prompt 'It reminded me that' than by 'I didn't know/never realised that'. This result implies that there were more respondents who considered that they had some pre-existing knowledge of zoos' contemporary policies than there were respondents who believed they had learnt something new during their visit. Of course, it might well be that respondents' pre-existing knowledge was quite rudimentary. Many of the comments set zoos in a favourable light, making reference to effective education and conservation programs.

**Table 4: Perceptions of zoos' role of in conservation**

Didn't know/realise ... (26 responses)	It reminded me ... (56 responses)
<ul style="list-style-type: none"> <li>zoos were doing so much for endangered species</li> <li>how many animals are extinct and how little we care. Thank god for our last stand-by—zoos!</li> <li>there are people working .....for the preservation of so many species—keep up the good work</li> <li>how important the zoo's role is—priceless</li> </ul>	<ul style="list-style-type: none"> <li>it is important to have zoos so we can see animals—it reminds us we share the planet with them</li> <li>the zoo provides an interesting and educational environment—one can relax and learn at the same time</li> <li>though I really don't like animals behind fences, I realise that this is often the only way to preserve species and for some people to ever see a wild animal</li> </ul>

These results were consistent with the quantitative data generated by the questionnaire which showed that respondents tended to rate zoos' performance favourably in several categories (see Mazur 1996). The results also

suggest that some respondents have reservations about subjecting wild animals to captivity, but appear to rationalise this condition on the basis of educational and conservation benefits they presume are gained in the process.

*Conservation theme 2—Perceived features of contemporary exhibits*

This group of responses highlighted respondents' perceptions of zoo surroundings, in particular the style and parameters of zoo exhibits. Respondents were about equally divided in their knowing beforehand that zoo exhibits and enclosures had improved, and in their lack of awareness of this. Apart from negative comments made by respondents in reference to catering and other customer services, comments categorised as 'negative responses' in Table 2 and which are not discussed in this paper, this group of data contained the highest number of unfavourable views. These comments, underlined in Table 5, highlighted the cramped conditions of some enclosures, particularly those housing the larger vertebrates such as elephants, giraffe and lions.

**Table 5: Perceived features of contemporary exhibits**

Didn't know/realise ... (44 responses)	It reminded me ... (40 responses)
<ul style="list-style-type: none"> <li>free-range zoos seem happier places for animals than conventional zoos</li> <li>animals can be so content their natural surroundings</li> <li><u>its good to be able to see animals you might not normally have a chance to see, but I feel sorry for them. I think they should be free</u></li> <li>animals don't necessary need more space to move around (eg. elephants, big animals), as long as they get their food and stimulation</li> <li><u>the Orang-utan rainforest park was so small, considering how much money was spend on the project</u></li> </ul>	<ul style="list-style-type: none"> <li>how far we have come since the days of concrete and iron-bar enclosures</li> <li><u>not all animals are really in happy to be here—the bears look sad and bored</u></li> <li>zoo enclosures are improving and the animals look happier in more natural environments</li> <li><u>caged animals are sad, even if the prime interest is conservation and protection of them</u></li> <li><u>a better alternative than zoos should be in existence for animals such as tigers and bears ... any endangered animal really—the compounds are too small for large animals</u></li> </ul>

*'respondents.....were not making a distinction between 'real' and simulated nature'*

The data suggest that some respondents may have experienced a level of discomfort when viewing these animals and tended to describe their feelings as 'sadness'. While the unfavourable comments in Table 5 intimate that many respondents tended to have adverse reactions to seeing animals in cages, some respondents appeared to be

reassured by the naturalistic designs prevalent in modern zoo exhibits. Certainly the open-range zoos and more expansive wildlife parks and sanctuaries evoked commendatory responses from respondents who appeared to believe animals were happier in 'natural', more open environments. Indeed, several respondents' use of the term 'natural' and 'habitats' when referring to animal enclosures implied that they were not making a distinction between 'real' and simulated nature. This confusion could be addressed by zoo education programs.

**Conservation theme 3—Appreciation of several aspects of non-human nature**

Table 6 lists a selection of responses which indicate a collection of ideas including the existence and importance of biological diversity in Australia and globally; the ways in which adaptation between animal and environments is seen; the often delicate balance that is necessary for human and non human cohabitation; and the importance of habitat for conserving a variety of species. Both prompts elicited a similar number of responses. All of these topics provide important potential foci for zoos' environmental education programs.

**Table 6: Appreciation of several aspects of non-human nature**

Didn't know/realise ... (13 responses)	It reminded me ... (20 responses)
<ul style="list-style-type: none"> <li>• how cleverly adapted every species is to its own habitat</li> <li>• all of our animals are so important to each other ... and how they balance our ecosystems</li> <li>• there are so many different animals in Australia</li> </ul>	<ul style="list-style-type: none"> <li>• there are many varied and different animals in this wonderful world of ours</li> <li>• the inter-linkages that exist in our small ecosystems</li> <li>• animals are very finely adapted to their environments</li> <li>• humans share the world with other species</li> </ul>

**Conservation theme 4—Appreciating the value of non-human nature**

The comments listed in Table 7 indicate respondents' appreciation of the need for conservation of animals. These responses included justifications for conserving non-human nature on the basis of its usefulness to humans and its value in its own right, that is, its instrumental and intrinsic values. For example, respondents cited: the necessity of considering the needs of future generations; the beauty of non-human nature; the uniqueness of animals and their intelligence; the Earth's fragility; and non-human nature's right to exist as reasons for continued and intensified support for conservation. These data are consistent with other data from the questionnaire which showed that 57 percent (897) of respondents selected *totally disagree* when asked whether plants and animals exist primarily for human use. These views provide support for education programs which might argue against preserving non-human nature solely because of its value to people.

**Table 7: Appreciating the value of non-human nature**

Didn't know/ realise ... (4 responses)	It reminded me ... (38 responses)
<ul style="list-style-type: none"> <li>• animals are smart—we have to act now to save them</li> <li>• animals are more intelligent and self-reliant than humans, however man (sic) controls them most of the time ... fortunately animals survive ... if not endangered, animals should remain free</li> <li>• that Oz's beautiful native birds need protecting</li> </ul>	<ul style="list-style-type: none"> <li>• our animal world is unique and a national treasure—we need to respect and learn from them</li> <li>• there are some truly beautiful creatures that I have never seen, and how precious they are ... it is so important to keep these creatures in our (and their) world</li> <li>• animals are very valuable to the country and to us               <ul style="list-style-type: none"> <li>• every animal and bird in Australia is precious and deserves the right to share this country with us—in their natural environment</li> </ul> </li> </ul>

**Conservation theme 5—Awareness of environmental problems**

Table 8 lists a selection of responses which convey respondents' cognisance of environmental problems. This category contained the second highest number of comments. Of the respondents commenting about environmental issues, almost 60% appeared to have been made more aware of those problems as a consequence of their zoo visit. One could infer that zoos provide many visitors with such information and therefore, fulfil part of their educative purpose. Most of the knowledge embodied in these responses was about endangered species and, to a lesser degree, the threats to those species—habitat loss and feral animal invasions. It is not clear whether respondents recognised the complex causes underlying these problems.

**Table 8: Awareness of environmental problems**

Didn't know/realise ... (59 responses)	It reminded me ... (40 responses)
<ul style="list-style-type: none"> <li>• there were so many animals becoming rare because of habitat loss</li> <li>• some monkeys (baboons) are endangered</li> <li>• Australia had so many endangered species</li> <li>• oryx are nearly extinct</li> </ul>	<ul style="list-style-type: none"> <li>• we should be aware of how cats are to blame for the extinction of so much birdlife</li> <li>• each day more species are added to the endangered list</li> <li>• our natural habitat for animals, etc. is rapidly dwindling away</li> <li>• feral and other animals should have never been introduced</li> </ul>

**Conservation theme 6—Perceiving the importance of conservation**

Table 9 contains comments which embody general acknowledgments of the importance of caring for animals and protecting the environment. These statements also

include endorsements for ensuring that these conservation efforts, both large and small, are continued. If these respondents were sincere in their support for conservation it suggests that zoo educators might be able to encourage some zoo visitors to take (increased) action for conservation.

**Table 9: Perceiving the importance of conservation**

Didn't know/realise ... (2 responses)	It reminded me ... (17 responses)
<ul style="list-style-type: none"> <li>• conservation is of paramount consideration in all aspects of flora and fauna</li> <li>• just by doing even a little, we help animals and the environment</li> </ul>	<ul style="list-style-type: none"> <li>• it is important to educate our children to love and care for animals</li> <li>• I don't know what most people mean by 'environment', but its very important to save animals and plants, because once they disappear, we will too</li> <li>• we need to look after our environment</li> <li>• looking after wildlife is very important</li> </ul>

**Conservation theme 7—Human role in environmental issues**

Table 10 lists some of the comments which conveyed respondents' perceptions of the roles humans play in creating and sustaining environmental degradation. A much greater number of statements were made in response to 'It reminded me that' than to 'I didn't know/never realised that'.

**Table 10: Human role in environmental issues**

Didn't know/realise ... (8 responses)	It reminded me ... (34 responses)
<ul style="list-style-type: none"> <li>• pollution ... people destroy the environment walking through the monsoon forest ... I just realised what we are losing through our own stupidity</li> <li>• that so many animals were killed for fashion</li> <li>• we as humans are forcing our lifestyle upon animals and turning them into entertain-ment rather than respecting them as other ... creatures—we share the planet with them</li> </ul>	<ul style="list-style-type: none"> <li>• how vulnerable the world is to irresponsible development</li> <li>• one day we might not see many of the species that exist today because of human disregard</li> <li>• our ecology is so fragile in the face of our technology</li> <li>• we don't know everything—humans are far too egocentric for the planet's good ... we are a part of the whole, not just the top looking down</li> </ul>

Essentially, these comments provided evidence of respondents' awareness that arrogant and unappreciative attitudes of humans towards nature, and their exploitative activities such as hunting, poaching and development have created many environmental issues such as species decline and habitat destruction. All of the statements voiced concern about these actions, and some offered generalised suggestions about the need to change this relationship between humans and animals. Education strategies could

be designed to increase the sophistication of respondents' understanding of the complex social and political factors involved, and to suggest actions to redress human-caused problems.

**Conservation theme 8—Recognising environmental responsibilities**

Table 11 contains respondents' comments which displayed their acknowledgment that individuals have environmental obligations. The prompt 'It reminded me that' elicited far more responses from zoo visitors than did 'I didn't know that'. Given the popularisation of environmental concern, it is not surprising that respondents would be reminded, rather than discovering, their responsibilities. Some comments embodied respondents' acknowledgment that they had not done enough for the environment, as well as their promises to redress this lack of action by making greater commitments in the future. These pledges ranged from rather vague suggestions such as "do more for conservation" to proposing more specific activities—"plant more native plants in my garden to encourage fauna". These findings are consistent with data produced from several closed-ended questionnaire items which showed that most respondents: agreed that individuals had some responsibility for implementing conservation; disagreed that there was nothing they could do to assist endangered species; and, interestingly enough, considered themselves to be environmentalists (see Mazur 1996 & 1997). This provides considerable potential for zoo educators to inform zoo visitors about what actions they can take to help protect the environment.

**Table 11: Recognising environmental responsibilities**

Didn't know/realise ... (2 responses)	It reminded me ... (33 responses)
<ul style="list-style-type: none"> <li>• there were so many endangered species—I am going to help them</li> <li>• I would like to be more active in animal/habitat conservation</li> </ul>	<ul style="list-style-type: none"> <li>• to plant more native plants to encourage fauna on my own property</li> <li>• wildlife conservation starts with the individual rather than relying on the government or other conservation organisations</li> <li>• I should do something personally to help preserve habitats</li> <li>• I don't do enough to help save endangered species or environments</li> </ul>

**Conservation theme 9—Prescribing future conservation actions**

Table 12 contains the largest group of responses under the conservation major theme. As in conservation themes six and eight (Tables 9 & 11), respondents sanctioned the need for conservation, and supplemented this endorsement with calls for more intensified actions than those presently being carried out. Implicit in these responses was a recognition of human responsibility for the environmental problems they

seek to address and that any delay in action increases the dangerous consequences of environmental decline. While such recommendations tended to be rather generalised they included requests for higher standards of animal care; emphases on the significance of habitats such local ecosystems; and acknowledgment of the need: to increase our knowledge of environmental problems; to ensure that environmental issues remain on the political agenda; to find a more harmonious balance with and become more considerate of non-human nature; and to educate children about how contemporary environmental problems might influence the future and about possible actions, and acknowledgment of the hard work which lies ahead.

Table 12: Prescribing future conservation actions

Didn't know/realise ... that ... (7 responses)	It reminded me ... (94 responses)
<ul style="list-style-type: none"> <li>• we must do more to conserve all remaining natural habitats</li> <li>• lots more can be done to protect these creatures (endangered species)</li> <li>• the public seem to be increasingly interested in animals, their welfare, and presentation</li> <li>• we need to value all wildlifeso that our children will enjoy the value of nature</li> </ul>	<ul style="list-style-type: none"> <li>• we need to be more aware of global and local issues (eg. habitat preservation)</li> <li>• there's a long, hard road ahead in education of people about conservation</li> <li>• we need to conserve natural habitats for all time, especially the trees as we have trouble with the ozone layer</li> <li>• life is too short—we must do something to help save the problems of the world NOW—before its too late</li> <li>• children should be made aware of the problem of extinction</li> <li>• we need to take more care for future generations to enjoy what we have now</li> <li>• we can't just live for today ... we need to always reflect on what we do today and how this will impact on the future conservation problems are not given much worth in the political arena ... governments aren't interested unless money is an outcome</li> <li>• Australian native plants should be understood as an integral part of our life here and should be promoted as a viable alternative to non-native (European) vegetation</li> </ul>

### Summary and conclusions

The qualitative data discussed in this paper supported much of the quantitative data generated by closed items in the broader survey undertaken by Mazur (1997). While some respondents had reservations about seeing wild animals in captivity, they largely had favourable attitudes towards zoos' conservation role and rated their performance highly (Table 4). Respondents appeared concerned about conditions for zoo animals and were aware of and

appreciated the shift towards more frequent use by zoos of naturalistic enclosures (Table 5). However, some respondents seemed to be confusing the term 'natural' with the simulated conditions in zoo exhibits (Table 5). The data suggest that respondents had some pre-existing awareness of the concepts of biodiversity, adaptation, habitat and certain environmental problems or had learnt about these matters through their zoo visit (Tables 6 & 8). Respondents' appreciation of these and other values and of the need for conservation was readily apparent (Tables 7 & 9), as was their recognition that environmental problems have human causes which society has a responsibility to address (Tables 10, 11 & 12).

### *'the degree to which zoo visitors obtain or refine their awareness of conservation from their zoo experience remains unclear'*

There are certain implications for zoo education policy if the findings from this sample of approximately 1600 respondents are representative of Australian zoo visitors. Approximately 21% of the responses included a conservation-oriented comment. This figure could be used to demonstrate a low incidence of environmental learning at the zoo, if we rule out the possibility that the questionnaire design discouraged visitors from responding to the open-ended item. This may not come as a surprise to some, given certain analyses which suggest that zoo visitors seek a recreational experience rather than improving their knowledge or understanding of wildlife and conservation (Kellert & Dunlap 1989). Where visitors have demonstrated interest in and expectations of environmental learning experiences at the zoo (Mazur 1997), the degree to which zoo visitors obtain or refine their awareness of conservation from their zoo experience remains unclear.

To what degree is this awareness a function of zoo education programs, the topical nature of conservation in the popular media, or the intensity and success of zoos' public relations campaigns which feature their conservation related activities? It seems likely that all have some influence on zoo visitors. However, the fact that 70 percent of the conservation-oriented replies were about being reminded of some environmental issues suggests that zoos do play an important role in reinforcing conservation messages.

Should zoo education do more than affirm the existing knowledge of its visitors? Official mandates such as the National Strategy for the Conservation of Biological Diversity implore environmental institutions to inform the public about conservation and to offer guides explaining how people can contribute to biodiversity conservation (Table 1). The data from the zoo survey which suggests that some zoo visitors have largely generalised knowledge about environmental conservation (Tables 6, 8, 9, 10, 11 &



12) and demonstrate low levels of activism (Mazur 1997) suggests there is more work to be done. It may also be that because most zoo visitors do not have strong ties to conservation groups, and show less interest in learning about conservation activism relative to other topics (see Mazur 1997) zoos' education programs are not effectively oriented towards attracting conservation-minded people or facilitating more 'environmentally-conscious' behaviours in existing visitors. Mazur (1996 & 1997) found those visitors with environmental affiliations and higher levels of education were more discerning about zoos' conservation policies and supported the notion that zoos should promote environmental advocacy

Questions about the effectiveness and appropriate focus for zoo education programs are embodied in criticisms about zoos which come from outside and inside the zoo community. The zoo often is labelled as overly-conservative when some members of the zoo community promote the notion that raising environmental awareness can and should be constituted by passive, apolitical learning (Mazur 1997). When zoos assume this traditional stance, they miss the opportunity to educate their visitors about progressive environmental knowledge and values (Seidman 1993, World Society for the Protection of Animals and the Born Free Foundation 1994, Jamieson 1995, Mazur 1997). This discourse reflects the broader debate about whether environmental education should merely focus on increasing an individual's awareness and motivation or improve their capacity and enthusiasm for critically evaluating and changing conventional societal practices.

If zoos are to overcome their reputation as staid and old-fashioned organisations (Mullan & Marvin 1987) and make a vital contribution to arresting declining global biodiversity they will need to challenge the political values of the 'Far Right' that have facilitated a 'business as usual' approach to Western environmental management (Doyle & Walker 1996). Zoos do provide an important community service by recounting the endangered species issues to its visitors. These civic achievements can be further enhanced by providing visitors with tangible information about environmental advocacy. In so doing, zoos would empower their visitors and demonstrate to critics and the general public that the zoo is a useful conservation organisation worthy of support. 🌀

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