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Abstract: We designed an instrument to measure attitudes about a variety of animal use issues, collect information on animal-related activities, and determine demographic characteristics of the sample. We administered the instrument to 151 Animal Rights Information and Education Service (ARIES) and 150 National Animal Damage Control Associaton (NADCA) members. Based on analysis of the data, we concluded that these 2 groups differ greatly on their attitudes about human use of animals. In addition, they differ greatly in background and types of activities in which they participate. Thus, attempts to bring these groups together for discussion must start with the realization they are beginning with very little common ground between the groups. We offer these observations not to discourage attempts at dialogues but simply as a caveat to those involved.

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Direct and indirect communication between groups and individuals holding different attitudes is essential and often inevitable. Frequently, key individuals from differing groups are brought together for discussion in hope that they might: (1) establish some common ground for future cooperative efforts, or (2) gain a better understanding of the viewpoints or attitudes of detracting groups. Within the wildlife management arena, recent examples of this include a symposium on hunting, and focus groups brought together for strategic planning within United States Department of Agriculture, Animal and Plant Health Inspection Service (APHIS), Animal Damage Control. An understanding of the attitudes held by groups on both sides of an issue may facilitate dialogue by eliminating preconceived notions that might hinder effective communication. In addition, proponents on both sides of the issue will affect future policies.

In Tract II of *Morals*, Plutarch discussed vegetarianism, cruelty to animals, animals as creations equal to humans, and justice to other living creatures (Goodwin 1889). These, and other animal use issues, are with us today. Schmidt (1989*a*) observed that while the majority of the general public may not support animal rights, it is apparent that animal welfare issues concern most people. There is a clear demarcation between animal rights and animal welfare issues. Underlying philosophies of animal rights and animal welfare are complex and difficult to summarize. In general, animal rightists believe that animals have the same right to life as people, whereas animal welfarists are concerned with reducing pain and suffering to animals (Schmidt 1989*b*). However, it is unfair to attribute the animal rights movement with extreme stances such as supporting the right of an animal to vote. More accurately, animal rights proponents believe that animals are sentient beings that experience the same emotions as humans and should be treated with the same respect afforded humans. In addition, animal welfare advocates are involved in developing standards for housing and care of animals. In reality, the distinction becomes vague as individuals confuse philosophies, or are sympathetic to portions of each. What is clear is that animal rights groups have rallied a segment of the population to their cause (Int. Assoc. Fish and Wildl. Agencies [IAFWA] 1990). As animal rights groups focus more attention on wildlife-related activities, public opinion about the role of wild animals in society will be impacted (Hooper 1988, Schmidt 1989*a*,*b*).

Several studies have provided insight into the attitudes, skills, and demographics of animal rights activists. Research-based studies have described animal rights activists as "highly-educated, relatively well-to-do, female professionals" (Richards and Krannich 1991) who will "continue to challenge both the methods and objectives of wildlife damage management" (Wywialowski 1991). Within the popular literature devoted to animal rights, activists have been described as well-organized and well-informed in techniques such as media manipulation (Animals' Agenda 1989*a*, Greenville 1989, People for the Ethical Treatment of Animals [PETA] 1991*a*), crowd psychology (Plous 1989), educational methods (Finch 1988, Schwartz 1989), and protest skills (Animals' Agenda 1989*b*). The image promoted by animal rights groups is that of a young, articulate, and dedicated activist (PETA 1991*b*).

While studies of animal rights activists are not unique, little research compares directly their attitudes to those of groups involved in professional wildlife management. We developed a measurement tool to assess attitudes and demographics of these groups. Herein, we consider the communications barriers raised by attitudinal differences evidenced by analysis of our data.

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METHODS

We developed and administered an instrument designed to address a broad array of animal use issues ranging from classroom dissection of laboratory specimens to lethal trapping of nuisance animals. Our attitude scale differs from others that have been developed primarily in the scope of animal use topics addressed.

Instrument Development

The attitude scale was divided into 5 sections. Part I related to the range of organisms included in the respondent's definition of the term "animal." Respondents chose from 7 animal categories: mammals, birds, fish, amphibians, reptiles, insects and spiders, and other invertebrates. Part II of the instrument consisted of 40 attitude statements. Topics for attitude items were based on a review of literature related to animal use and included: general attitudes about animal use, farming and ranching, research, teaching, personal decoration, and wildlife management. Part III contained 8 items dealing specifically with the types of rights an animal might be granted. Items for Parts II and III were of a Likert design where respondents chose one of 5 answers ranging from strongly disagree (value of 1) to strongly agree (value of 5). An "uncertain" category was given a value of three. Part IV contained 12 dichotomous choice items related to the respondent's involvement with animal-related activities and organizations. Part V of the instrument was designed to collect demographic/life history information. The 11 items in this section asked for information about age, gender, race, hometown population size, professional goals, and exposure to rural life.

We used structural equation modeling (Bentler 1986), which supported a 1 factor model that allowed us to total scores over the entire test. We determined content validity by expert review and pilot testing with groups representing polar views toward the issue of animal treatment by humans. One group consisted of animal rights activists attending a regional rally in Atlanta, Georgia; the second, members of the National Animal Damage Control Association (NADCA) attending a symposium in Kansas City, Missouri. Pilot testing showed the instrument to be effective in discriminating between groups. To refine the instrument further, we conducted pilot testing with college students enrolled in a variety of academic majors. Based on comments and questions by the pilot groups, we refined or removed any ambiguous items.

Reliability estimates, or Cronbach's alpha (Crocker and Algina 1986), were high for the groups independently and in combination. Cronbach's alpha for the combined groups was 0.99, the pro-use group had a reliability estimate of 0.92, and the anti-use group estimate was 0.95.

The attitude portion of the test instrument was recoded to score on a scale of 1-5 with a higher score indicating greater opposition to the use of animals and a lower score suggesting greater support for human use of animals. For example, Item 1 reads, "The only rights an animal has are those that are assigned to it by humans." We predicted that animal rights proponents would disagree with that statement, and therefore the item score was recoded so that strong disagreement was given a score of 5. Data were analyzed using SPSS/PC+ (SPSS, Inc. 1990). An *a priori* alpha ≤ 0.05 was determined.

Sampling Procedure

The 2 samples were drawn from the subscriber list of the Animal Rights Information and Education Service (ARIES) and the NADCA membership list. The ARIES Magazine synthesizes animal rights activities across the nation and is therefore of interest to anyone concerned with following the issue. The NADCA is a professional organization for animal damage control practitioners and researchers. Members of NADCA are involved in lethal and nonlethal techniques of wildlife damage management. Therefore, we hypothesized that this group would be more supportive of human use of animals than were ARIES members.

Survey protocol was consistent with that prescribed by Dillman (1978). The ARIES members (n = 151) and NADCA members (n = 150) were randomly chosen from the sampling frame. We mailed cover letters and instruments to 301 subjects in the summer of 1992. We followed up with a reminder/thank you post card 1 week later. At the end of 3 weeks, we mailed a more earnest cover letter and another copy of the instrument to those who had failed to respond. Each mailing of the instrument was accompanied by a self-addressed, stamped return envelope. Instruments returned as undeliverable were dropped from the sample.

Response Rate

When adjusted for non-deliverable surveys, the total combined response rate was 88% (n = 259). The response rate for ARIES was 82% (n = 121). Four respondents were dropped from the sample because of inaccurate addresses. Response rate for NADCA was 94% (n = 138). Three names were dropped from the sample when the instruments were returned as undeliverable.

No attempt to assess nonresponse bias for the pro-use group was made because of the high response rate (Kurzejeski et al. 1992). Attempts were made to contact a sample of ARIES nonrespondents. However, due to high initial response rates by both groups, it was difficult to contact nonrespondents; many had unlisted phone numbers, failed to return calls, or simply did not wish to participate in the study. Three nonrespondents were contacted eventually, but the small sample size made it impractical to draw comparisons.

RESULTS AND DISCUSSION

Attitudes Toward Animal Use

While the results cannot be generalized to all animal rights activists or all wildlife damage managers, the information provides insight into how 2 samples from these groups compare (Table 1).

Total recoded mean for NADCA members ($\bar{x}$ = 1.76, SE = 0.032) was significantly lower (F = 1901.98, 1 df, $P <$ 0.001) than the recoded ARIES mean ($\bar{x}$ = 4.29, SE = 0.043).

Table 1. Mean scores of National Animal Damage Control Association (NADCA) and Animal Rights Information and Education Service (ARIES) respondents (n = 261) to individual items on a scale to measure attitudes towards animal use.[a]

	ARIES		NADCA	
Item	$\bar{x}$	**SE**	$\bar{x}$	**SE**
Total score	4.329	0.043	1.762	0.032
A. Human/animal relations				
1. The only rights an animal has are those that are assigned to it by humans.	4.783	0.058	2.066	0.096
2. There are humane ways to kill animals.	2.517	0.126	1.529	0.058
3. If an animal of any type is allowed to be born, it should be allowed to live out its natural life.	4.109	0.097	1.765	0.069
4. People are more important than animals.	4.127	0.090	1.606	0.079
5. The government should fund research to find ways to reduce animal suffering.	4.292	0.096	2.796	0.097
6. Research involving animals should be more strictly regulated.	4.851	0.050	2.518	0.086
7. Government funds should be allocated for animal welfare societies.	4.091	0.097	1.358	0.056
8. Animal species should have legal representation.	4.542	0.066	1.533	0.079
9. The primary function of animal life is to benefit humans.	4.885	0.035	2.970	0.111
10. Human needs should have priority over animal needs.	4.242	0.075	1.787	0.080
11. Using animals is immoral if the animal suffers in any way.	4.438	0.090	1.788	0.067
12. Animals should have legal rights similar to those for humans.	4.070	0.091	1.219	0.048
B. Farming/ranching				
13. Farmers have the right to kill birds that damage their crops.	4.289	0.075	1.763	0.075
14. Raising animals for their meat is cruel.	4.512	0.082	1.263	0.040
15. Farmers should be allowed to kill deer that damage crops.	4.190	0.081	1.460	0.050
16. Ranchers have the right to kill coyotes who prey on livestock.	4.410	0.070	2.088	0.076
17. Dogs and cats that roam loose and attack livestock should be destroyed.	4.508	0.065	1.577	0.059
C. Research				
18. New medical procedures should be tried on animals before they are tried with humans.	4.455	.085	1.577	0.064
19. Researchers should find alternatives to using animals.	4.918	.025	2.691	0.092
20. Animals should not be used for research purposes.	4.483	.084	1.431	0.055
21. Experimentation with animals is legitimate if it saves human lives.	4.328	.086	1.387	0.053
22. I support university research that is done with animals.	4.653	.070	1.547	0.059
23. Research that uses but does not injure animals is acceptable.	3.730	.110	1.779	0.077
D. Teaching				
24. It is not cruel to use and dispose of live microscopic animals for classroom purposes.	3.529	.111	1.599	0.071
25. It is morally wrong to use animals in classrooms.	4.322	.089	1.431	.055

Table 1. Continued

Item	ARIES $\bar{x}$	ARIES SE	NADCA $\bar{x}$	NADCA SE
D. Teaching (continued)				
26. It is all right to use dead animals in class laboratories if the animals were raised and killed humanely.	4.372	0.083	1.532	0.054
27. Medical and veterinary students need to practice on animals to perfect their skills.	4.084	0.110	1.331	0.040
E. Personal decoration				
28. It is wrong to kill animals for their fur.	4.852	0.057	1.381	0.058
29. It is more acceptable to get fur from farm-raised rather than wild animals.	4.661	0.076	4.138	0.072
30. Make-up should not be used if it has been tested on live animals.	4.746	0.060	1.813	0.074
31. Consumers should boycott companies that routinely use animals for testing their products.	4.836	0.050	1.518	0.057
32. Animals should be used to test personal products, such as soap, before they are marketed for people.	4.811	0.055	1.986	0.068
F. Animal management				
33. Hunting is not an acceptable means for controlling overpopulation in wild animals.	4.631	0.070	1.317	0.071
34. Animal shelters should not destroy strays.	3.327	0.110	1.309	0.045
35. Household invaders such as mice and rats should be destroyed in and around the house.	3.700	0.095	1.446	0.066
36. There should be federally supported animal shelters.	4.115	0.090	1.727	0.071
37. Animals, such as caterpillars, that damage gardens should be exterminated within the garden area.	3.504	0.100	1.655	0.054
38. Trapping is acceptable if it kills the animal swiftly.	4.818	0.050	1.791	0.084
39. Trapping is never acceptable for any reason.	4.562	0.085	1.180	0.048
40. Unwanted dogs and cats must be destroyed.	3.899	0.105	1.848	0.080
G. Animal rights				
41. Research involving animals should be more strictly regulated.	4.823	0.052	2.399	0.084
42. If an experiment will cause an animal to suffer it should not be done.	4.683	0.066	1.906	0.064
43. Animals possess rights, but these are violated by humans.	4.731	0.050	1.558	0.065
44. An animal has as much right to live as a human.	4.636	0.076	1.638	0.082
45. Our decisions about animal uses should not be based on whether or not it has rights.	3.728	0.143	1.986	0.091
46. Zoos violate the right of wild animals to remain free.	4.215	0.082	1.856	0.076
47. Animals are entitled to the same rights as humans.	3.823	0.110	1.245	0.043
48. Animals have as much right as people to remain free.	4.492	0.077	1.599	0.076

[a] all items differed at the $P < 0.001$ level.

The 2 groups differed ($P < 0.001$) on each of the 48 attitudinal items. In no instance did the NADCA sample have a higher recoded score than the ARIES group. The extreme disparity between ARIES and NADCA scores on all 48 attitude variables provides evidence that the groups are very different in their attitudes toward animal use. While this may not be surprising, it casts doubt on the success of "joint" meetings to arrive at "common ground." The evidence presented here suggests that both groups would have to undergo extreme attitudinal shifts on many issues to approach agreement on just about any animal use issue. This seems doubtful. However, wildlife damage managers and animal welfare advocates may not be as far apart attitudinally and as such, might experience greater progress through dialogue.

Phylogenetic Ratings

Respondents were asked to indicate those categories included in their general definition of animal (Table 2). ARIES and NADCA respondents differed significantly ($P \leq 0.001$) in how they rated all but 1 category of animals. Both groups categorized mammals as animals, but fewer NADCA respondents categorized the remaining groups as members of the animal kingdom. How one interprets a certain word may influence one's attitudes about issues involving that word. In this study we found a lack of similarity between NADCA and ARIES respondents relative to the phylogenetic rating of animals. When NADCA respondents speak of animal use they are referring primarily to vertebrates. However, an ARIES respondent involved in the same discussion would more likely include invertebrates in their paradigm. Given the number of invertebrate species in the world as compared to vertebrate species, discussions about humane treatment of animals must encompass a much broader range of organisms for an ARIES respondent.

Participation

The ARIES and NADCA members tended to differ in the types of animal-oriented activities in which they participated (Table 3). In only 2 instances did the 2 groups fail to differ: membership in a local zoological garden organization ($X^2 = 2.02$, 2 df, $P = 0.365$), and past pet ownership ($X^2 = 2.42$, 3 df, $P = 0.489$). Neither group tended to have membership in zoological gardens, and most members of both groups had owned pets in the past. Leisure and professional activities provided little opportunity for interaction between ARIES and NADCA respondents. NADCA respondents were more involved with consumptive uses of wildlife (i.e., hunting and fishing). Even in membership in a zoological garden (where the groups did not differ significantly), the similarity was in lack of participation by either group.

Demographic Characteristics

There was a significant gender difference in demographic characteristics between the 2 groups ($X^2 = 138.56$, 2 df, $P < 0.001$) (Table 4). Males dominated the NADCA sample (95.7%, $n = 133$), while females were the most frequent respondents in the ARIES sample (73.8%, $n = 90$).

All age categories were represented in both samples, but there was a significant difference between the ARIES and NADCA groups ($X^2 = 12.97$, 6 df, $P = 0.004$). A greater proportion of ARIES members were 40 years of age or less (50.8% ARIES vs. 40.3% NADCA). Respondents within both ARIES and NADCA were overwhelmingly white (96.7% and 95.0%, respectively).

Groups did not differ with regard to populations of their hometowns ($X^2 = 16.86$, 9 df, $P = 0.051$). However, groups did differ significantly on childhood environment ($X^2 = 15.55$, 3 df, $P = 0.001$); more NADCA respondents indicated a rural background than did ARIES respondents. A profile of the typical respondent from both groups revealed few similarities. Only 2 of the demographic variables were not significantly different. Perhaps of greater practical significance was the fact that NADCA respondents grew up in a more rural environment. Because most ARIES respondents grew up in bigger cities, there may be little common background on which to build.

If age and gender differences combine to hinder communications (La Fontaine 1978), then animal rights activists and wildlife damage professionals might be expected to have communication difficulties. The ARIES group was dominated by females, 40 years old or less, in contrast to the NADCA group which was composed primarily of men, 40 years old or older.

Table 2. Respondents including category in definition of "animal".

Category	ARIES	NADCA	X^2	df[a]	P
Mammals	122	136	0.23	1	0.630[b]
Birds	118	111	14.94	2	0.001
Fish	115	97	23.34	2	0.000
Amphibians	116	99	23.24	2	0.000
Reptiles	116	102	20.37	2	0.000
Insects	93	70	19.14	3	0.000
Invertebrates	100	71	27.99	3	0.000

[a] degrees of freedom vary due to nonresponse and illegible categories.

[b] groups did not differ significantly.

RECOMMENDATIONS

Wildlife damage management would seem a legitimate component of the wildlife management profession as evidenced by the existence of a working group of The Wildlife Society (TWS) devoted to the topic and several TWS position statements (i.e., Responsible Human Use of Wildlife; Traps, Trapping, and Furbearer Management; Wildlife Damage Control) in support of scientific wildlife damage management. We do not claim that NADCA, and the results of this study, are representative of the attitudes of all wildlife professionals, nor do we claim that ARIES represents all animal rights activists. Nonetheless, the results raise some provoking questions as to the disparity between 1 component of wildlife management and a group that, for the most part, are in opposition to current

Table 3. Respondents answering "yes" to participation comparisons as a measure of people's attitudes towards animal use.

	ARIES		NADCA				
Item	*n*	%	*n*	%	X^2	df	*P*
A. Are you currently a member of any hunting organization?	2	1.6	77	55.4	87.11	2	0.000
B. Do you subscribe to any type of hunting magazine?	4	3.3	94	67.6	111.22	1	0.000
C. Are you currently a member of any fishing organization?	2	1.6	18	12.9	12.99	2	0.002
D. Do you subscribe to any type of fishing magazine?	5	4.1	39	28.1	27.16	1	0.000
E. Are you a member of your local zoological garden (zoo) organization?	8	6.6	7	5.0	2.02	2	0.365[a]
F. Do you subscribe to any nature or wildlife publication (other than those concerned with animal rights, hunting or fishing)?	57	46.7	108	77.7	25.82	1	0.000
G. Do you subscribe to any type of animal rights or animal welfare publication?	117	95.9	6	4.3	215.07	2	0.000
H. Are you a member of any animal rights organization?	100	82.0	9	6.5	155.82	2	0.000
I. Are you a member of any animal welfare organization?	100	82.0	9	6.5	155.82	2	0.000
J. Do you raise or gain income from livestock?	2	1.6	24	17.3	19.09	2	0.000
K. Did you donate any money in the past year to animal rights or animal welfare causes?	113	92.6	7	5.0	204.33	2	0.000
L. Did you donate any money in the past year to any causes opposing animal rights?	4	3.3	61	43.9	55.48	2	0.000
M. Have you owned pets in the past?	117	95.9	137	98.6	2.42	3	0.489[a]
N. Do you currently own a pet?	110	90.2	104	74.8	13.24	3	0.004
O. Were you raised on a farm or ranch?	14	11.5	44	31.7	16.98	2	0.000

[a] = groups did not differ significantly on these variables.

Table 4. Demographic comparisons between respondent groups on a measure of people's attitudes towards animal use.

Category	ARIES		NADCA				
	n	%[a]	*n*	%[a]	X^2	df	*P*
Gender					138.56	2	0.000
Male	30	24.6	133	95.7			
Female	90	73.8	5	3.6			
Age					12.97	6	0.044
18 - 25 years	8	6.6	1	0.7			
26 - 30 years	12	9.8	8	5.8			
31 - 40 years	42	34.4	47	33.8			
41 - 50 years	32	26.2	41	29.5			
51 - 60 years	17	13.9	33	23.7			
> 60 years	11	9.0	8	5.8			
Race					8.07	8	0.426[b]
White	118	96.7	132	95.0			
Black	0	0.0	1	0.7			
Hispanic	1	0.8	2	1.4			
American Indian	0	0.0	2	1.4			
Asian	1	0.8	0	0.0			
Hometown population					16.86	9	0.051[b]
Less than 5,000	1	9.8	29	20.9			
5,000 - 10,000	11	9.0	18	12.9			
11,000 - 50,000	32	26.2	40	28.8			
51,000 - 500,000	25	20.5	19	13.7			
501,000 - 1,000,000	9	7.4	14	10.1			
greater than 1,000,000	22	18.0	0	0.0			
Not from a town	3	2.5	6	4.3			
Childhood environment					15.55	3	0.001
Urban	61	50.0	45	32.4			
Rural	51	41.8	91	65.5			
Suburban	7	5.7	2	1.4			

[a] percentages are not additive due to some nonresponse or illegible answers.
[b] groups did not differ significantly on these variables.

wildlife management practices. When involved in formal and, if possible, informal discussions with animal rights activists, wildlife damage professionals would do well to remember the potential attitude barriers highlighted in this study.

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