
ATTITUDES TOWARD THE ENDANGERED EASTERN BARRED BANDICOOT

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Abstract. *Endangered species recovery requires a rapid, concerted effort on several fronts, including an understanding of sociological considerations such as the values and attitudes of local people. We examined the values and attitudes of residents living in and around the City of Hamilton, Victoria, toward the endangered, mainland Australia population of eastern barred bandicoots (*Perameles gunnii*) and bandicoot conservation efforts using a sample telephone survey. Over 90% of those surveyed indicated that they favored efforts to save the bandicoot and nearly 100% believed that bandicoots have a right to exist. Support was broad and varied little with respect to gender, age, level of edu-*

cation, or income. Attitude scale scores supported these results, with most people scoring relatively high on moralistic and naturalistic/ecologistic scales and relatively low on utilitarian and negativistic scales. Of people surveyed, 45.5% owned cats. Cats pose a major threat to bandicoot survival because of predation and disease transmission. Although cat owners and nonowners displayed similar levels of support for bandicoot conservation, 70% of cat owners allowed their cats out at night, when bandicoots are most active. The results suggest that the local public would support new conservation measures invoked to enhance bandicoot survival and represents a potentially valuable source of volunteer labor. A public affairs program should educate the public about the role of domestic cats in bandicoot decline and explicitly point out the contradiction between strong support for bandicoot conservation and the behavior of permitting cats to roam free at night. To increase chances of success, managers and conservationists should recognize the importance of nonbiological aspects, such as values and attitudes of local people, to endangered species restoration efforts.

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INTRODUCTION

In this article we examine the values and attitudes of residents living in and around the city of Hamilton, Victoria, toward eastern barred bandicoots (*Perameles gunnii*) and bandicoot conservation efforts. Eastern barred bandicoots are relatively small (500–900 g) marsupials with long thin snouts, strong curved claws, and pale bars on their hindquarters. Primarily nocturnal, bandicoots feed mainly on soil invertebrates inhabiting the grasslands and grassy woodlands of Victoria and Tasmania (Seebeck et al. 1990). Eastern barred bandicoots are very fecund; their 12.5 day gestation period is the shortest of any mammal and they are capable of producing one to five young every 3–4 months.

The Australian mainland population of the bandicoot is critically endangered, sur-

viving in the wild in a single, small, free-ranging population in and around Hamilton (Minta et al. 1990, Seebeck et al. 1990). A larger population of animals survives on Tasmania, but recent evidence indicates that these populations may represent distinct subspecies (Robinson et al. 1990). The Hamilton population is rapidly declining, and its loss is imminent (Lacy and Clark 1990). Large-scale, historic decline of the bandicoot resulted from systematic habitat alteration and the impacts of introduced exotics (Clark et al. 1990, Seebeck et al. 1990). More recently, the Hamilton population has declined because of predation and disease from introduced predators (especially domestic and feral cats, *Felis catus*), pesticides, poisons, motor vehicle mortalities, local habitat reduction, (Brown 1989, Lenghaus et al. 1990, Seebeck et al. 1990) and, undoubtedly, stochastic demographic, genetic, and environmental processes (Shaffer 1981). Of known mortalities in the Hamilton bandicoot population in recent years, 49% were caused by road trauma and 23% were either directly (i.e., predation) or indirectly (i.e., transmission of toxoplasmosis) attributable to cats (Brown 1989, Lenghaus et al. 1990).

Bandicoot recovery will require a rapid, concerted effort on several fronts (see Kellert and Clark 1991, Reading et al. 1991). For example, sociopolitical factors are the most important forces causing the decline, endangerment, and extinction of many species (Kellert 1985). One of the sociological factors is the attitude of local people toward the species and efforts to conserve it. As Glass and Moore (1990:548) stated, "While biophysical interrelationships set limits of capability, managerial objectives for wildlife species also are determined by attitudes, perceptions, and the economic value placed upon the species." Unfortunately, as Tear and Forester (1992:360)

suggest, "most endangered species protection efforts have been characterized by a general lack of concern for social factors and human perceptions." In some instances, lack of consideration of local public attitudes has had disastrous consequences (e.g., see Hook and Robinson 1982 and Belden et al. 1990).

In general, values and attitudes are influenced by a number of factors including (1) a person's understanding of experiences, interactions, and information (knowledge); (2) motivations and perceptions; (3) the cultural and social setting; (4) the context (e.g., mode, scale, measure, and constituency) of the perception or valuation; and (5) the influence of social institutions (Rokeach 1972, Randall 1986, Chaiken and Stangor 1987). Values and attitudes, as well as behaviors, are not fixed, but change with changing contexts, knowledge, and experiences (Sinden and Worrell 1979, Williams 1979).

Important factors influencing the values and attitudes toward a wildlife species include knowledge of its characteristics (such as its phylogeny, morphology, size, sentient capacity), its history of and potential for human/wildlife conflict, its perceived worth or value, its cultural and symbolic importance, its population and conservation status (i.e., rare, threatened, or endangered), public attitudes toward animals and wildlife in general, and moral and ethical issues associated with animal rights (Kellert in press, Reading and Kellert in press). It is far easier to garner support for large, charismatic, and well-known species with high public appeal than for lesser known, "lower" life forms or species with real or perceived negative impacts on local communities, such as large predators (Westman 1990, Reading and Kellert in press).

Table 1. Demographic Comparison of Eastern Barred Bandicoot Survey Samples With 1986 Hamilton Census Data

Bandicoot Survey Demographic Group	Bandicoot Survey Sample Data (1991)		Census Demographic Group	Hamilton Census Data (1986)	
Gender					
Male	42.6%	(N = 86)	Male	47.0%	(N = 3027)
Female	55.0%	(N = 111)	Female	53.0%	(N = 3410)
Unstated	2.5%	(N = 5)			
Age Category					
18-35 Yrs	31.3%	(N = 62)	18-29 Yrs	23.8%	(N = 1784)
			30-39 Yrs	9.8%	(N = 736)
36-55 Yrs	34.3%	(N = 68)	40-54 Yrs	31.4%	(N = 2360)
>55 Yrs	34.3%	(N = 68)	>54 Yrs	35.0%	(N = 2629)
Education Level					
<12 Yrs	55.0%	(N = 111)	Unqualified	65.5%	(N = 4939)
High School	18.8%	(N = 38)	Other	9.7%	(N = 734)
Trade	8.4%	(N = 17)	Trade	8.8%	(N = 666)
<F616196Graduate	14.9%	(N = 30)	≥Graduate	7.0%	(N = 250)
Unstated	3.0%	(N = 6)	Unstated	8.9%	(N = 675)
Annual Gross Income					
0-\$20,000	30.7%	(N = 62)	0-\$18,000	77.0%	(N = 5810)
\$21-\$40,000	33.7%	(N = 68)	\$18-\$40,000	16.3%	(N = 1238)
>\$40,000	14.4%	(N = 29)	>\$40,000	0.8%	(N = 66)
Unstated	21.3%	(N = 43)	Unstated	5.7%	(N = 431)
Number of Cats Owned					
None	54.5%	(N = 109)			
One	31.0%	(N = 62)			
>One	14.5%	(N = 29)			

METHODS

The values and attitudes of local people toward eastern barred bandicoots and their conservation was sampled via a telephone survey. A sample of 312 residences in and around Hamilton, Victoria, was randomly selected from the telephone directory. All surveys were conducted by Australian citizens. Interviewers introduced themselves as research assistants in a graduate research project supported, in part, by the Victorian Department of Con-

servation and Environment (now the Department of Conservation and Natural Resources) and directed at determining local values and attitudes toward eastern barred bandicoots and bandicoot conservation efforts. Of the 312 households selected, 280 (89.7%) were contacted, and 202 households agreed to participate. Thus, the participation rate for targeted households was 64.7% and the participation rate for contacted households was 72.1%. The survey sampled 3.14% of Hamilton's adult (18

years) population. Table 1 compares the survey samples with 1986 Hamilton census data. Although demographic categories differed slightly, distributions compared favorably for all categories except annual gross income. However, the survey requested annual gross income of the *household*, whereas the census requested annual gross income of the *individual*.

The survey consisted of 22 Likert formatted, forced response questions to assess attitudes and 7 demographic/participation questions and was conducted November 12–20, 1991. Four attitude scales were constructed based on principal component and factor analyses of the individual attitude questions. Scales comprised 4 to 7 questions addressing a similar basic attitude toward bandicoots and bandicoot conservation. Specific questions and scale procedures are available upon request. The scales, though conceptually based on a typology of basic attitudes toward wildlife developed by Kellert (1980) and using the same labels, consisted of question items unique to this study. Brief definitions of the four basic attitude scales are:

Negativistic: Strong dislike or indifference toward eastern barred bandicoots and their conservation.

Utilitarian: Strong support for the direct utilization of wildlife and subordination of wildlife habitat for human use.

Moralistic: Strong concern for the possible infliction of cruelty, harm, and exploitation of eastern barred bandicoots and strong interest in their nonmarket values.

Naturalistic/Ecologistic: Strong interest in direct outdoor recreational contact with eastern barred bandicoots and in their ecological value.

Attitude scales were standardized on a 100-point scale. Scores obtained represent an index with which to compare basic attitudes of different groups.

Attitude scales and responses to individual questions were grouped by the demographic/participation questions and analyzed for significant differences. Individual questions were examined using likelihood ratio chi-square analyses. Multiple means (attitude scales) were compared using analysis of variance (ANOVA). Pairwise comparisons were performed using Tukey's studentized range HSD test (Tukey 1977). The Tukey-Kramer adjustment (harmonic mean adjustment) was performed for comparisons between groups with unequal sample sizes.

RESULTS

The study found an extremely high level of support for eastern barred bandicoots and efforts to conserve them among people living in and around Hamilton. Over 90% of people surveyed indicated that they favored efforts to save the bandicoot and 99% believed that bandicoots have a right to exist (Table 2). Support was broad and varied little with respect to gender, age, level of education, or income (Table 2). The only significant variation was a lower level of support among individuals with a high school diploma compared with individuals who did not finish secondary school and individuals who possessed additional education ($X^2 = 13.26$, $df = 6$, $P < 0.05$). A relatively large number of people (12.9%) perceived themselves as having participated in bandicoot conservation efforts.

Most people also recognized that bandicoots are endangered. Almost 80% of all people surveyed agreed that bandicoots are seriously endangered, and only 10.4% disagreed (Table 3). Again, respondents of

Table 2. Level of Support For Eastern Barred Bandicoot Conservation

Sample Group	Moderately or Strongly Agree(%)	Neither Agree nor Disagree(%)	Moderately or Strongly Disagree(%)	N
I Favor Efforts To Save The Bandicoot				
General Public	90.6	2.5	6.9	202
Gender				
Male	89.5	8.1	2.3	86
Female	91.9	5.4	2.7	111
Age				
18-35 Years	91.9	3.2	4.8	62
36-55 Years	94.1	5.9	0.0	68
Over 56 Years	85.3	11.8	2.9	68
Education*				
Under 12 Years	91.0	5.4	3.6	111
High School Diploma	79.0	18.4	2.6	38
Graduate or Higher	97.9	2.1	0.0	47
Income				
0-\$20,000	88.7	8.1	3.2	62
\$21-\$40,000	92.7	4.4	2.9	68
Over \$40,000	96.6	3.5	0.0	29
Cat Owner?				
Yes	91.2	4.4	4.4	91
No	89.9	9.2	0.9	109
Bandicoots Have A Right To Exist				
General Public	99.0	0.0	1.0	202
Gender				
Male	98.8	0.0	1.2	86
Female	99.1	0.0	0.9	111
Age				
18-35 Years	100.0	0.0	0.0	62
36-55 Years	100.0	0.0	0.0	68
Over 56 Years	97.1	0.0	2.9	68
Education				
Under 12 Years	98.2	0.0	1.2	111
High School Diploma	100.0	0.0	0.0	38
Graduate or Higher	100.0	0.0	0.0	47

Table 2. Level of Support For Eastern Barred Bandicoot Conservation (Continued)

Sample Group	Moderately or Strongly Agree (%)	Neither Agree nor Disagree (%)	Moderately or Strongly Disagree (%)	N
Bandicoots Have a Right To Exist (Cont.)				
Income				
0-\$20,000	96.8	0.0	3.2	62
\$21-\$40,000	100.0	0.0	0.0	68
Over \$40,000	100.0	0.0	0.0	29
Cat Owner?				
Yes	97.8	0.0	2.2	91
No	100.0	0.0	0.0	109

*Categories significantly different at $P < 0.05$.
Scores compared using likelihood ratio chi-square analyses (see text for exact scores).

different demographic groups were strikingly similar in their responses. However, of people who did not agree that bandicoots were seriously endangered, significantly fewer males (4.6%) than females (13.6%) were undecided ($X^2 = 8.79$, $df = 2$, $P < 0.05$). Not surprisingly, significantly more people who perceived themselves as having participated in bandicoot conservation efforts (96.2%) believed that bandicoots were seriously endangered than did people who did not perceive themselves as having participated (77.0%; $X^2 = 8.17$, $df = 2$, $P < 0.05$).

Of people surveyed, 45.5% owned cats, and 14.5% owned more than one (Table 1). Because cats pose a major threat to bandicoot survival as a result of predation and disease transmission (Lenghaus et al. 1990, Seebeck et al. 1990), a number of programs and restrictions have been imposed or suggested to encourage more responsible pet ownership (Arnold et al. 1990). Several questions addressed the effect these programs and restrictions have had on the general public and on cat own-

ers. Cat owners and nonowners displayed similar levels of support for bandicoot conservation and similar recognition of the endangered status of the species (Tables 2 and 3). In fact, more cat owners (17.6%) than nonowners (9.0%) stated that they had participated in bandicoot conservation efforts. Not surprisingly, however, if cat owners had to choose, they were significantly ($X^2 = 16.33$, $df = 4$, $P < 0.01$) more likely to choose cats over bandicoots (51.6%) than were nonowners (25.7%; Table 4). Alternatively, cat owners were not more likely than nonowners to be against bandicoots because of the restrictions they cause to cat owners ($X^2 = 3.79$, $df = 4$, $P = 0.44$; Table 4). Aside from the fact that more elderly people indicated they were against bandicoots because of restrictions to cat owners, there were no significant differences among demographic groups for either of these two questions.

The degree of responsible pet ownership displayed by cat owners in and around Hamilton varied. While the vast majority (93.4%) of cat owners surveyed indicated

Table 3. I Believe Bandicoots Are A Seriously Threatened Species

Sample Group	Moderately or Strongly Agree (%)	Neither Agree nor Disagree (%)	Moderately or Strongly Disagree (%)	N
General Public	79.6	10.0	10.4	201
Gender*				86
Male	79.1	4.7	16.3	
Female	80.0	13.6	6.4	110
Age Category				62
18–35 Years	77.4	9.7	12.9	
36–55 Years	82.4	11.8	5.9	68
Over 55 Years	79.4	8.8	11.8	68
Education Level				111
Under 12 Years	81.1	10.8	8.1	
High School Diploma	79.0	7.9	13.2	38
Graduate or Higher	76.6	10.6	12.8	47
Annual Gross Income				62
0–\$20,000	80.7	9.7	9.7	
\$21–\$40,000	82.4	10.3	7.4	68
Over \$40,000	82.7	6.9	10.3	29
Cat Ownership				109
No Cats	79.8	10.1	10.1	
1 Cat	83.9	6.5	9.7	62
>1 Cat	69.0	17.2	13.8	29
Participate In Bandicoot Conservation Efforts?*				174
No	77.0	11.5	11.5	
Yes	96.2	0.0	3.8	26

*Categories significantly different at $P < 0.05$

**Categories significantly different at $P < 0.01$.

Scores compared using likelihood ratio chi-square analyses (see text for exact scores).

that they had had their cat(s) sterilized, 70.0% of cat owners allowed their cats out at night, when bandicoots are most active (Brown 1989, Dufty 1991). There was no significant variation with respect to demographic groups for either question.

Bandicoots are also subject to deaths from motor vehicles. Most people (82.9%)

indicated a willingness to slow down in response to bandicoot road signs and only 9.6% indicated they would not travel more slowly (Table 5). Most sample groups responded similarly; however, significantly more young people indicated they would or do disregard bandicoot signs ($X^2 = 14.97$, $df = 3$, $P < 0.001$).

Table 4. Cat Ownership and Bandicoot Conservation

Sample Group	Moderately or Strongly Agree(%)	Neither Agree nor Disagree(%)	Moderately or Strongly Disagree(%)	N
If I had to choose between having pet cats or wild bandicoots, I would choose cats				
General Public	37.6	15.8	46.5	202
Cat Ownership**				
Yes	51.6	13.2	35.2	91
No	25.7	18.3	56.0	109
I am against bandicoots because of the restrictions they cause to cat owners				
General Public	9.0	12.0	79.0	201
Cat Ownership				
Yes	11.1	13.3	75.6	90
No	7.3	11.0	81.7	109

*Categories significantly different at $P < 0.05$.

**Categories significantly different at $P < 0.01$.

Scores compared using likelihood ratio chi-square analyses (see text for exact scores).

Bandicoots are a source of pride to many Hamilton residents. Their symbolic importance was illustrated by the large proportion of respondents (80.6%) who agreed that bandicoots represent an important part of Hamilton's natural heritage (Table 5) and by the efforts of some local residents to change the common name of the species to the Hamilton barred bandicoot. In addition, there has been some discussion of utilizing bandicoots as a tourist attraction (M. Robson, personal communication). Slightly more than half of the people surveyed (54.3%) believed bandicoots should be used to draw tourists; 35.2% did not (Table 5). Similar results were obtained for people who expressed an interest in observing bandicoots in the

wild (58.0%) and for those who did not (35.2%; Table 5). There was no significant demographic variation.

Few Hamiltonians (35.2%) believed that the people interested in saving bandicoots should pay the costs of those efforts (Table 5). This was especially true of 36–55-year-old people (26.5%) with more education. Almost 40% of those who never finished secondary school, 36.8% of people with high school diplomas, and only 24.4% university graduates felt people interested in conserving bandicoots should pay the costs of conserving them. These differences were significant ($X^2 = 11.84$, $df = 4$, $P < 0.05$ and $X^2 = 14.04$, $df = 6$, $P < 0.05$; respectively).

Most people (83.5%) did not agree that

Table 5. Percent of the General Public Responding to Selected Questions on Eastern Barred Bandicoots and Their Conservation

Sample Group	Moderately or Strongly Agree (%)	Neither Agree nor Disagree(%)	Moderately or Strongly Disagree(%)	N
I would/do slow down on roads marked with bandicoot signs	82.9	7.5	9.6	199
We should not capitalize on bandicoots as tourist attractions	35.2	10.5	54.3	199
I would not be keen on watching bandicoots in the wild	34.5	7.5	58.0	200
The people who want to save the bandicoots should pay the costs of saving them	35.2	10.6	54.3	199
Any animal that cannot survive on its own deserves to go extinct	12.5	4.0	83.5	200
Bandicoots should be conserved because people have an obligation to conserve them	62.0	9.0	29.0	200
Bandicoots should be conserved because they represent an important part of Hamilton's natural heritage	80.6	6.0	13.4	201
Bandicoots should be conserved because they are an important part of the natural world	89.1	4.5	6.4	201
Bandicoots should be conserved so future generations can enjoy them	90.5	5.5	4.0	201

animals that cannot survive on their own deserve to become extinct (Table 5). This was significantly less true for people over 55 years of age (69.1%) compared with younger people (88.7–92.6%; $X^2 = 16.45$, $df = 4$, $P < 0.01$) and for people with annual gross household incomes of under \$20,000 (77.4%) compared with people with higher incomes (93.1–94.1%; $X^2 = 10.33$, $df = 4$, $P < 0.05$). People who

stated they had participated in bandicoot conservation efforts were significantly more likely to disagree that animals that cannot survive on their own deserve to become extinct (100%) than people who stated they had not participated in bandicoot conservation efforts (81.0%; $X^2 = 10.12$, $df = 2$, $P < 0.01$).

Several questions addressed the values people place on bandicoots and their con-

Table 6. Comparison of Mean Attitude Scale Scores Among Population Sub-Samples

Demographic Group	Attitude Scale				N
	Moralistic	Nat./Ecol.	Utilitarian	Negativistic	
General Public	66.7	60.8	23.8	16.6	202
Gender					
Male	70.2	61.8	23.4	16.6	86
Female	63.9	60.5	24.2	16.4	111
Age Category				**	
18–35 Years	66.5	59.5	22.2	15.5	62
36–55 Years	71.7	67.1	21.9	13.0	68
Over 55 Years	62.5	56.6	27.8	21.8	68
Education Level					
Under 12 Years	64.4	59.2	25.3	17.1	111
High School Diploma	65.8	60.9	25.0	19.5	38
Graduate or Higher	73.4	64.6	20.2	13.8	47
Annual Gross Income					
0–\$20,000	65.5	63.9	25.0	18.9	62
\$21–\$40,000	70.6	63.6	21.3	14.0	68
Over \$40,000	70.3	60.8	24.1	15.5	29
Cat Ownership		*			
No Cats	65.8	60.8	23.5	15.9	109
1 Cat	72.0	66.9	22.6	15.7	62
>1 Cats	60.3	50.0	28.9	21.8	29

* Categories significantly different at $P < 0.05$.

** Categories significantly different at $P < 0.01$.

Scores compared using likelihood ratio chi-square analyses (see text for exact scores).

servation (Table 5). Most Hamilton residents (62.0%) believed people have an obligation to conserve bandicoots; 29% felt no obligation. The vast majority of those surveyed (89.1%) believed bandicoots should be conserved because of their importance to the natural world, while only 6.4% disagreed. Similarly, 90.5% of those surveyed stated a desire to conserve bandicoots for future generations; a mere 4% did not. People over 55 years of age were significantly less likely to agree that bandicoots should be conserved both be-

cause people are obligated to conserve them (50.0%, $\chi^2 = 19.39$, $df = 4$, $P < 0.01$) and because bandicoots represent an important part of the natural world (79.4%, $\chi^2 = 8.90$, $df = 2$, $P < 0.05$) than were younger people (63.9–70.6% and 93.6–94.1%, respectively).

Attitude Scales

Basic attitudes toward eastern barred bandicoots and bandicoot conservation were assessed using attitude scales. Most people

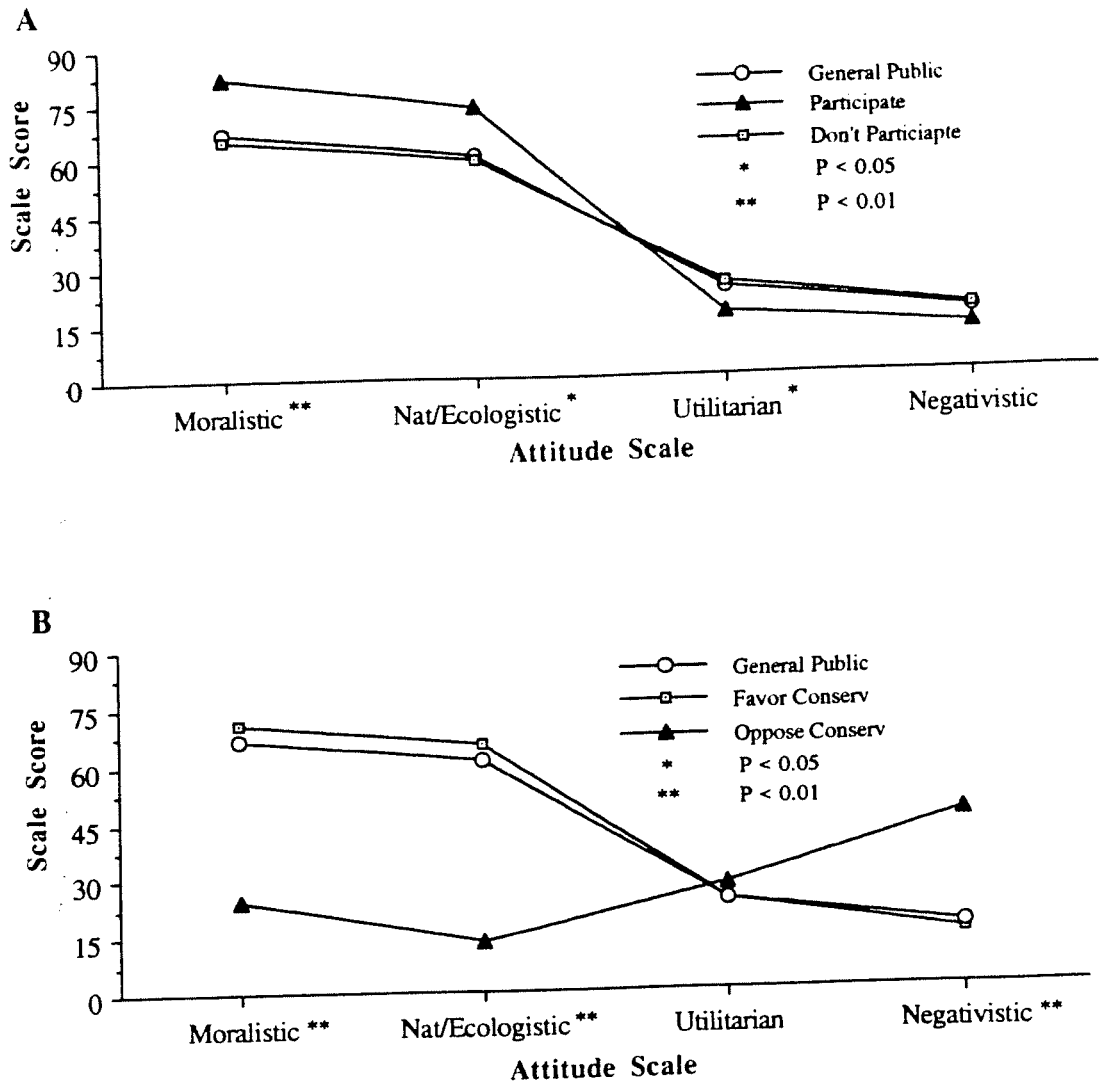


Figure 1. Mean attitude scale scores of the general public compared with people who (A) have and have not participated in and (B) favor and oppose eastern barred bandicoot conservation efforts. Mean scale scores compared using ANOVA (see text for exact scores).

scored relatively high on the moralistic and naturalist/ecologistic scales and relatively low on the utilitarian and negativistic scales (Table 6). As with the individual attitude questions, there was little variation in attitude scale scores among the different demographic groups analyzed. The only

significant demographic variation was higher negativistic scores among older respondents ($\chi^2 = 5.64$, $df = 2$, $P < 0.01$; Table 6). These results support the high level of support for bandicoot conservation indicated in Table 2.

Cat owners attitude scores were similar

to those of the general public, except for significantly lower naturalistic/ecologicistic scores by owners of more than one cat ($F = 3.24$, $df = 2$, $P < 0.05$; Table 6).

Individuals who stated they participated in bandicoot conservation efforts scored significantly higher on the moralistic ($F = 10.57$, $df = 2$, $P < 0.01$) and ecologicistic/naturalistic ($F = 5.26$, $df = 2$, $P < 0.05$) scales and significantly lower on the utilitarian scale ($F = 5.49$, $df = 2$, $P < 0.05$) than those who did not participate (Figure 1a). People who did not participate in bandicoot conservation efforts scored more similarly to the general public. Similarly, individuals who favored bandicoot conservation efforts scored significantly higher on the moralistic ($F = 34.33$, $df = 2$, $P < 0.001$) and ecologicistic/naturalistic ($F = 27.00$, $df = 2$, $P < 0.001$) scales and lower on the negativistic scale ($F = 33.04$, $df = 2$, $P < 0.001$) than those who were not in favor of those efforts (Figure 1b). However, in this case, people who favored bandicoot conservation efforts scored more similarly to the general public.

DISCUSSION

Endangered species conservation programs are complex, urgent tasks requiring attention to all biological and nonbiological dimensions of the recovery challenge (Reading et al. 1991). Especially important are sociological considerations, such as the values and attitudes of local people. As Reading and Kellert (in press:9) suggest, "Attitudinal data is useful for devising socially acceptable policies and for developing more effective public relations campaigns." This article was an initial attempt to analyze the values and attitudes of local people living in and around Hamilton. The results have several implications for future bandicoot conservation efforts and sociological studies and for endan-

gered species conservation programs in general.

The results of this study demonstrate great support for eastern barred bandicoots and efforts to conserve them among residents living in and around Hamilton, Victoria. Most people surveyed also recognized that bandicoots are seriously endangered. Although some other trends were apparent, people grouped by age, gender, income, and education displayed few statistical differences in their values and attitudes toward bandicoots. Overall, respondents were remarkably homogeneous in their values and attitudes toward bandicoots. These results were encouraging. Other studies found greater antagonism among local publics due to real and perceived restrictions resulting from endangered species legislation (Kellert 1986, 1991; Bath 1989; Reading and Kellert in press).

The local support enjoyed by bandicoots appeared partially related to the animal's symbolic importance to many Hamilton residents. Studies of attitudes toward bald eagles (*Haliaeetus leucocephalus*; Glass and Moore 1990) and golden lion tamarins (*Leontopithecus rosalia*; Kleiman et al. 1990) also found high support for symbolically important species. The results suggest that the local public would both support new conservation measures invoked to enhance bandicoot survival and volunteer their labor. Indeed, 12.9% of people surveyed stated they had participated in bandicoot conservation efforts. Local citizens have clearly played an important role in bandicoot conservation efforts to date (Brown 1989, Arnold et al. 1990), and a recently formed nongovernmental organization, Friends of the Eastern Barred Bandicoot, bodes well for the future. Such volunteerism requires encouragement, guidance, and support by officials and conservationists working to-

ward bandicoot recovery. Public affairs programs should work to capitalize on the symbolic importance of the bandicoot and to maintain, strengthen, and mobilize the already broad base of support (Cutlip and Canter 1964).

Domestic and feral cats prey upon bandicoots and transmit toxoplasmosis to them (Lenghaus et al. 1990, Seebeck et al. 1990). Some restrictions have already been placed on cat owners, and although this issue has been contentious (C. Patrick, unpublished data), cat owners generally did not display values or attitudes significantly different from the general public. These results should allay the fears of local politicians reluctant to institute new, more restrictive pet legislation. Nevertheless, efforts should be made to neutralize vocal opposition (Cutlip and Center 1964).

Most cat owners, although supportive of bandicoot conservation efforts, allow their cats out at night when bandicoots are most active. A public affairs program should attempt to change the behaviors of cat owners who allow their cats out at night. Although changing behaviors is difficult, it is not impossible (Williams 1979, Kaplan and Kaplan 1982). Dissonance reduction theory suggests that behaviors are most easily changed when individuals become aware of internal contradictions between their values or attitudes and their behaviors (Williams 1979, Chaiken and Stangor 1987). The public affairs program should therefore educate the public about the role of domestic cats in bandicoot decline and explicitly point out the contradiction between strong support for bandicoot conservation and the behavior of permitting cats to roam free at night. Of course, if not carefully administered, such a strategy could "backfire"; resulting in cat owners reducing their dissonance by reducing their support for bandicoot conservation.

Additional sociological studies should

attempt to (1) identify variation among important local publics and demographic groups more clearly, (2) perform more detailed, expanded analyses of these publics and groups, and (3) broaden the analyses to include the entire population of the state of Victoria. Specifically, value and attitude studies should be expanded to cover more general attitudes toward nature, wildlife, endangered species, conservation programs, and agencies and organizations involved in recovery programs. Respondents should be categorized by additional demographic characteristics (i.e., race, occupation, length of residence, rural vs. urban residents) and by participation in related activities (i.e., hunting, fishing, bird watching, watching nature television, membership in conservation organizations,). Research should delve into the full array of values associated with wildlife (see Kellert 1980, Rolston 1981). In addition to values and attitudes, other important sociological dimensions to consider are discussed in Kellert (1985), Kellert and Clark (1991), and Reading et al. (1991).

Several of the recommendations made for the bandicoot recovery program apply to endangered species conservation efforts in general. The values and attitudes of local and regional publics is an important social variable that could influence the success of recovery programs. Only when managers and conservationists begin explicitly to recognize and address the several important nonbiological aspects of endangered species conservation and recovery efforts, such as the values and attitudes of local people, will programs become more socially acceptable (Kellert 1985, Kellert and Clark 1991, Reading and Kellert in press).

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