

OBTAINING WILDLIFE VALUES INFORMATION

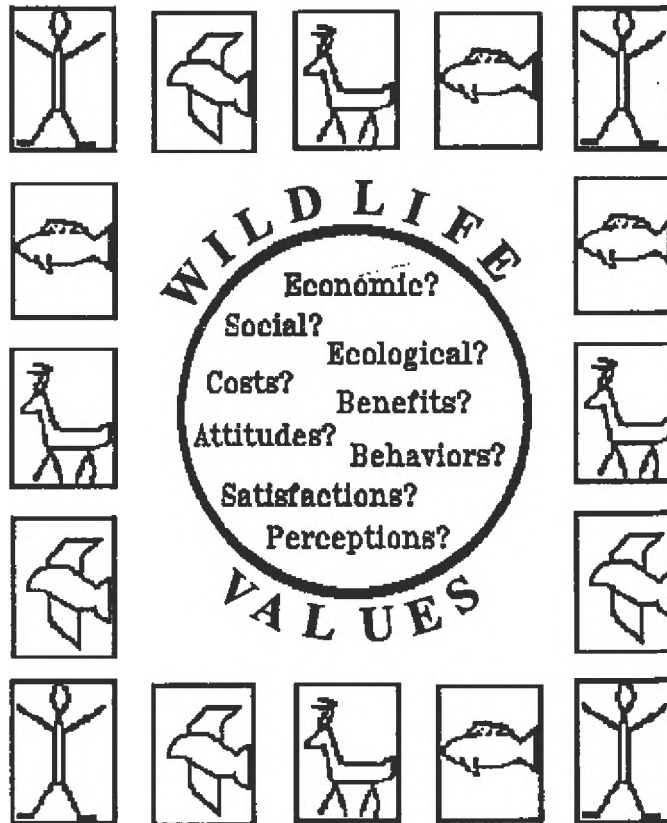
FOR MANAGEMENT:

THE WILDLIFE ATTITUDES AND VALUES SCALE (WAVS)

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and

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January 1989

HDRU Series No. 89-2



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Department of Natural Resources
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Cornell University, Ithaca, N. Y.



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FINAL REPORT

STATE: NEW YORK

PROJECT: W-146-R:14

PROJECT TITLE: Public Attitudes Toward Wildlife and Its Accessibility

STUDY NUMBER AND TITLE: VII - Identifying Attitudes and Values Toward Species and Their Management

JOB NUMBER AND TITLE: VII-2 - Programmatic and Research Uses of a Wildlife Attitudes and Values Scale

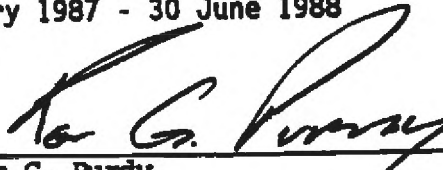
JOB OBJECTIVES: To summarize the information obtained from the application of the Wildlife Attitudes and Values Scale across a variety of wildlife species and human audiences.

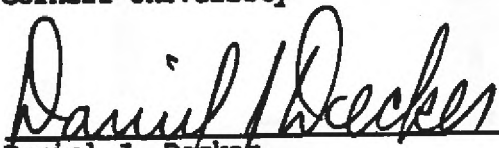
To facilitate DEC staff understanding of the conceptual framework for assessing wildlife attitudes (developed by Project W-146-R as an outcome of WAVS design) and to facilitate the practical application of the framework in management planning.

To facilitate DEC staff use of the Wildlife Attitudes and Values Scale in surveys they conduct of wildlife user audiences.

JOB DURATION: 1 January 1987 - 30 June 1988

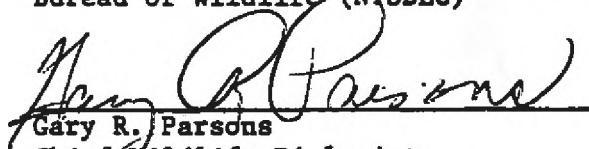
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ACKNOWLEDGMENTS

Several people have made significant contributions to both the development of the WAVS and to the preparation of this report. Robert A. Smolka, Jr. carried out a major portion of the original exploratory work involving interviews. Nancy A. Connelly has assisted in analyses of several studies that have used WAVS. Tommy Brown, Jody Enck, Gerri Pomerantz and William Siemer have provided helpful suggestions during WAVS development and on this report in particular. Many other people, especially Department of Natural Resources colleagues and New York State Department of Environmental Conservation cooperators have offered helpful suggestions at various times during the development of WAVS. Margie Peech and Nancy Bowers have provided excellent word processing support for the instruments, reports and other documents that have been essential parts of the WAVS development effort.

INTRODUCTION

The discipline that has become known as the "human dimensions of wildlife management" has, by and large, grown out of a concern about how people's values affect and are affected by decisions about the management of wildlife populations. As indicators of the worth or significance of wildlife as a natural "resource," human values are important for wildlife managers to understand and evaluate. Indeed, values assessments have become increasingly important to wildlife managers as the breadth of public interests in wildlife and concomitant demands on the wildlife resource have been recognized.

Recognition of the diversity of values and the need to understand them has led to numerous studies to describe the values of wildlife to various segments of society. Nevertheless, we continue to struggle with the practical application of information about wildlife values to the real-world business of wildlife management (Berryman 1987). As Witter (1980) has indicated, often the best that can be expected is to use values information as clues to how wildlife programs might be made more effective. In many situations, however, managers' success in developing priorities for various management alternatives may depend largely on their ability to determine the values that form the basis for people's attitudes toward wildlife and uses of wildlife (Brown and Manfredo 1987). Making those determinations in a valid, reliable, standard and practical manner is the subject of this paper. Herein we describe efforts undertaken in New York to develop an approach to obtain wildlife values information and illustrate, by using a case example, how that approach has aided wildlife-management decisions.

ASSESSING WILDLIFE VALUES

Considerable thought and research have focused on the assessment of wildlife values. Several conceptual and methodological frameworks for analyzing values have been developed from both social and economic perspectives, but no single framework has attained dominance. As Steinhoff et al. (1987:42) have stated " . . . the appropriate classification system today depends upon the purpose and viewpoint of the user." Examples of many of the notable contributions to values assessment and some excellent literature reviews are provided in Shaw and Zube (1980) and Decker and Goff (1987).

The diversity of values frameworks has contributed to confusion surrounding the collection and use of information about the values of wildlife. Methods to assess values must be adaptable to various situations and needs for greatest utility. However, the development of valid and reliable values-assessment methods is a long, involved, and expensive task. Thus, methods that may have sound conceptual frameworks often receive no or limited empirical testing. Typically, those that have been tested were only "one-shot" implementations. Their usefulness (i.e., applicability) in other situations has seldom been demonstrated due to a lack of replication over time and across audiences.

A Wildlife Attitudes and Values Scale

We have developed a measure to assess wildlife values, referred to simply as a Wildlife Attitudes and Values Scale (WAVS), for purposes of obtaining information about the social values of wildlife for management decisions in New York. Our goal has been to develop a standardized measure that could be incorporated easily into multi-purpose questionnaires, be useful across a variety of wildlife-management issues and related audiences, and that would, with acceptable accuracy and reliability, provide an indicator of the values

orientation of a constituency or subgroup thereof towards wildlife.

Throughout our development efforts, we realized that the method must be grounded theoretically and tested empirically.

Early development efforts. WAVS development efforts began in 1980, focusing on a review of existing typologies of the "values" of wildlife and methods for assessing wildlife values and identifying values indicators. Because people's values cannot be measured directly, only inferred from statements of beliefs and expressions of value-laden opinion, people's attitudes--indicators of the broadly integrated feelings, beliefs and values possessed by individuals (Kellert 1980)--were selected as the basis of measurement. After reviewing the literature on wildlife values and evaluating the various typologies for their applicability to our purposes, we chose the categorization of King (1947) as the theoretical foundation for the scale development work. Although the general framework for WAVS was modelled after the 6 categories of wildlife values proposed by King (i.e., recreational, aesthetic, educational, biological, social, and commercial), it is similar in many respects to other recognized wildlife values frameworks for which attitude assessment is the focus (e.g., Nobe and Steinhoff 1973, More 1973, Hendeé 1974, Shaw 1974, Kellert 1978, Filion 1987). Using King's 6 categories, an extensive list of value-indicator items was developed based on information in the literature and input from New York State Department of Environmental Conservation and Human Dimensions Research Unit staff in the Department of Natural Resources, Cornell University. The preliminary items were pretested in open-ended interviews with wildlife professionals and college students as well as subjected to expert review by colleagues who were familiar with this topic. The items were then adapted to questionnaire format and pretested by having wildlife professionals and other people use the items

to express their attitudes. Pretest results were evaluated to identify items that were frequently misunderstood by the pretest respondents, duplicative, and of consistently low relevance to respondents' consideration of the values of wildlife. The items remaining after this screening appeared most salient and exclusive of other items. The screening process reduced the initial listing to 25 items (Decker et al. 1981).

During the period 1981-1983, WAVS was pretested in mail questionnaires used in 3 major surveys dealing with public attitudes toward wildlife and their management (Connelly et al. 1984, Smolka et al. 1984, Decker et al. 1981). Respondents were asked to rate the personal importance of each of the value indicators on a 5-point Likert scale. Responses ranged from "extremely important" to "not at all important." Factor analysis using a principal components extraction (Kim 1975) of WAVS data from those surveys indicated that the scale items could be categorized into 3 attitudinal "dimensions" that reflected how people related to the wildlife values represented (Purdy et al. 1984). The 3 dimensions were interpreted to represent attitudes about (1) Traditional Conservation, (2) Societal Benefits, and (3) Problem Acceptance. Within each dimension, individual items were excluded if: (1) the Pearson product-moment correlation coefficients (r) demonstrated intercorrelations of ≤ 0.4 , (2) the internal consistency, as indicated by Cronbach's Alpha (Nunnally 1967), was reduced by the presence of the item, or (3) the item did not contribute to an overall Alpha value of ≥ 0.6 . These efforts led to further refinements of the scale and indicated that, minimally, 18 of the wildlife values items developed were needed to form a reliable scale. The scale statements retained were clarified where believed necessary and adapted to an "agree- disagree" Likert-scale format (Table 1).

Table 1. A wildlife attitudes and values scale^a.

IT IS IMPORTANT TO ME PERSONALLY:

	<i>Strongly Agree</i>	<i>Agree</i>	<i>Neither</i>	<i>Disagree</i>	<i>Strongly Disagree</i>
<u>TRADITIONAL-CONSERVATION ATTITUDES</u>					
That I hunt game animals for recreation	()	()	()	()	()
That I hunt game animals for food	()	()	()	()	()
That I trap furbearing animals for the sale of fur or pelts	()	()	()	()	()
That game animals are managed for an annual harvest for human use without harming the future of the wildlife population	()	()	()	()	()
That local economies benefit from the sale of equipment, supplies, or services related to wildlife recreation	()	()	()	()	()
<u>SOCIETAL-BENEFITS ATTITUDES</u>					
That I talk about wildlife with family and friends	()	()	()	()	()
That I observe or photograph wildlife	()	()	()	()	()
That I see wildlife in books, movies, painting, or photographs	()	()	()	()	()
That I express opinions about wildlife and their management to public officials or to officers of private conservation organizations	()	()	()	()	()
That I appreciate the role that wildlife play in the natural environment	()	()	()	()	()
That wildlife are included in educational materials as the subject for learning more about nature	()	()	()	()	()
That I know that wildlife exist in nature ...	()	()	()	()	()
That I consider the presence of wildlife as a sign of the quality of the natural environment	()	()	()	()	()
That I understand more about the behavior of wildlife	()	()	()	()	()

Table 1 cont.

<u>PROBLEM-ACCEPTANCE ATTITUDES</u>	Strongly Agree	Agree	Neither	Disagree	Strongly Disagree
That I tolerate most levels of property damage by wildlife	()	()	()	()	()
That I tolerate most wildlife nuisance problems	()	()	()	()	()
That I tolerate the ordinary personal safety hazards associated with some wildlife	()	()	()	()	()
That I tolerate the ordinary risk of wildlife transmitting disease to humans or domestic animals	()	()	()	()	()

^aThe WAVS items shown are organized and labelled to demonstrate the dimensions of the wildlife values believed to be represented. This presentation format is not the same as that used when the scale is incorporated into a survey questionnaire.

A comprehensive evaluation of WAVS. Since 1984 (i.e., following the 3 pretest surveys), we have used the 18-item WAVS in wildlife-related studies of 10 separate audiences to assess values orientations toward wildlife (Table 2). Overall, nearly 7,000 people, representing a diversity of wildlife interests, have provided WAVS responses. For each application, WAVS data were subjected to factor analysis to determine the consistency with which individual scale items grouped into the same 3 dimensions found in earlier evaluations. Across all studies, the number of occurrences of each item with all other items within the same factored dimension was determined; the results are summarized in Table 3. (See also Appendix A.) The findings indicated a relatively strong "dimensional cohesion" for items that were theorized during the early development stages to represent people's attitudes about Traditional Conservation as well as for those reflecting Problem Acceptance. With only 1 exception (i.e., attitudes about sustained harvest of game animals), all items expected to comprise those dimensions did so $\geq 70\%$ of the time.

The items believed to reflect attitudes about Societal Benefits, however, seldom did so as the expected single dimension (Table 3). Instead, in over half of the studies, the relationships among those items were better explained by the presence of 2 dimensions. Only infrequently, however, did these 2 dimensions encompass items from the Problem Acceptance or Traditional Conservation dimensions, an indication that the nature of the "new" dimensions was relatively exclusive of others represented in the WAVS measure. Although the grouping of items within these dimensions was not absolutely consistent over all studies, we believe the patterns suggest "social significance" and "ecological significance" components of attitudes about Societal Benefits. Specifically, those items frequently grouping together in the social significance component reflect values of wildlife related to their uses as the

Table 2. Summary of study year, audiences, numbers of respondents supplying WAVS data, and general management issue for 10 studies included in evaluation of WAVS.

<u>Year of study</u>	<u>Audience</u>	<u>Number of Respondents</u>	<u>Management issue</u>
1984	Representatives of organizations with interests in deer in northern New York	280	White-tailed deer management
1985	Outdoor recreationists in northern New York	1,023	White-tailed deer management
1985	Rural landowners in northern New York	223	White-tailed deer management
1985	Town and county highway superintendents in central New York	126	Public acceptance of beaver
1985	Rural landowners in central New York	423	Public acceptance of beaver
1985	Suburban homeowners in Islip, New York	300	Suburban deer management
1987	Suburban homeowners in Westchester County, New York	671	Suburban deer management
1985	Graduates of New York's 1983 Hunter Training Course	2,828	Hunting participation
1984	Graduates of New York's 1978 Hunter Training Course	442	Hunting participation
1985	Rural landowners in western New York	541	Pheasant habitat improvement
		<u>Total</u>	
		6,857	

Table 3. Consistency of Wildlife Attitudes and Values Scale (WAVS) dimension groupings as determined by the number of joint occurrences of WAVS items within the same dimension.^a

Hypothesized dimension and WAVS item	Number of joint occurrences of WAVS items in same dimension																		Total occurrences ^b	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18		
<u>Traditional-conservation Attitudes^c</u>																				
1. hunting (rec.) value						1	1	0	1	0	0	0	0	1	0	0	0	0	0	8
2. hunting (food) value					5	6	1	1	0	1	0	0	0	1	0	0	0	0	0	8
3. trapping value					7	8	0	0	0	1	0	0	0	0	0	0	0	0	0	9
4. sust. harvest value					7	7	0	0	0	1	1	2	1	1	0	0	0	0	0	10
5. econ. benefit value																				10
<u>Societal-benefits Attitudes^d</u>																				
6. conversational value																				10
7. observational value																				10
8. artistic value																				8
9. social action value																				10
10. ecological role value																				10
11. educational value																				10
12. existence value																				10
13. environ. quality value																				10
14. behavioral value																				10
<u>Problem-acceptance Attitudes</u>																				
15. damage problems																				10
16. disease risk																				10
17. safety risk																				7
18. nuisance problems																				10

^aDimensions determined by selection of largest factor loading on each item.

^bTotal occurrences over 10 studies. Totals are less than 10 for those value indicator items that were not believed appropriate for certain audiences.

^cDescriptions of the enumerated WAVS items are abbreviated; refer to Table 1 for complete descriptions.

^dCross-hatched areas represent two hypothesized components of societal-benefits attitudes: items 6-9 = social significance component and items 10-14 = ecological significance component.

subjects of conversation, personal observation in the outdoors or in books, movies, etc. and as the source of concern for expressing personal opinions to public officials or officers of private conservation organizations. On the other hand, items in the ecological significance component portray an appreciation of wildlife for their ecological role in the environment, as the subject of educational materials, as environmental quality indicators, for their function in understanding wildlife behavior, and for the value of their presence in the environment.

Overall, the analysis of WAVS responses collected over 5 years in studies with 10 separate audiences demonstrated particular patterns of the ways that persons relate to the wildlife-values indicators included in the scale. Survey responses have consistently indicated that values pertaining to wildlife have 3 primary attitudinal dimensions: acceptance of wildlife problems, traditional conservation of wildlife, and societal benefits of wildlife. The latter dimension, however, seems to be more accurately conceptualized as consisting of social significance and ecological significance components.

We believe that examining individuals' or groups' scores on WAVS dimensions can contribute substantially to wildlife managers' understanding of constituents' fundamental values orientations. Differences in responses to particular WAVS dimensions often indicate particular constituency interests or concerns pertinent to wildlife management issues. We recommend that WAVS data should be used with other information to gain additional insights about individuals' or groups' characteristics, preferences, and opinions relative to wildlife issues. WAVS can provide important clues to both impediments and opportunities faced by managers for attaining desired management objectives. WAVS also can help determine the confidence one can have in responses to

questions on specific issues in survey instruments by assessing the logical consistency between the specific responses and general responses on WAVS. The following case study is presented as 1 example of the way that values assessment via WAVS has been used to provide input into management decisions.

APPLYING WAVS INFORMATION TO SUBURBAN DEER MANAGEMENT

Increasingly, the presence of white-tailed deer (*Odocoileus virginianus*) in suburban areas of the eastern U.S. has presented a difficult management problem for state wildlife agencies. In such areas, deer are often appreciated as a unique community resource. Nevertheless, deer damage to ornamental plants and gardens, deer-vehicle collisions and, in some instances, the perceived threat of deer-transmitted disease pose substantial management problems. As a result, suburban residents' "acceptance capacity" (Decker and Purdy 1988) for deer may be reduced. The conventional management mechanism (i.e., recreational hunting) for deer population reduction is often unacceptable to suburban residents (Flyger et al. 1983), even where such a control may be used safely. Therefore, understanding how suburban residents value wildlife, including their acceptance of wildlife-caused problems, can be vital to the development of effective management solutions.

Recently, Decker and Gavin (1985) studied the deer-related attitudes and experiences of residential property owners living in the vicinity of Seatuck National Wildlife Refuge, Long Island, New York. The refuge, consisting of only about 80 ha, is adjacent to the community of Islip, an area on the south-central shore dominated by suburban homesites. Deer from a small herd numbering about 30 individuals move between the refuge and neighboring residential properties. Prior to the study, wildlife managers suspected that residents' acceptance capacity for the deer population had been reached or exceeded, as reflected in growing public concern about deer damage to

ornamental plantings and the role of deer in Lyme disease transmission to humans.

As part of that 1985 study, 605 residential property owners in the vicinity of Seatuck National Wildlife Refuge were asked to complete the WAVS as part of a mail-questionnaire survey. Returns from nearly 70% of the property owners surveyed were analyzed to determine residents' attitudes about deer in the area and how they valued deer. Of special concern were 300 residents who reported seeing deer or signs of deer presence on or near their residences. Decker and Gavin (1985) found that Islip residents' acceptance of the refuge deer and their primary concerns about the animals generally were consistent with their more basic attitudes about wildlife determined with WAVS. The acceptance capacity for deer of most respondents in the area had not been exceeded; indeed, they believed deer were an aesthetic asset to their neighborhoods. Generally, the WAVS scores of these "supportive" individuals showed a positive regard for both the social significance and ecological significance values of wildlife. Respondents also believed that the potential problems associated with the deer should be accepted. Other respondents who expressed the most concern about deer damage to ornamental plantings and about the threat of Lyme disease were consistent in their WAVS responses by being the least likely to believe that wildlife-related problems should be accepted. Overall, WAVS indicated that most Islip residents accepted as the basis of management the concept of wildlife as a renewable natural resource. However, few persons appeared to hold values that would indicate support for regulation of the deer herd by controlled hunting.

In the Islip situation, WAVS helped demonstrate to managers that deer were indeed valued by property owners more than had been believed prior to the study. For those residents who were experiencing damage, WAVS scores helped

identify the attitudinal orientations of individuals for whom control efforts may be developed. Also, WAVS helped to substantiate further that control by means other than hunting or shooting needed to be explored. Perhaps most importantly, WAVS findings provided evidence that residents' specific opinions about refuge deer were reflections of basic values about appropriate uses of the deer and were not likely to be changed easily. Thus, to maintain or increase Islip residents' acceptance of deer, managers would face the challenge of developing unconventional approaches to deer management appropriate for a suburban social and environmental situation.

OTHER APPLICATIONS OF WAVS

In New York, WAVS has been used routinely to help wildlife managers understand constituency values in situations involving human conflicts with species like deer and beaver (*Castor canadensis*) (Purdy and Decker 1985). The information has helped managers establish objectives for wildlife populations that better consider the interests of management constituents. The utility of the information, however, has by no means been limited to situations involving human-wildlife conflicts. Other situations in New York in which information about wildlife values gained via WAVS has provided direction for management actions include: assessments of the characteristics of contributors and noncontributors to the New York State "Return-A-Gift to Wildlife" Program (i.e., the State's income tax check-off fund for supporting wildlife programs) (Connelly et al. 1984); the social/psychological influences of participation or nonparticipation in recreational hunting in New York (Purdy and Decker 1985); assessments of the importance of white-tailed deer as a recreational resource in the Adirondack region of Northern New York (Smolka et al. 1986); and an evaluation of the incentives and disincentives for participating in a

Ring-necked pheasant (*Phasianus colchicus*) habitat improvement program (Penrod 1986).

SUMMARY OF THE MAJOR DIMENSIONS OF WAVS

Values of wildlife that we identified from literature review and preliminary exploratory interviews were repeatedly subjected to factor analysis. Given the limits to the breadth of values included in the WAVS, we have found that 3 principal dimensions of values exist: traditional conservation, societal benefits, and problem acceptance. An individual's orientation to each of the dimensions is indicated by his or her responses to the attitude statements comprising that dimension. People tend to respond to the attitude statements within a dimension similarly; that is, they tend to respond favorably, unfavorably, or neither favorably nor unfavorably to each statement in the set. Also, individuals' responses to 1 set do not predetermine responses to the other set; that is why they are separate dimensions.

The importance of this finding for management is that knowledge of the values orientation of an individual or group for 1 dimension, such as problem acceptance, does not predetermine their orientation toward another dimension, such as traditional conservation. For example, if suburban residents report a low tolerance of deer damage and nuisance problems, that should not be interpreted to mean they will support traditional wildlife conservation approaches such as recreational hunting of deer to control the population. This was exactly the situation reported recently by Decker and Connelly (1988) for Westchester County residents. Specific attitude and preference questions on a survey of residential landowners revealed this situation, and the more general WAVS corroborated the validity of that finding. Thus, WAVS is both an empirical tool and a conceptual aid. Empirically, WAVS can be applied to

identify major groups', segments of major groups', and individuals' values orientations toward wildlife. Conceptually, WAVS can help managers understand that seemingly inconsistent values orientations (from the manager's perspective) exist and have different kinds of implications for management planning and implementation. The 3 dimensions are described briefly below.

Traditional-conservation Attitudes

A set of attitude statements that consistently held together in factor analysis seemed to reflect attitudes toward the traditional concept of "conservation," or wise use, as has been practiced by wildlife management agencies for decades. People's values orientation relative to a wise use philosophy regarding wildlife management or of the results of management under such a philosophy were manifest through responses to statements about hunting, trapping, management for a sustainable harvest through these activities, and the economic impact associated with these traditional activities. Factor analysis demonstrated that people are consistent in accepting or rejecting the set of values associated with the traditional notion of wise use of wildlife.

Societal-benefit Attitudes

A set of attitude statements that elicited moderate consistency of response dealt with a range of societal values or benefits of wildlife. These were of 2 general types, those of social significance and those of ecological significance. The social significance set encompassed the social interaction and perceptual enjoyment aspects of wildlife's existence. The ecological significance set had as a commonality ecological/biological appreciation.

Problem-acceptance Attitudes

The potential liabilities of wildlife existence are recognized by people who tend to regard nuisance, damage, disease, and personal safety risks

similarly. Some people are willing to accept considerable risk (and actual experience) while others are not.

CONCLUSIONS

Our experience in working with wildlife managers has indicated that in addition to the use of WAVS in specific surveys the collective findings serve as a useful, general conceptual tool when planning management actions or communicating management needs to the public. Of course, considering constituents' specific orientations to the values dimensions represented in WAVS increases the chance during planning that actions developed will be sensitive to the values held by persons for whom programs are intended. Similarly, effective communication may be enhanced by developing messages that incorporate knowledge of constituents' values gained by WAVS.

We do not propose that WAVS is more valid than other scales that have been developed for assessing human-values orientations. However, few other measures have been subjected to the level of testing for measurement validity and reliability as has been WAVS. For this reason, and due to our experiences with the beneficial applications of the values information gained from the measure, we offer WAVS as a viable and practical tool for the assessment of how people value wildlife.

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APPENDIX A:

FACTOR SCORES FOR ITEMS BY STUDY

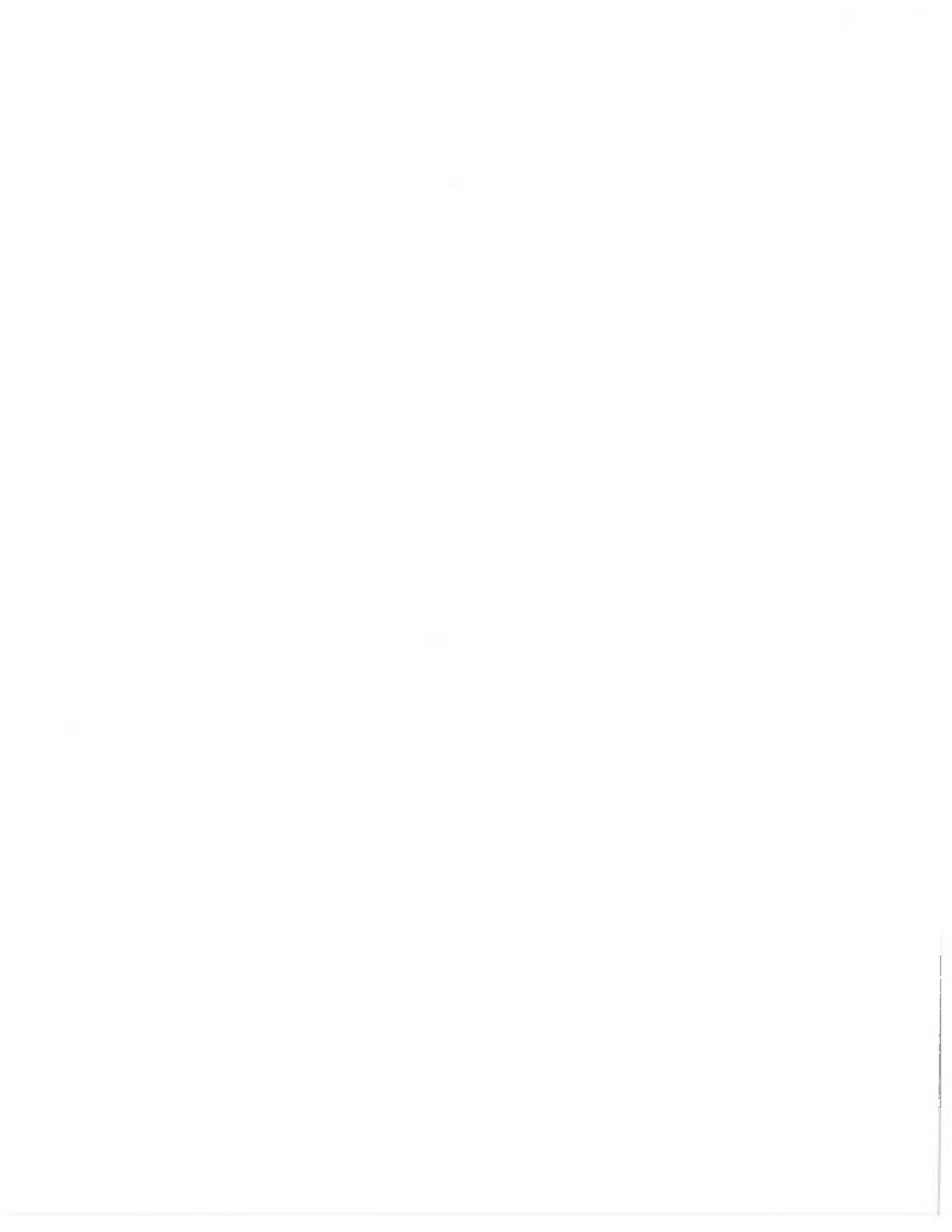
APPENDIX A: Factor Scores for Items by Study

	NNY Organ. Leader - Wildlife ^a -				Homeowners - Westchester Co. - Wildlife -			
	1	2	3	4	1	2	3	4
	<u>Traditional-conservation Attitudes</u>							
Hunting (food) value	.71				.83			
Hunting (rec.) value	.81				.84			
Trapping value	n/a				.70			
Sustained harvest value				.73	.65			
Economic benefit value				.72	.65			
<u>Societal-benefits Attitudes</u>								
Conversational value	.63							.62
Observational value	.49						.53	
Artistic value		.58					.66	
Social action value	.64							.79
Ecological value		.75					.79	
Educational value		.78					.78	
Existence value			.36				.75	
Environ. quality value		.72					.65	
Behavioral value	.53						.60	
<u>Problem-acceptance Attitudes</u>								
Damage problems			.86		.77			
Disease risks			.73		.73			
Safety risks			n/a		.80			
Nuisance problems			.79		.73			

	NNY Recreators - Wildlife -				NNY Landowner - Wildlife -				
	1	2	3	4	1	2	3	4	5
	<u>Traditional-conservation Attitudes</u>								
Hunting (food) value	.87				.81				
Hunting (rec.) value	.86				.88				
Trapping value	.74				.78				
Sustained harvest value	.66				.56				
Economic benefit value	.49				.51				
<u>Societal-benefits Attitudes</u>									
Conversational value				.72				.57	
Observational value				.70				.82	
Artistic value				.65		.48			
Social action value				.48					.75
Ecological value		.77			.73				
Educational value		.73			.74				
Existence value		.73			.66				
Environ. quality value		.62			.62				
Behavioral value		.50						.56	
<u>Problem-acceptance Attitudes</u>									
Damage problems			.80				.78		
Disease risks			.74				.75		
Safety risks			.74				.69		
Nuisance problems			.69				.72		

	Highway Supts. - Beaver -			Islip Homeowners - Wildlife -			
	1	2	3	1	2	3	4
	<u>Traditional-conservation Attitudes</u>						
Hunting (food) value			n/a			.86	
Hunting (rec.) value			n/a			.89	
Trapping value			.78			.81	
Sustained harvest value			.61			.58	
Economic benefit value			.78		.42		
<u>Societal-benefits Attitudes</u>							
Conversational value	.82						.66
Observational value	.69						.58
Artistic value	(missing data)						.61
Social action value			.38				.79
Ecological value	.70			.86			
Educational value	.74			.85			
Existence value	.63			.51			
Environ. quality value	.75			.68			
Behavioral value	.78			.74			
<u>Problem-acceptance Attitudes</u>							
Damage problems		.77			.80		
Disease risks		.80			.81		
Safety risks		n/a			.82		
Nuisance problems		.66			.72		

	Rural Landowners - Beaver -			1978 HTC Grads (1984 Study) - Wildlife -			
	1	2	3	1	2	3	4
	<u>Traditional-conservation Attitudes</u>						
Hunting (food) value			n/a			.55	
Hunting (rec.) value			n/a			.65	
Trapping value			.79			.76	
Sustained harvest value			.78				.64
Economic benefit value			.70			.53	
<u>Societal-benefits Attitudes</u>							
Conversational value	.49			.51			
Observational value	.61			.68			
Artistic value			n/a	.68			
Social action value			.65	.43			
Ecological value			.68	.75			
Educational value			.73	.74			
Existence value			.72				.54
Environ. quality value	.62			.72			
Behavioral value		.65		.69			
<u>Problem-acceptance Attitudes</u>							
Damage problems	.88			.71			
Disease risks	.71			.79			
Safety risks	n/a			.54			
Nuisance problems	.89			.70			



	Rural Landowners (Pheasant Study) - Wildlife -			1983 HTC Grads. - Wildlife -			
	<u>1</u>	<u>2</u>	<u>3</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>
<u>Traditional-conservation Attitudes</u>							
Hunting (food) value		.83					.58
Hunting (rec.) value		.83					.59
Trapping value		.81					.67
Sustained harvest value		.64		.67			
Economic benefit value		.44					.57
<u>Societal-benefits Attitudes</u>							
Conversational value	.71				.70		
Observational value	.66				.70		
Artistic value	.65				.61		
Social action value	.53				.56		
Ecological value	.76			.76			
Educational value	.75			.72			
Existence value			.32	.67			
Environ. quality value	.70			.64			
Behavioral value	.72			.58			
<u>Problem-acceptance Attitudes</u>							
Damage problems			.83				.78
Disease risks			.75				.75
Safety risks			.61				.65
Nuisance problems			.78				.63

^aThe type of wildlife that persons are asked to use as a referent for expressing their attitudes via WAVS may be species specific (e.g., beaver, deer, etc.) or nonspecific and inclusive of all species (i.e., "wildlife").