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ATTITUDES TOWARD WILDLIFE:
DEVELOPMENT AND TESTING OF MEASUREMENT SCALES

by

GLADYS PIRT

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ABSTRACT

Wildlife is a natural resource that is of interest to many Manitobans, but people are evidencing that they prefer to relate to this resource in divergent ways.

This study applies the principles and methods of attitude theory to develop a survey questionnaire capable of measuring attitudes toward wildlife.

Since "wildlife attitude" is not a unidimensional concept, separate scales have been constructed to measure direction and intensity of Protectiveness, Appreciation and Anti-Consumptive orientations.

The scales have been refined through pre-test and pilot study procedures.

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Any errors and defects in this study remain my own responsibility.

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CHAPTER I

INTRODUCTION

Wildlife has been of substantial interest to many Manitobans throughout our history. While the historical role of wild animals and birds as essential sources of food and fibre has now faded, interest in wildlife has not correspondingly waned. Wildlife management evolved to control "pest" species that posed a threat to crops and livestock, to manage furbearers for the protection and enhancement of the trapping industry, and to maintain game species and habitat for recreational sport-hunting.

In relatively recent times, two trends have appeared which complicate the pattern of traditional wildlife management:

A. RECREATIONAL CONFLICTS

The first trend is the growing popularity of outdoor recreation. With increased leisure time and mobility, and the advent of better road systems and higher incomes, greater numbers of people are increasing their contact with the natural environment through participation in such outdoor recreational experiences as camping, picnicking, boating and snowmobiling. As early as 1961, delegates at the "Resources for Tomorrow" Conference in Montreal[1] reiterated their acknowledgement that the public's use of renewable resources,

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1. Canada, Canadian Wildlife Service; Wildlife in Man's World; cat. no. R66-2365; Ottawa, 1964.

such as wildlife, was increasing at a greater rate than our population growth.

Orientations toward wildlife are of diverse expression, ranging from active pursuit for the purposes of sport-hunting or photography, to incidental enjoyment. In common is the feature of dependency upon the natural environment for provision of a recreation site.

While to some outdoor recreationists the presence of natural topography, flora and fauna, is irrelevant to the pleasure of the recreational experience, others depend on such phenomena to contribute to the pleasure of the activity. Back-packers, canoeists, cross-country skiers, hikers and snowshoers, for example, deliberately seek nature-preserved sites; campers, cyclists, sightseers and picnickers tend to select areas that have been at least slightly modified to provide public amenities.

Multiple-use planning for public land frequently gives rise to conflict among recreationists, particularly when the pursuit of an activity by certain users preclude simultaneous enjoyment by others, or diminishes the quality of the recreational experiences for some users. Power-boating and canoeing, for example, may be perceived as incompatible due to the noise of motors and disruption of aquatic life; terrestrial recreation vehicles may also be perceived as disruptive of tranquility and destructive of natural vegetation - so that hikers, cross-country skiers and snowshoers may consider that their activities are incompatible with snowmobilers, trail-

bikers and all-terrain-vehicles. Of late, there has been indication that sport-hunting may be incompatible with other recreational activities - in particular, with wildlife-watching and nature photography.

B. ATTITUDINAL CONFLICTS

During early settlement, the necessity of using wild creatures for food and fibre, and of protecting self and chattels from harm, was met by hunting and trapping. Meat-hunting is a protected right of native Manitobans to this day. Sport-hunting during season continues to be a popular form of recreation in the province[2] and fur-trapping is a source of income for many Manitobans each year, particularly in the northern part of the province.[3]

There is some evidence to suggest, however, that a philosophic inclination toward protectiveness of wildlife now exists to some degree among Manitobans. Examples of such regard have been manifested by expressions against spring-hunting of black-bear, disfavour with the practice of sport-hunting in provincial parks, and concern over the use of leg-hold traps in harvesting furbearers. The preservation of wildlife habitat has also received public attention, particularly in association with potential environmental interferences engendered by hydro transmission lines, oil pipelines and re-routing of natural waterways.

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2. Manitoba, Department of Mines, Resources and Environmental Management; Annual Report, Year ending March 31, 1974.

3. Ibid.

It is not known whether such outcroppings of protectiveness are indicative of the more generalized phenomena of "anti-hunting" and "anti-trapping" sentiments. The prevalence of such wildlife-empathetic stances among the public has not been gauged.

IMPLICATIONS FOR WILDLIFE MANAGEMENT

In order for resource managers to effectively provide for recreation demands, to resolve conflicting demands and to react to concerns expressed by the public, familiarity is needed with the wildlife clientele. Knowledge about the extent or prevalence of a protective attitude toward wildlife among the general public, and development of attitudinal trends leaning toward non-consumptive use of wildlife, could provide criteria by which management might estimate support or non-support for policies affecting wildlife welfare. Similarly, the knowledge that the public at large is apathetic or non-appreciative of wildlife, could assist in delineating the size of the wildlife clientele in relation to the total population of the province.

Additionally, it would be useful to know whether there are any common social characteristics underlying divergent perspectives on wildlife, so that trends in wildlife orientation might be predicted as social charcteristics change over time.

Disclosure of public attitudes toward the wildlife resource would not, of course, represent a mandate for perpetuation or reform of current or proposed wildlife policies. Ultimately, decisions must be based on sound biological and environmental information, and will have reference to both economical and political philosophy. Such knowledge could, however, identify specific areas where programs are apt to meet with poor public reception, and could illustrate need for public relations efforts - communication and education - in advancing management's objectives. Hendee and Schoenfeld[4] aptly express this sentiment: "A generation ago, wildlife managers began with the job of producing something to shoot or catch. It seemed to them that once they collected a body of scientific knowledge about game crops and cropping, all would be well. ...Wiser now, wildlife managers recognize that public attitudes and actions can effectively control wildlife programs. So the need for 'human engineering' and the social-science research that must precede it is voiced in growing volume and intensity."

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4. Hendee, John C. and Clay Schoenfeld (Eds.); Human Dimensions in Wildlife Programs; Washington, D.C., 1973, pp.8-9.

THE PROBLEM

Is it possible to find out how people feel about wildlife? We wish to know not only the different attitudes that people might have, but also how intense the attitude is and whether recreational conflicts and social characteristics might contribute to the direction and strength of the sentiment. The problem is one of developing a survey instrument capable of measuring wildlife attitudes.

THEORETICAL FRAMEWORK

The predisposition to think, feel, perceive and behave toward an object is encompassed in the concept of "attitude", which is defined operationally to represent "both an orientation toward or away from some object, concept, or situation and a readiness to respond in a predetermined manner to these or related objects, concepts, or situations."[5]

The presumption that an attitude can be measured has considerable support. Social attitudes have been researched and reported since the 1920s; they have been extensively applied and have been of practical assistance to many fields of inquiry. Babbie (1973) summarizes the status of attitude measurement by noting that there is still broad disagreement on the point that an attitude may be measured in "absolute" terms, but little disagreement that

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5. Hilgard, Ernest R. and Atkinson, Richard C.; Introduction to Psychology, 4th ed.; New York: Harcourt, Brace & World, Inc., 1953, p.583.

it can be measured in "relative" terms - which is to say that it must have some comparison standard.[6] Just as it would not be possible to conclude that a person who has five automobile collisions per year is "accident-prone" unless one can compare his accident rate to that of some referent group - such as "all drivers" - it is similarly invalid to deduce that a person is "hostile" if he obtains a score of "9" on a 10-point "hostility scale". The latter person can, however, be described as more hostile, or less hostile, than other people who have participated in the same or an equivalent survey, providing that the measurement tools are reliable and accurate.

In order that an attitude (e.g., "pro-hunting") may be reflected in behavior (e.g., buying a hunting licence, going out hunting, shooting a game animal) it must first be motivated and an opportunity must be available. Just as all persons who favour legal abortion are not potential users of this service, so all persons who approve of hunting are not apt to go hunting themselves, and all persons who disapprove of hunting will not protest against hunting in a formal sense.

Motivation and opportunity are dynamic concepts[7]. As they change, the characteristics of the users of a resource

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6. Babbie, Earl R.; Survey Research Methods; Belmont, California: Wadsworth Publishing Company, Inc.; 1973.

7. Niepoth, William; "Users and Non-users of Recreation and Park Services", in David Gray & Donald A. Pelegrino, eds.; Reflections on the Recreation and Park Movement; Wm C. Brown Company Publishers, 1973.

also change. While the study of clientele groups at one point in time has merits, long-range resource planning can be enhanced by general population studies which disclose potential users of the resource: How people will wish to use a resource, should they become recreational participants or resource-users, can be inferred from their attitude toward the resource object.

RESEARCH OBJECTIVES

1. To construct a survey tool capable of
   (a) differentiating attitudes toward wildlife
   (b) investigating socio-demographic commonalities or differences among persons reflecting diverse wildlife attitudes.
2. To refine the survey tool through pre-test procedures.
3. To test the survey tool as an instrument appropriate to gauge wildlife attitudes among the general public through pilot test procedures.

Assumptions

- that people will tell the truth about their feelings toward wildlife when participating in the survey.
- that attitudes can be conceptualized as existing in degrees along a continuum, rather than as a dichotomy of "present" or "absent".

CHAPTER II

PREVIOUS STUDIES

The wildlife literature contains only scanty research on the measurement of attitudes. It is, however, not uncommon for investigators to include some attitudinal-type questions in user surveys. The investigation of hunters in Wisconsin,[8] for example, included a section on "attitudes" wherein opinions were polled on a number of hunting issues, including game laws and enforcement.

In South Dakota, a research project was undertaken to specifically investigate whether the general population was opposed to hunting, after a general referendum in 1972 voted against continuation of the mourning dove hunting season (67% negative vote).[9] The sample consisted of 0.25 percent of the households in South Dakota, and heads of households were personally interviewed. On the basis of this survey, it was concluded that "There is no widespread anti-hunting or anti-hunter sentiment in South Dakota."[10]

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8. Klessig, Lowell L. and James B. Hale; A Profile of Wisconsin Hunters; Tech. Bull. #60; Madison, Wisconsin Dept. of Natural Resources; 1972.

9. Rosonke, Jerome R., Robert T. Wagner, Robert M. Dimit and Raymond L. Linder; "Attitudes of South Dakota Residents Toward Hunting, Hunters and Game Officials"; Paper presented to: Midwest Sociological Meeting, Omaha, Nebraska, April, 1974.

10. Ibid., p.11.

Unfortunately for purposes of critical analysis, the reliability and validity of the measuring instrument were not reported, nor was there an explanation of an obviously high rate of non-response (474 schedules were completed), nor of why heads of households were selected to represent the South Dakota population.

Shaw and Gilbert[11] designed a 20-item questionnaire to gauge the attitudes of college students toward hunting. The questionnaire was pretested on 200 students, and after three revisions was administered to 937 other students in colleges and universities across the United States. It is noted that 75% of all students expressed some degree of anti-hunting or anti-hunter sentiment. In fact, 34% of the males and 55% of the females surveyed rated their anti-hunting sentiment on the strong end of a a 7-point scale. The authors conclude that "...the student survey did not reinforce the hypothesis that philosophical opposition poses a major threat to sport hunting." [12] Presumably, the students are opposed to hunting on pragmatic rather than idealistic grounds, although the data have not been handled in a fashion that would support this conclusion. The authors also observe that there are two distinct components

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11. Shaw, Dale L. and D.L. Gilbert; "Attitudes of College Students Toward Hunting"; Transactions of the Thirty-Ninth North American Wildlife and Natural Resources Conference, March, 1974.

12. Ibid., p.161.

comprising a negative attitude toward sport-hunting: these are an "anti-hunting" sentiment and an "anti-hunter" sentiment. The anti-hunter sentiment, it is claimed, "...reflects negative attitudes toward the conduct of some individuals who participate in the hunt."[13] This deduction does not stem from statistical analysis of data, but the suggestion merits some consideration in further investigations of anti-hunting attitudes.

Erickson[14] developed a Q-sort instrument to determine some types of attitudes about wildlife. His sample consisted of 49 persons randomly selected from a list of people who volunteered their names at sporting good stores, garden stores and pet shops, as well as recruited contacts from a local county fair. Two distinct "wildlife-types" emerged from his analysis, which he labeled "protectionist" and "reductionist". Erickson's purpose in wishing to categorize and label wildlife attitudes was to help facilitate communication of wildlife ecology and management concepts to the public by identifying "target" audiences.

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13. Shaw and Gilbert; op. cit., p.161.

14. Erickson, David L. "Attitudes and Communications about Wildlife"; Transactions of the Thirty-Fifth North American Wildlife and Natural Resources Conference; March, 1970.

Hendee, Catton, Marlow and Brockman[15] developed a "Wildernism" scale to measure the "wilderness-purist" tendencies of visitors to the wilderness. The scale was used in surveying 2500 campers in the Pacific Northwest and showed differences in response between "wilderness-purists" and "non-purists".

Although the Wildernism Scale (originally 60 items, reduced after pretest to 30) was assumed to be unidimensional, Herbelein[16] has re-analysed the data from the Hendee et al study and reports that as many as seven unidimensional scales might be contained within the larger instrument. Heberlein further extracted a 14-item scale measuring "artifactualism" - preference for such artifactual aspects of wilderness as campsites with plumbing and equipped bathing beaches - and reported that "... all meaningful inferences in the Hendee data could be made equally well using the shorter, unidimensional, and conceptually more integrated artifactualism scale."[17]

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15. Hendee, J.C., W.R. Catton, Jr., L.D. Marlow and C.F. Brockman; "Wilderness Users in the Pacific Northwest - Their Characteristics, Values, and Management Preferences"; Portland, Oregon: Pacific Northwest Forest and Range Experiment Station; U.S.D.A. Forest Service Research Paper PNW-61, 1968.

16. Heberlein, Thomas A.; "Social Psychological Assumptions of User Attitude Surveys: The Case of the Wildernism Scale"; J. of Leisure Research, 5, 1973.

17. Ibid., p.26.

The Institute for Northern Studies, University of Saskatchewan, undertook a 3-year investigation for the Canadian Wildlife Service of "...the current and future social and economic needs, requirements and aspirations of society for the migratory bird resource."[18] One phase of the research involved designing a questionnaire to study the preferences of the general public for bird-oriented recreational activities. A random sample of 3066 (0.85 percent) of the households in Saskatchewan were selected to particiapate, and 694 (22.6 percent) returns were used in the analysis. Results showed that 33 percent of the sample were interested in bird hunting, 34.1 percent were interested in bird studying, and 87.3 percent were interested in bird observation.

Although 66.1 percent of the sample were either negative or indifferent about participating in bird hunting activities, Schweitzer[19] cautions that this does not indicate an anti-hunting sentiment in Saskatchewan, "... as respondents were asked to express an opinion only on their own potential participation in any specified activity."

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18. Schweitzer, Doug; "Socio-Economics in Migratory Bird Management"; Paper prepared for the 37th Federal-Provincial Wildlife Conference; Ottawa, Ontario; July 10, 1973.

19. Schweitzer, Douglas H., David A. Scott, Arthur W. Blue and Jonathan P. Secter; "Recreational Preferences for Birds in Saskatchewan", in John C. Hendee and Clay Schoenfeld, eds., Human Dimensions in Wildlife Programs; Washington, D.C., 1973, p.45.

CHAPTER III

METHODOLOGY

SCALE CONSTRUCTION

"Attitudes toward wildlife" proved to be a composite concept. It was necessary to reduce the concept into components, to which simple empirical indicators could be applied in order that an attempt might be made to quantify it. Steps in the construction involved:

1. Familiarization with the many opinions regarding wildlife as expressed in the literature and popular media; exploitation of expert contacts and own obervations.
2. Ennumeration of the subdimensions of "wildlife attitude". These were observed to include (a) dispositions toward protection of wildlife from extinction, hardship and habitat loss; (b) elements descriptive of general regard or non-regard for wildlife, including aesthetic appreciation; (c) supportive and non-supportive reactions to consumptive use of wildlife - specifically, sentiments regarding hunting and trapping.[20]

Three scales ultimately defined were: Wildlife-Protective; Wildlife-Appreciative, and Anti-Consumptive-Use. In order to preserve the unidimensionality of the scales, the Wildlife-Appreciative Scale was further separated

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20. While (a) might appear to include (c), it was observed that both supporters and non-supporters of consumptive use held an interest in protecting wildlife. Logic dictated that the Wildlife-Protective attitude be treated distinctly from the Anti-Consumptive-Use attitude.

into statements describing "general" appreciation of wildlife in terms of value to people, danger and disturbance - and "aesthetic" appreciation in terms of enjoyment of sight and sound, and the pursuit of such experiences. Similarly, the Anti-consumptive-Use attitude was maintained as two distinct scales.

The five scales developed were: (i) Wildlife-Protective (ii) Wildlife-Appreciative (General) (ii) Wildlife-Appreciative (Aesthetic) (iv) Anti-Consumptive (Hunting), and (v) Anti-Consumptive (Trapping).

3. Specification of empirical indicators which could represent the five dimensions. Since our interest was to determine whether a particular perspective about wildlife is held by persons responding to the questionnaire, this step entailed creating statements which summarized the perspective in whole or delineated one of its attributes.

In this manner, persons who indicated that they concurred with a specific statement representative of, for example, the dimension "Wildlife-Protectiveness", are assumed to be giving a report of whether they hold that attitude.[21]

4. Selecting a scaling technique. It was concluded on the basis of accumulated observations that persons were not absolutely "Protective" or "Non-Protective", but that the

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21. Kerlinger, Fred N.; Foundations of Behavioral Research; New York: Holt, Rinehart & Winston, Inc.; 1964

protectiveness could vary in strength depending on the wildlife object being considered. In effect, a continuum of attitude suggested itself, ranging in degrees from negative to positive.

To handle this perceived "intensity" of attitude, a summated rating scale (Likert-type) was judged to be most appropriate.[22] By this technique, persons are asked to select, for each statement, one of five response categories ranging from "strongly agree" to "strongly disagree". If the statement to which a respondent "strongly agrees" is favourable toward, e.g., Wildlife Protection, a score of "5" is assigned; if the statement is unfavourable toward Wildlife Protection, a score of "1" is assigned. Similarly, if a respondent "strongly disagrees" with a statement unfavourable toward Wildlife Protection, a score of "5" is assigned; if the statement is favourable toward Wildlife Protection, a score of "1" is given.

Scores ranging from "1" to "5" correspond to the five categories of response available for each statement. To find the "Wildlife-Protective" score achieved by any particular respondent, all of his weighted responses are summed. In this fashion, a person who received a score of "1" for each item of a 10-item scale, would have a total score of "10" on that scale.

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22. Edwards, Allen L.; Techniques of Attitude Scale Construction; New York: Appleton-Century-Crofts, Inc., 1957.

5. Designing a questionnaire.

A self-administered mail questionnaire was perceived to be appropriate for the purposes of this attitude investigation.

The alternative survey method, personal interviewing, is superior to the mail questionnaire in some respects, but has drawbacks consisting of greater expenditures in both time and money, the risk of interviewer bias, and a greater imposition on the time and privacy of respondents.[23]

While the major weakness of mail questionnaires lies in the problem of non-returns, it was anticipated that the topical nature of the subject area and the use of specific survey techniques reputed to increase response rates[24] would tend to mitigate this effect.

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23. Miller, Delbert C. ;Handbook of Research Design and Social Measurement, 2nd ed.; New York: David McKay Company, Inc., 1970.

24. Babbie, Op.cit., pp.163-4.

CHAPTER IV

PRE-TEST OF QUESTIONNAIRE

Objective: Refinement of the research instrument through administration of a draft questionnaire.

Population: Membership of the Manitoba Wildlife Federation and Manitoba Naturalists Society. These populations were purposively selected on the basis of knowledge that the two clubs (a) have a formalized interest in wildlife, and (b) consist respectively (but not exclusively) of persons oriented toward consumptive utilization of wildlife and persons oriented toward non-consumptive use. In view of the nature of the research objectives, the club-members were judged as likely to be reasonably appropriate respondents for the questions under consideration.

Responses from these two groups were further perceived to present a useful method of construct validation of the consumptive-utilization scales ("known-groups" method[25]): the index must be able to discriminate between the two groups and elicit responses in the predicted direction in order to support the "theory" behind the instrument's construction.

Sampling-Frame: Lists obtained from rosters of the two clubs, comprised of names of current club-members judged by contacts to be likely representatives of extremes on a consumptive/non-consumptive scale. The list provided by one of the clubs consisted exclusively of males.

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25. Kerlinger, op cit., p.454.

Sampling Method: Club-members were stratified according to sex (all male) and approximate age. From the homogeneous subsets identified, equivalent numbers of prospective participants were systematically selected from each list.

Sampling-size: (arbitrarily chosen) 5 members from each list.

Data-Collection Method: Personal interview. This method permitted the investigator to follow-up on any difficulties in responding to the questions and to note where interpretation of any statement was requested. Since the questionnaire was in a preliminary state, it was also possible to request comments and criticisms to gauge the acceptability of the questionnaire.

Respondents were contacted by telephone, the purpose of the study was explained to them and an interview time was arranged. The "draft" status of the questionnaire was stressed prior to commencing the interview, and respondents were encouraged to comment on the question items.

Method of Analysis: (a) question clarity was judged according to respondents' failure to answer an item, providing multiple answers to one item, giving qualified answers or "undecided" answers; (b) format "flow" was determined according to ease of completion; (c) the responses were compared to determine whether the consumptive-utilization scales had discriminated between the groups and whether responses were in the expected direction.

Evaluation of Pre-Test:

Item Analysis: Individual items were first analysed on the basis of ease of response; any comments offered by the respondents were taken into account, and resulted in some minor changes in wording in the questions eventually retained. Several questions that received a combination of "Undecided" answers, non-response and qualified answers were dropped.

Several of the questions that were met with a high rate of qualification or "undecided" answers tended to be of topical, policy-laden content. Specifically, they dealt with (a) the use of insecticides (mosquito-fogging in particular); (b) the environmental effects of creating and transporting energy; (c) appropriate forms of recreation (hunting, snowmobiling) in provincial parks; and (d) Indian rights to hunt wildlife. The very simple question format used in the scales could not be modified to handle all of the various qualifications that arose.

Rather than drop these "problem" statements entirely, it was decided to handle them through re-design. Five "alternative-response" type of questions were developed, based on the qualifications and comments provided by the respondents. These items do not form part of the five scales.

Scale Analysis:

(a) Wildlife-Protectiveness. No difference in responses appeared between the two groups. Questions that received over-all high agreement for protective statements and low agreement for unprotective statements were retained. In cases where the questions were duplicative in substance, the ones achieving highest response intensity were retained.

(b) Wildlife-Appreciation. Responses for both groups were in the same (positive) direction for both the General and Aesthetic scale. Items were handled as above.

(c) Anti-Consumptive Utilization.

The MWF group obtained an average score of 2.66 per item on the Anti-Hunting Scale. The MNS group obtained an average score per item of 3.94. Items which showed no ability to distinguish between the groups were either altered in an effort to increase response variance, or were dropped from the scale.

On the Anti-Trapping Scale, the MWF group obtained an average score per item of 2.45, while the MNS group average score was 3.77. Items without power to discriminate were eliminated.

The item analysis and scale analysis resulted in 37 items being dropped from the scale portion of the questionnaire, and 5 new alternative-response questions being formulated.

The revised questionnaire and key to the scales appear in Appendix A.

CHAPTER V

PILOT STUDY DESIGN

Objective: In order to disclose errors in reasoning or design of the project, this phase represented a miniaturized walk-through of a general population survey. The foremost objective was further refinement of the questionnaire. A secondary objective was to assess the acceptability of the questionnaire by the public by gauging response rates.

Population: General population (Winnipeg) as it is assumed to be represented in a readily-available directory. In the knowledge that the male/female ratio in Winnipeg is approximately 50/50,[26] the sample was selected in a fashion to perpetuate this ratio in the prospective respondents.

Sampling-frame: Henderson's Directory. This directory was chosen because it is convenient, easy to use, and inexpensive. The Henderson's Directory was perceived as a superior sampling frame to the City Telephone Directory for the purposes of this study due to one of its features: surnames are listed alphabetically with the name of the spouse (if any) appearing in brackets behind the name of the head-of-the-household.

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26. There are 48.08% males and 51.92% females over the age of 15 in the Greater Winnipeg area.(Henderson's Directory lists adults in the household.)
Canada, Bureau of Statistics; 1971 Census of Canada, Population by Specified Age Groups and Sex.

Sample Size: The sample size, in view of time and budget constraints, was arbitrarily set at 30 respondents.

Sampling Method: A random sample was generated through use of a table of random numbers.

In order to vouchsafe 30 respondents, and in the absence of any information which would enable prediction of the response rate of Winnipeg residents to a questionnaire of this nature, 100 names were initially obtained through use of the random-number table. In order to achieve a fairly equal male/female ratio, the name of the spouse was selected rather than the name of the head-of-the-household on alternate draws.

To lessen the prospect of wasteful mailing, the names selected were cross-checked with the current City Telephone Directory.* If there was some doubt about the current address of the persons selected, these names were removed from the list. Ultimately, 73 names remained. (36 males and 37 females). A response rate of 41% was required in order to meet the 30-respondent objective.

Data Collection Method: Self-administered mail questionnaires.

Letters were sent to all persons on the sample list one week prior to mailing out the questionnaire. The letter explained why the study was being conducted, how

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*The data comprising Hendersons Directory is compiled in the year before its publication, so that the information in the 1975 Directory was gathered during 1974.

people had been selected to participate in the study, the importance of each person's participation, the mechanics of returning the questionnaire, and gave an assurance of confidentiality (Appendix B - Exhibit 1).

The letter was intended to "catch the interest" of the respondents. The assumption was made that if anyone had negative feelings about surveys in general, they would read a solitary, one-page letter with less rejection than they would read the same letter accompanied by the 11-page questionnaire.

The contact letters were xeroxed on letter-size paper. The respondent's name was individually typed at the top, and each letter was individually signed by the investigator.

The questionnaire was printed on legal-size, blue paper and consisted of 90 scale items, 5 alternative-response items, 14 personal data questions and a blank page for comments.

The questionnaire-package contained a stamped, self-addressed envelope, as well as a covering letter reiterating the explanations previously given (Appendix B - Exhibit 2).

Prospective respondents were assured in both the contact-letter and covering-letter that their replies would be confidential.

Follow-up Mailings:

A follow-up mailing was done three weeks after the questionnaires were first sent out. Only those persons who had not yet returned their questionnaires were included in this phase.

Two methods of follow-up were used.

Half of the nonrespondents were sent another copy of the questionnaire and a new covering letter encouraging them to participate (Appendix B - Exhibit 3). As an alternative to participation, they were also sent a form-letter suggesting various reasons why they might not be able or willing to take part in the survey (Appendix B - Exhibit 4).

Half of the nonrespondents were sent a form-letter similar to that described above, along with a covering letter (Appendix B - Exhibits 5 and 6). This group was not sent a second copy of the questionnaire.

Methods of Analysis:

1) Response rates were computed and the effects of follow-up mailings were assessed.

2) Scores of from 1 - 5 were assigned for each item, taking the direction of the question into account. Scale scores were derived by totalling scores achieved by all respondents on all items within the scale.

3) Item analysis was undertaken to determine question clarity, meaningfulness and acceptability.

4) Functional unity of each scale was investigated.

5) Reliability co-efficients were calculated for each scale using the "split-half" technique.

6) Concurrent and content validity were determined.

7) "Best" items were selected using the criteria of high discrimination power and low "undecided" response rate.

8) Response frequencies in each response category were determined.

9) Five wildlife-attitude scores were derived for each respondent by accumulating weighted responses in each refined scale.

10) Non-parametric statistical methods were applied to investigate whether respondent scores were influenced by two independent variables - age and sex.

RESULTS OF PILOT STUDY

Participation Rate:

Of the 73 questionnaires mailed out, one was returned marked "address unknown", further reducing the prospective sample size to 72. Forty-six persons returned completed questionnaires, producing a participation rate of 63.9 percent.

Participation rate was better for females than for males: twenty-seven of the 37 females who received questionnaires participated (73 percent); 19 of the 35 males who received questionnaires participated (54.3 percent).

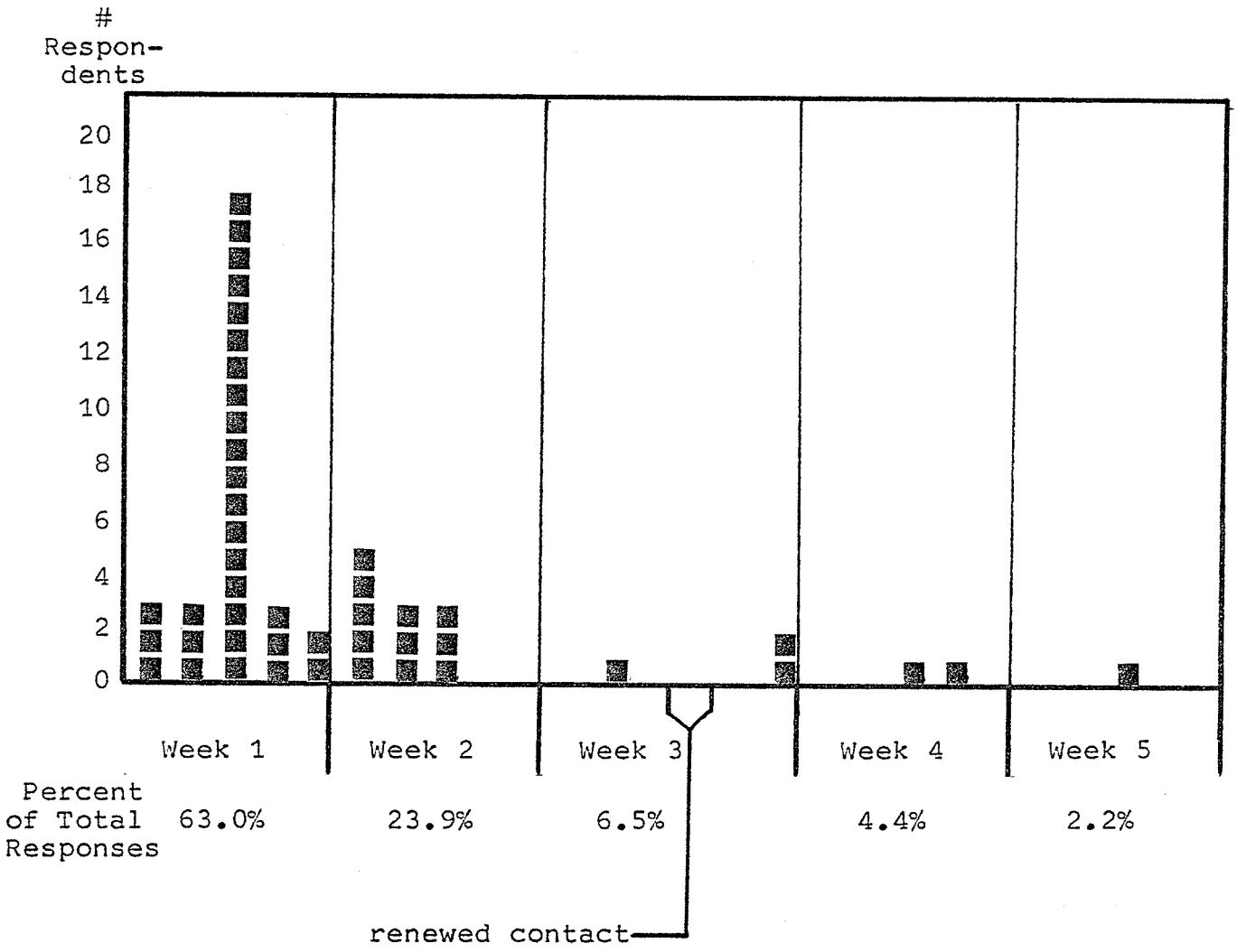
Of responses received, 93.4 percent occurred during the first 3 weeks, and 6.6 percent in the 2 weeks following (Figure 1). Since contact with respondents was renewed midway through the 3rd week, the follow-up mailing technique cannot be credited with improving response rate to any great extent.

One individual returned the uncompleted questionnaire during the first week, indicating that a problem with using the English language prevented her from participating in the survey; two others took advantage of the form-letters supplied at the time of renewed contact to report, respectively (i) time restraints prevented participation, and (ii) disinterest in wildlife and disfavour toward surveys. Response rate, including these three individuals, was 68.1 percent.

The questionnaires used in further analysis were those of the first 15 males and first 15 females to participate.

FIGURE 1

RATE OF PARTICIPATION



Item Analysis:

(a) "Undecided" answers. The number of "undecided" responses for each item ranged from 0 - 13, with a mean of 3.8 per item. Items that received a high number of such responses (10 or more) were scrutinized to determine whether a problem in clarity and interpretation might exist, or whether respondents might be unable to make a decision for other reasons. Seven of the 90 items received ten or more "undecided" responses. These were: #42, #54, #61, #76, #80, #84 and #87.

While no problem with question wording was apparent, it appeared possible that lack of familiarity with the subject matter of the items might have contributed to the high rate of "undecided" responding, and it was concluded that these items were not contributing to the usefulness of the scales.

(b) Failure to answer. Of the 90 questions comprising the five scales, 18 questions received one "no answer" each, while one question received 2 "no answer" responses. Careful re-study of any question with a refusal rate in excess of 5 percent is recommended.[27] The one question that received 2 "no answer" responses required some experiental familiarity with particular wildlife species (#11), so that

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27. Goode, William J. and Paul K. Hatt; Methods in Social Research; New York: McGraw-Hill Book Co., Inc., 1952, p.159.

it appeared likely the respondents who did not answer the question were not in a position to respond. However, even when combining "no answer" and "undecided" responses, 76.7 percent of the sample had expressed a sentiment, so that the question seemed to have utility.

(c) Multiple answers and qualified answers. Multiple answers were not given by any of the respondents. Only one qualified answer was given by one respondent.

(d) Comments on questions. Three of the 30 respondents offered comments in the body of the questionnaire. In general, these comments tended to give an explanation for non-response to particular items.

The five alternative-response questions received a mean "undecided" response rate of 1.7 per item. There was only one "no answer" response in this section. There were no direct comments, multiple answers or qualified answers.

Personal Data. There were 14 questions dealing with personal data. Eight of these were fully answered by all respondents. The largest number of "no answers" per item were in response to #9 (Household Income), which achieved a 13.3 percent (4/30) non-response rate; and to #11 (Ethnic Background), which achieved a 10.0 percent (3/30)

non-response rate. Three respondents (10.0 percent of the sample) were responsible for 75.0 percent of the non-responses in this section, while 3 others were responsible for one non-response each.

Functional Unity:

An attitude scale has functional unity if the respondents react consistently to the items.[28] That is to say, persons obtaining high scores on the scale should achieve those scores by consistently responding to items at the positive extreme of the scale, while persons achieving low total scores on the scale should consistently respond to items at the negative extreme of the scale.

An item is said to have "discrimination power" if it is consistently able to separate high scorers from low scorers.

For each of the five scales, each respondent's total scores were placed in an array from lowest to highest. The 10 highest scorers and 10 lowest scorers were selected out, and their responses were compared. For each group, the mean response for each item and the difference between the means of high and low groups were calculated.

The difference between means represents the "discrimination power" of the item. It is recommended that

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28. Blalock, Hubert M., Jr. and Ann B. Blalock; Methodology in Social Research; New York: McGraw-Hill Book Company; 1968.

few items with a discrimination power of less than 0.50 be retained in an attitude scale.[29]

Table 1 indicates that items achieved discrimination powers ranging from 0.0 to 2.2, with a median of 0.8.

Reliability:

Reliability of a scale is demonstrated if the scale will consistently produce the same results when applied to the same sample.[30]

The reliability of each of the five scales was determined using the "split-half" technique: each scale was separated into two subscales by selecting out alternative items, and the two subscales were correlated. Pearson product moment correlation coefficients (r) were determined, since a high positive r would indicate that each respondent had obtained approximately the same score on both subscales.

Table 2 shows that relatively high positive coefficients were obtained for all scales. The highest correlation was obtained for the Anti-Consumptive (Hunting) Scale with r = 0.92612.

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29. Goode and Hatt; Op. cit., p. 276.

30. Ibid., p.235.

TABLE 1

DISCRIMINATION POWER OF ITEMS IN RANK ORDER

Wildlife Protective		Wildlife-Appreciative (General)		(Aesthetic)		Anti-Consumptive Hunting		Trapping	
Q#	Rank	Q#	Rank	Q#	Rank	Q#	Rank	Q#	Rank
25	1.5	38	1.9	11	2.0	1	2.2	43	1.8
28	1.3	33	1.7	49	1.6	39	2.1	45	1.6
85	1.3	71	1.6	13	1.1	41	1.7	64	1.6
55	1.2	89	1.6	26	0.9	14	1.6	61	1.5
15	1.1	70	1.4	29	0.9	36	1.6	7	1.4
18	1.1	21	1.3	40	0.9	50	1.5	37	1.3
53	1.0	63	1.2	79	0.9	73	1.5	58	1.1
76	0.9	56	1.0	24	0.8	30	1.4	16	1.0
83	0.9	47	0.9	35	0.8	74	1.2	84	0.9
87	0.9	5	0.8	62	0.8	82	1.2	12	0.6
59	0.8	22	0.8	17	0.7	66	1.1		
60	0.8	52	0.8	34	0.6	42	1.0	n = 10	
72	0.7	48	0.7			88	1.0		
80	0.7	51	0.7	n = 12		9	0.9		
86	0.7	68	0.7			81	0.9		
57	0.5	54	0.6			90	0.9		
75	0.5	65	0.6			32	0.8		
4	0.4	69	0.6			44	0.8		
6	0.3	77	0.6			78	0.8		
23	0.1	8	0.5			27	0.4		
19	0.0	46	0.5			10	0.2		
		2	0.4			67	0.2		
n = 21		3	0.3						
		31	0.3			n = 22			
		20	0.2						
		n = 25							

TABLE 2

COEFFICIENTS OF CORRELATION
FOR "SPLIT-HALF" RELIABILITY

SCALE NAME	r
Wildlife-Protective	0.88644
Wildlife-Appreciative (General)	0.88274
Wildlife-Appreciative (Aesthetic)	0.84546
Anti-Consumptive (Hunting)	0.92612
Anti-Consumptive (Trapping)	0.78178

Validity:

Concurrent Validity.[31] Respondents listing "hunting" as one of their outdoor recreational activities should achieve low scores on the Anti-Consumptive (Hunting) Scale. Only one "hunter" appeared in the sample and it was noted that this respondent did, in fact, receive the lowest score on this scale.

The responses provided by the "hunter" were similar in most respects to the responses provided by the MWF group during the pre-test phase of the questionnaire. Only 4 of the 22 responses were in the unexpected direction.

Content Validity.[32] The four respondents who indicated strong agreement with the statement "I wish that sport-hunting was not allowed in this Province" (#39) were among the five top scorers on the Anti-Consumptive (Hunting) Scale.

On the Anti-Consumptive (Trapping) Scale, four of the five respondents who indicated strong agreement with the statement "Trapping wild animals for their fur should not be allowed in this Province" (#45) were among the six top scorers on this scale.

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31. Kerlinger; op. cit., pp.445-448.

32. Ibid., pp.445-447.

Refinement of Scales:

To meet the dual objective of shortening the length of the questionnaire and culling out "poor" items, the decision was made to remove items which had demonstrated less than the median discrimination power (0.8) and those which had received a high rate of "undecided" responses.

On these bases, 33 items were eliminated from the questionnaire. The refined scales, consisting of 57 items, were used for all subsequent analysis.

Actual responses to each statement comprising the scales are given in Appendix C.

Frequencies within Response Categories:

The raw scores, weighted to account for the direction of response, were totalled for each response category. Responses are ranged from "strongly negative" in category 1 to "strongly positive" in category 5, for each scale (Figures 2 - 6).

Distribution of Responses and Interpretation of Scores:

Five scale scores were determined for each respondent. Raw and mean scores are shown in Table 3. Mean responses ranged from 3.64 on the Anti-Consumptive (Trapping) scale to 4.27 on the Wildlife-Appreciative (Aesthetic) scale.

FIGURE 2

WILDLIFE-PROTECTIVE SCALE
RESPONSE FREQUENCY BY CATEGORY AND PERCENT

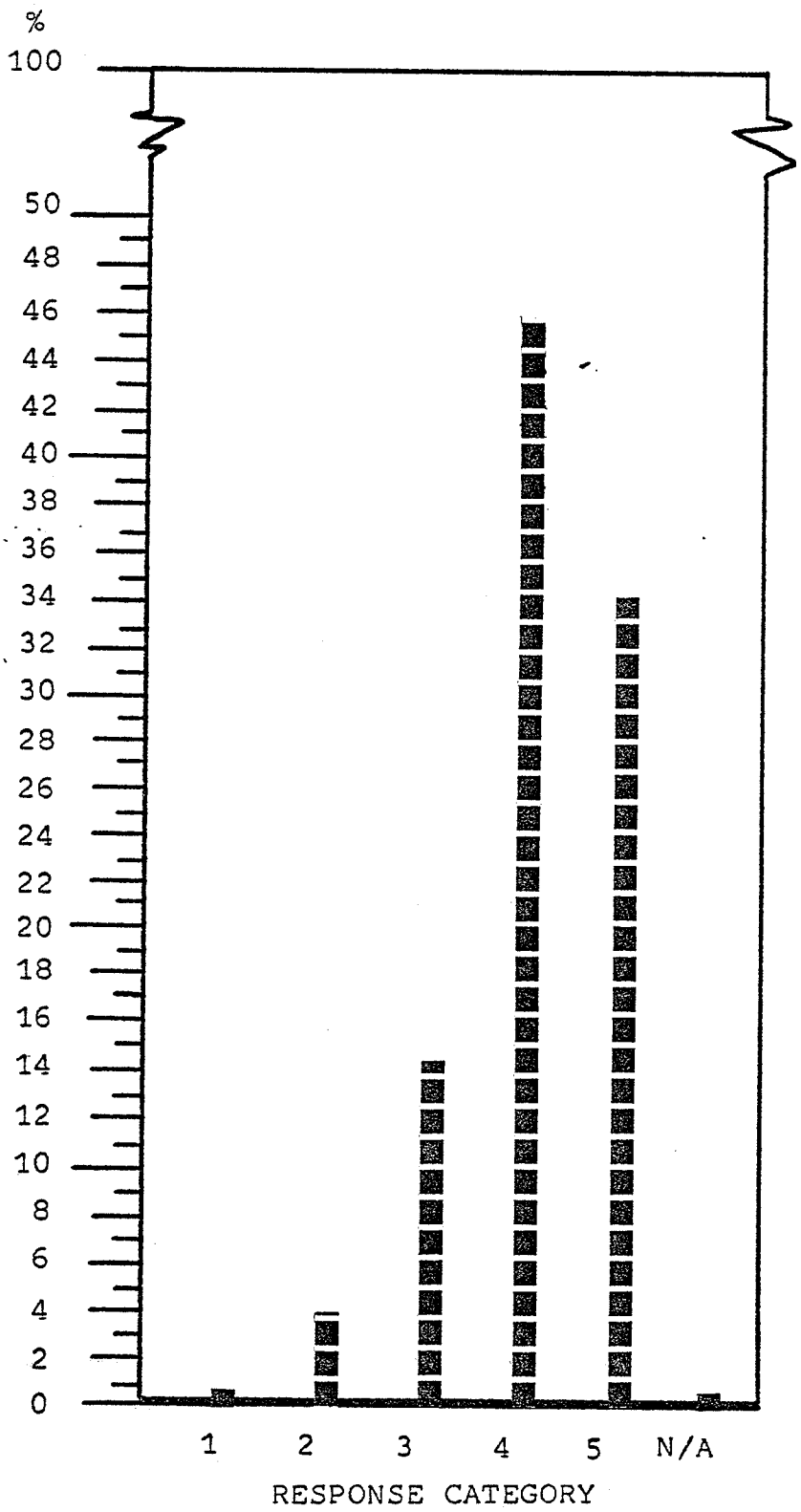

FIGURE 3

WILDLIFE-APPRECIATIVE (GENERAL) SCALE
RESPONSE FREQUENCY BY CATEGORY AND PERCENT

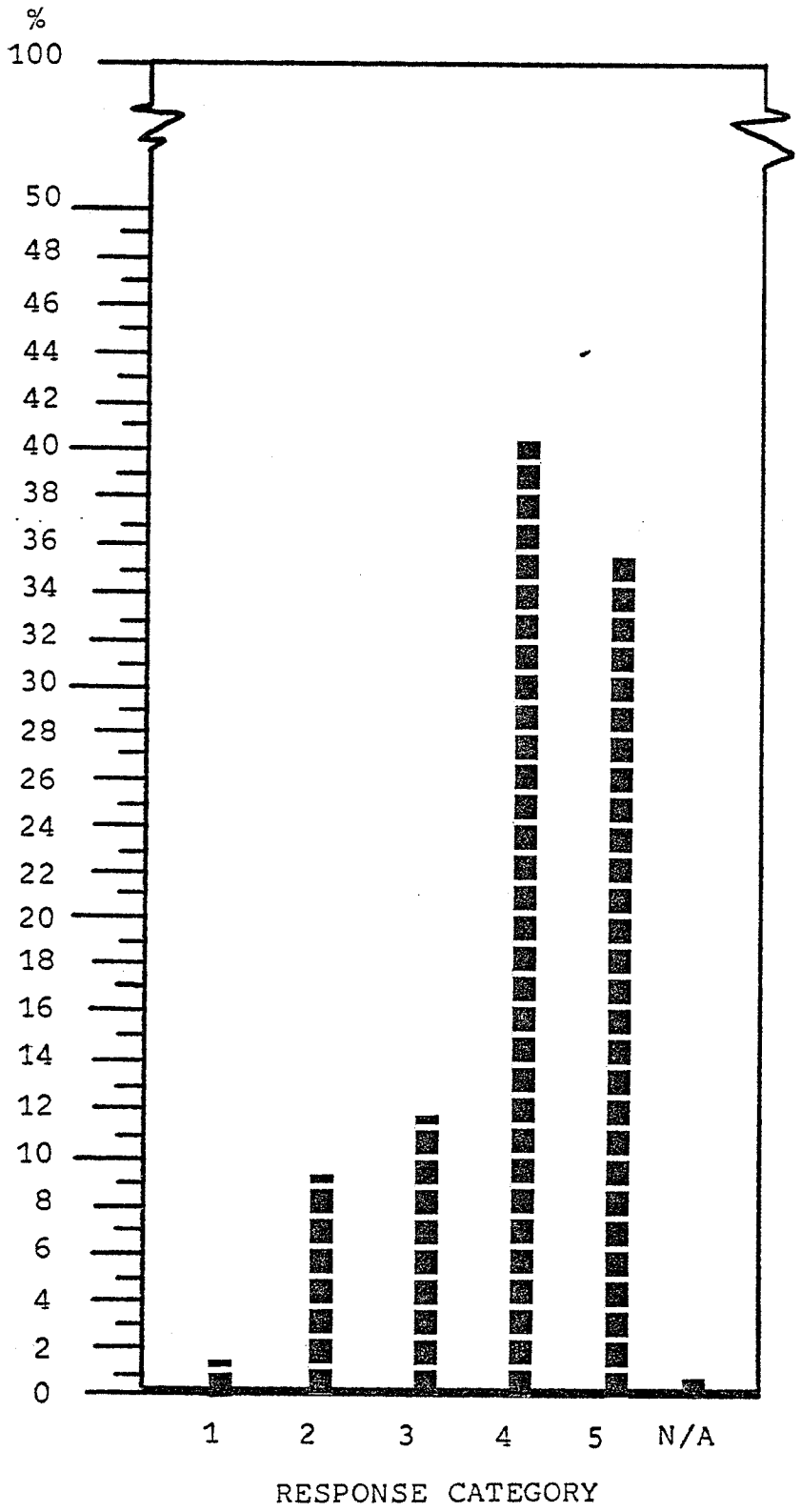

FIGURE 4

WILDLIFE-APPRECIATIVE (AESTHETIC) SCALE
RESPONSE FREQUENCY BY CATEGORY AND PERCENT

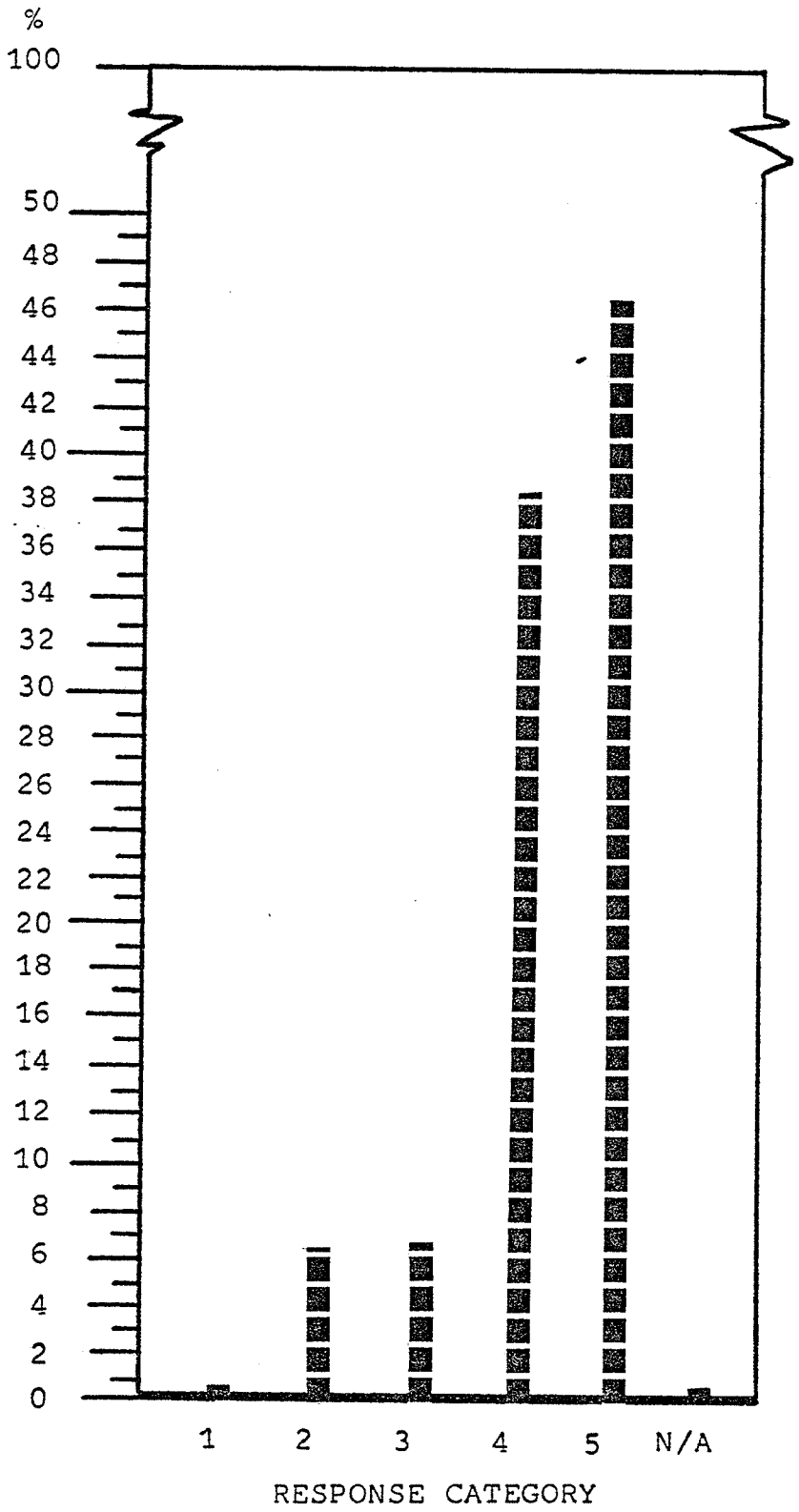

FIGURE 5

ANTI-HUNTING SCALE
RESPONSE FREQUENCY BY CATEGORY AND PERCENT

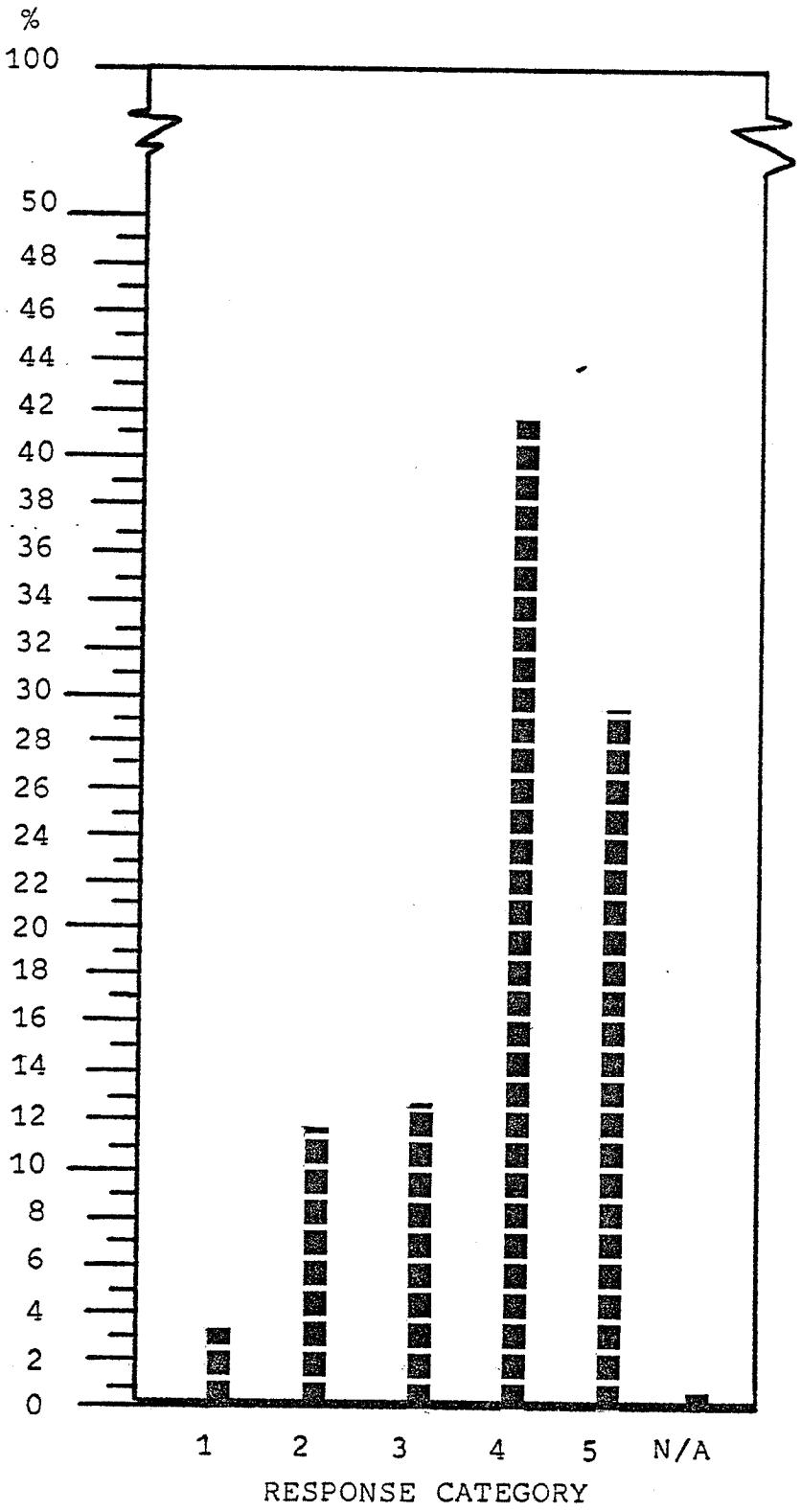

FIGURE 6

ANTI-TRAPPING SCALE
RESPONSE FREQUENCY BY CATEGORY AND PERCENT

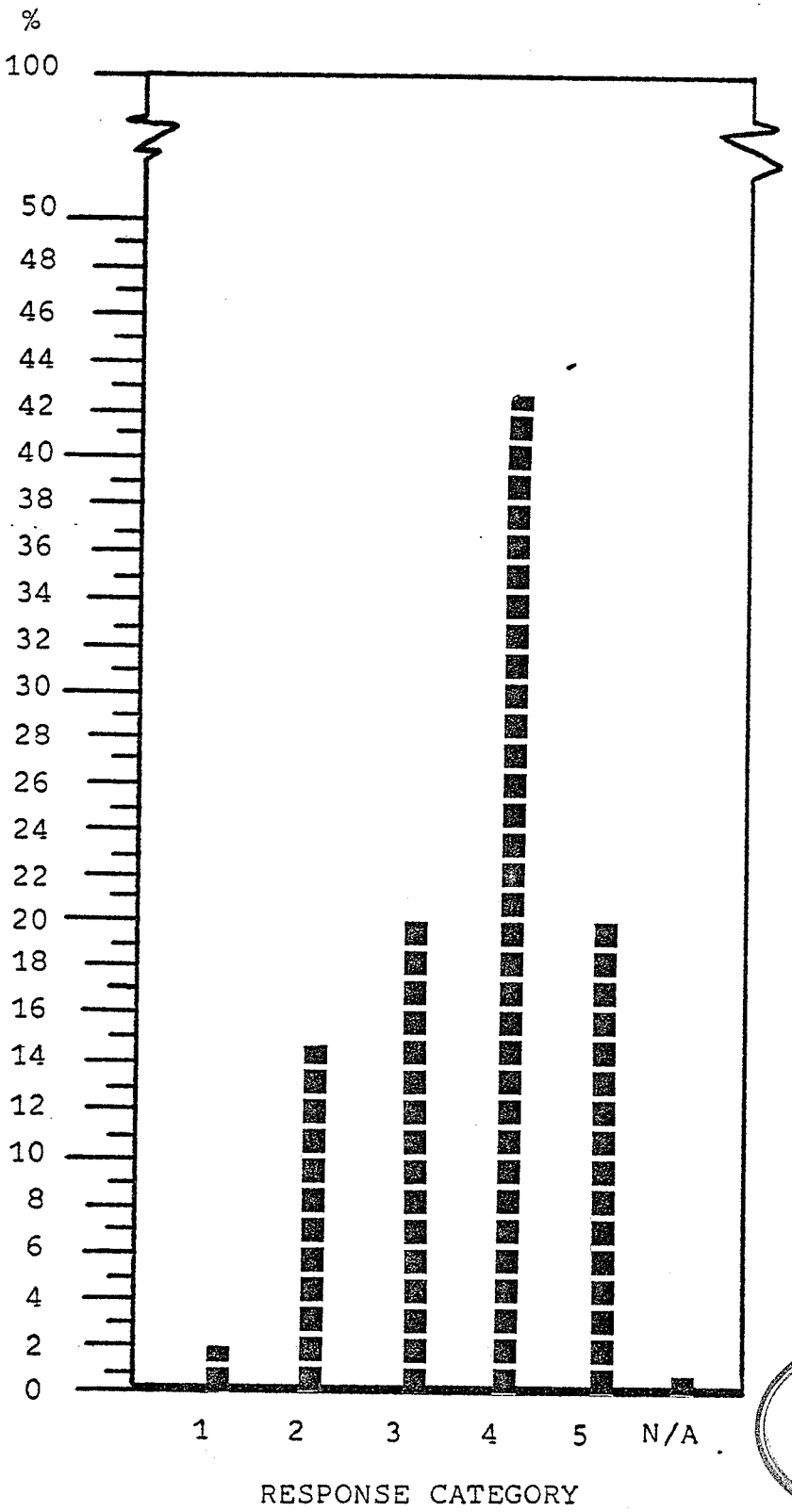

TABLE 3

RAW SCORES AND MEAN SCORES

Respondent #	Wildlife Protective		Wildlife Appreciative (General)		(Aesthetic)		Anti-Consumptive Hunting		Trapping	
	Total Score	Mean Score	Total Score	Mean Score	Total Score	Mean Score	Total Score	Mean Score	Total Score	Mean Score
1	45	4.50	52	4.33	48	4.80	84	4.67	32	4.57
2	43	4.30	49	4.08	48	4.80	72	4.00	22	3.14
3	41	4.10	52	4.33	39	3.90	71	3.94	26	3.71
4	49	4.90	54	4.50	48	4.80	78	4.33	33	4.71
5	42	4.20	48	4.00	41	4.20	56	3.11	23	3.29
6	46	4.60	58	4.83	50	5.00	78	4.33	25	3.57
7	48	4.80	60	5.00	49	4.90	*49.2	2.73	16	2.29
8	48	4.80	56	4.67	44	4.40	76	4.22	26	3.71
9	41	4.10	47	3.92	39	3.90	61	3.39	28	4.00
10	37	3.70	47	3.92	47	4.70	82	4.56	28	4.00
11	40	4.00	44	3.67	37	3.70	70	3.89	27	3.86
12	31	3.10	38	3.17	36	3.60	66	3.67	24	3.43
13	30	3.00	35	2.92	33	3.30	63	3.50	21	3.00
14	30	3.00	35	2.92	38	3.80	70	3.89	24	3.43
15	*37.8	3.78	*44.1	3.68	35	3.50	*70.7	3.93	*27.3	3.90
16	41	4.10	43	3.58	41	4.10	53	2.94	18	2.57
17	41	4.10	55	4.58	*44.5	4.45	59	3.28	18	2.57
18	41	4.10	50	4.17	*42.5	4.25	*81.4	4.52	26	3.71
19	41	4.10	50	4.17	46	4.60	57	3.17	25	3.57
20	38	3.80	44	3.67	44	4.40	66	3.67	25	3.57
21	35	3.50	37	3.08	36	3.60	75	4.17	29	4.14
22	35	3.50	47	3.92	45	4.50	64	3.56	20	2.86
23	48	4.80	53	4.42	47	4.70	84	4.67	31	4.43
24	45	4.50	59	4.92	47	4.70	82	4.56	30	4.29
25	40	4.00	50	4.17	41	4.10	66	3.67	32	4.57
26	39	3.90	42	3.50	38	3.80	74	4.11	25	3.57
27	46	4.60	42	3.50	47	4.70	86	4.78	35	5.00
28	41	4.10	48	4.00	42	4.20	62	3.44	22	3.14
29	49	4.90	57	4.75	48	4.80	*39.4	2.19	21	3.00
30	41	4.10	44	3.67	40	4.00	74	4.11	26	3.71
	1229.8	4.10	1440.1	4.00	1281.0	4.27	2069.7	3.83	765.3	3.64
	$\bar{X}$ = 40.99		$\bar{X}$ = 48.00		$\bar{X}$ = 42.7		$\bar{X}$ = 68.99		$\bar{X}$ = 25.51	
	n = 10		n = 12		n = 10		n = 18		n = 7	

* Score includes "no answer" responses, which were given the mean score for the item.

Respondent scores were arranged from lowest to highest (Table 4) and median scores for each scale were derived.

For purposes of description, we may consider a mean item score of '3' as a neutral score, since this score would indicate either "undecided" responses, or that negative and positive responses had cancelled each other out. Neutral scores for each scale are obtained by multiplying the number of items in each scale by 3. Hence, for the Wildlife-Protective Scale, a score greater than 30 (10 items x 3) would describe a positive attitude toward the protection of wildlife, whereas a score of less than 30 would indicate a negative attitude toward wildlife protection. Breakdowns of positive, neutral and negative attitudes as reflected in the five scales are given in Table 5.

Data Analysis: Description and Results:

Table 4 also lists respondents' age and sex. These variables were cross-tabulated with the attitude scores on all five scales in order to examine the association between them. Q-coefficients were utilized (Appendix D).

Positive associations were found between high scores and male sex on four of the five scales. The strongest association was on the Wildlife-Protective Scale, where a Q-coefficient of 0.4128 was achieved. A positive association between high scores and female sex occurred only on the Wildlife-Appreciative (Aesthetic) Scale.

TABLE 4

RANKED SCORES ON ATTITUDE-TOWARD-WILDLIFE SCALES
SHOWING SEX AND AGE CATEGORY OF RESPONDENTS

Wildlife Protective			Wildlife-Appreciative (General)			Wildlife-Appreciative (Aesthetic)			Anti-Consumptive Hunting			Anti-Consumptive Trapping		
Total Score	sex	age	Total Score	sex	age	Total Score	sex	age	Total Score	sex	age	Total Score	sex	age
49	M	Y	60	F	O	50	F	O	86	M	Y	35	M	Y
49	M	Y	59	M	Y	49	F	O	84	F	O	33	M	Y
48	F	O	58	F	O	48	F	O	84	M	Y	32	M	O
48	F	Y	57	M	Y	48	F	O	82	F	O	32	F	O
48	M	Y	56	F	Y	48	M	Y	82	M	Y	31	M	Y
46	F	O	55	M	Y	48	M	Y	*81.4	M	Y	30	M	Y
46	M	Y	54	M	Y	47	F	O	78	M	Y	29	M	Y
45	F	O	53	M	Y	47	M	Y	78	F	O	28	F	O
45	M	Y	52	F	O	47	M	Y	76	F	Y	28	F	O
43	F	O	52	F	Y	47	M	Y	75	M	Y	*27.3	F	O
42	M	O	50	M	Y	46	F	Y	74	M	Y	27	M	O
41	F	Y	50	F	Y	45	F	O	74	M	O	26	F	Y
41	F	O	50	M	O	*44.5	M	Y	72	F	O	26	F	Y
41	M	O	49	F	O	44	F	Y	71	F	Y	26	M	Y
41	M	Y	48	M	Y	44	F	Y	*70.7	F	O	26	M	Y
41	F	Y	48	M	O	42	M	Y	70	F	O	25	F	O
41	M	Y	47	F	O	*42.5	M	Y	70	M	O	25	F	Y
41	M	Y	47	F	O	41	M	O	66	F	O	25	F	Y
41	M	Y	47	F	O	41	M	O	66	F	Y	25	M	O
40	M	O	*44.1	F	O	41	M	O	66	M	O	24	F	O
40	M	O	44	F	Y	40	M	Y	64	F	O	24	F	O
39	M	O	44	M	Y	39	F	Y	63	F	Y	23	M	O
38	F	Y	44	M	O	39	F	O	62	M	Y	22	F	O
*37.8	F	O	43	M	O	38	F	O	61	F	O	22	M	Y
37	F	O	42	M	Y	38	M	O	59	M	Y	21	F	Y
35	M	Y	42	M	O	37	M	O	57	F	Y	21	M	Y
35	F	O	38	F	O	36	F	O	56	M	O	20	F	O
31	F	O	37	M	Y	36	M	Y	53	M	O	18	M	Y
30	F	Y	35	F	Y	35	F	O	*49.2	F	O	18	M	O
30	F	O	35	F	O	33	F	Y	*39.4	M	Y	16	F	O
1229.8 n = 10			1440.1 n = 12			1281.0 n = 10			2069.7 n = 18			765.3 n = 7		
median = 41.00			median= 48.00			median=43.00			median =70.35			median =25.50		

CODE: M = male Y = less than 35
F = female O = 35 or more
*mean score for the item.

TABLE 5

ATTITUDES TOWARD WILDLIFE

Scale	Positive	Neutral	Negative
	%	%	%
Wildlife-Protective	28 (93.3)	2(6.7)	0(0.0)
Wildlife-Appreciative (General)	28 (93.3)	0(0.0)	2(6.7)
Wildlife-Appreciative (Aesthetic)	30(100.0)	0(0.0)	0(0.0)
Anti-Consumptive (Hunting)	27 (90.0)	0(0.0)	3(10.0)
Anti-Consumptive (Trapping)	24 (80.0)	2(6.7)	4(13.3)

Positive associations were found between high scores and younger age (35 or less) on all five scales. The strongest associations were on the Wildlife-Protective Scale (Q = 0.6410) and the Wildlife-Appreciative (General) Scale (Q = 0.5000).

To investigate the probability that the observed differences in scores could have occurred by chance, a non-parametric statistical test (the Sign Test) was applied to the data.[33] By this technique, scores were paired on the basis of sex and age and counts were made of the number of times that the scores of male respondents exceeded those of female respondents, and the number of times that the scores of younger respondents exceed those of "older" respondents. If there were no differences in the scores we would expect to obtain approximately equal numbers of times with, e.g., male scores exceeding female scores and female scores exceeding male scores.[34] Tables of data for the sign test appear in Appendix D.

The significance of the observed differences was tested using the normal approximation to the binomial probability distribution. Calculation of z-scores are in Appendix D.

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33. Runyon, Richard P. and Audrey Haber; Fundamentals of Behavioral Statistics; Reading, Mass.: Addison-Wesley Publishing Co., 1967.

34. Kerlinger, op. cit., pp.261-263

On the Sex/Wildlife-Attitude comparisons, the z-score of 1.8709 obtained on the Anti-Consumptive (Trapping) Scale is significant at the 0.10 probability level; i.e. there is less than 10% probability that the scores of male respondents would exceed the scores of female respondents by chance (the probability is, in fact, 6.1%).

On the Age/Wildlife-Attitude comparisons, none of the observed differences in scores achieved statistical significance. The lowest chance-association is with respect to the Wildlife-Protective Scale, where "younger" respondents could be expected to achieve higher scores than "older" respondents with a probability of 18.0 percent.

"Alternative-Response" Questions: Analysis and Results:

Actual responses to the five "alternative-response" questions are given in Appendix C.

Respondents were most divided on the matter of whether snowmobiling should be allowed in Provincial Parks: Fifty percent disapproved (33.3% strongly) while 46.7 percent approved (10.0% strongly).

There was least division on the matter of licensed hunting in Provincial Parks. Eighty percent of the sample disagreed (63.3% strongly) and 16.7 percent agreed (none strongly).

Respondents tended to disapprove of having more hydro-electricity production in Manitoba: 63.3 percent expressed disapproval (16.7% strongly), while 20 percent approved (0 strongly).

On the matter of mosquito-fogging, 60.0 percent of the sample approved (26.7% strongly) while 23.3 percent disapproved (6.7% strongly).

The majority of respondents agreed that Indian people should have special rights to hunt wildlife: 60.0 percent were in favour (23.3% strongly). Of respondents who disapproved (33.3%), only 13.3 percent had a strong opinion on the matter.

Sample Characteristics:

Characteristics of the 30 respondents comprising the sample are given in Appendix C. Sex was the only independent variable which was controlled. Respondents, fortuitously, were dichotomized in age with 35 as the mid-point. Small numbers of respondents falling into the other personal characteristic categories prevented any further analysis of this section of the questionnaire.

Recreational Preferences:

Respondents had a wide array of outdoor recreational preferences (Table 6). The most relatively popular activities were Driving & Sightseeing, Swimming, Hiking & Walking for Pleasure, Picnicking, Camping and Boating. Each of these activities achieved a participation rate of more than 50 percent. Fishing was also quite popular (46.6% participation rate).

Ranking the activities according to relative popularity disclosed that the least popular activities were Downhill Skiing, Hunting and Snowmobiling (one participant reported for each activity). Birdwatching and Wildlife Photography were also relatively unpopular (4 participants in each activity).

The more wilderness-oriented recreational pursuits, such as canoeing, cross-country skiing, back-packing and snowshoeing, received intermediate ranks, with participation rates between 16.6% and 36.6%.

TABLE 6

OUTDOOR RECREATION ACTIVITIES: PARTICIPATION RATE AND RELATIVE POPULARITY

Activity	Participants #	Participants %	Relative % Popularity of Activity*
Back-packing	5	16.6%	2.45%
Bicycling	13	43.3%	6.37%
Bird-watching	4	13.3%	1.96%
Boating	15	50.0%	7.35%
Camping	16	53.3%	7.84%
Canoeing	11	36.6%	5.39%
Cross-Country Skiing	10	33.3%	4.90%
Downhill Skiing	1	3.3%	0.49%
Driving & Sightseeing	21	70.0%	10.29%
Fishing	14	46.6%	6.86%
Golfing	11	36.6%	5.39%
Hiking & Walking for pleasure	18	60.0%	8.82%
Horseback-riding	6	20.0%	2.94%
Hunting	1	3.3%	0.49%
Nature Photography	6	20.0%	2.94%
Nature Study	6	20.0%	2.94%
Picnicking	16	53.3%	7.98%
Snowmobiling	1	3.3%	0.49%
Snowshoeing	5	16.6%	2.45%
Swimming	20	66.6%	9.80%
Wildlife Photography	4	13.3%	1.96%

Ranked Popularity	Activity
1	Driving & Sightseeing
2	Swimming
3	Hiking & Walking for pleasure
4	Picnicking
5	Camping
6	Boating
7	Fishing
8	Bicycling
9	Canoeing
9	Golfing
10	Cross-Country Skiing
11	Horseback-riding
11	Nature Photography
11	Nature Study
12	Back-packing
12	Snowshoeing
13	Bird-watching
13	Wildlife Photography
14	Downhill Skiing
14	Hunting
14	Snowmobiling

*obtained by summing the # of participants in each activity, totalling the sums (204) and dividing by the # of participants in each activity.

CHAPTER VI

CONCLUSIONS

The five dimensions which were identified as components of "Wildlife Attitude", namely

Wildlife-Protectiveness

Wildlife Appreciation (General)

Wildlife Appreciation (Aesthetic)

Anti-Consumption (Hunting)

Anti-Consumption (Trapping)

have proven to be measurable, and it has been possible to construct a questionnaire to collect responses from the general public regarding their wildlife attitudes.

The questionnaire appears to be acceptable to the general public.

Persons comprising the pilot sample tended to indicate protectiveness, appreciation and anti-consumptive orientations toward wildlife.

DISCUSSION

It would appear that the "anti-consumptive" sentiments expressed by the persons comprising this pilot sample with regard to hunting and trapping do not extend into the realm of fishing. Fishing was the 7th most popular outdoor recreational activity reported. It cannot be said, therefore, that the respondents are opposed to the consumptive use of wildlife, but merely to consumptive use in the form of hunting and trapping.

On the basis of this sample, anti-hunting sentiment does not have its basis in obvious, direct recreational conflict, e.g., between birdwatchers and sport-hunters. These two activities were among the least popular that were reported.

Although the most popular recreational activities are those which do not involve "seeking out" wildlife, we cannot assume that observing wildlife is of small consequence to these respondents. We note that 100 percent of the sample expressed agreement with the statement "A drive through the countryside is more enjoyable if one can see wildlife along the way (Q.#62). Driving & Sightseeing was the most popular outdoor recreational activity reported (70.0% participation rate) and many of the other very popular activities involve, by their nature, "drives through the countryside".

Results show also that 83.4 percent of the respondents expressed agreement with the statement "Hunting scares wildlife away so that there is less chance for people to see and enjoy them" (#66). It might be inferred from these observations that hunting is in conflict with most other types of recreational activities, and not merely in conflict with the most obvious non-consumptive uses, i.e., birdwatching and wildlife photography.

Since most people (96.7%) reported that they enjoyed listening to songbirds, and 93.4 percent reported that they were delighted by the sight and sound of migrating flocks of Canada Geese, it is most curious that so few (13.3%) reported themselves as "birdwatchers". There is, in the minds of these respondents at least, an obvious difference between enjoying the sight and sound of birds and "birdwatching". It is interesting to reflect that Schweitzer's study[35] revealed that 87.3 percent of his sample were interested in "bird observation". The terms "watching" and "observing" are obviously not synonomous with respect to birds.

In general, it can be said that the importance of wildlife to these individuals was not reflected in their outdoor recreational preferences.

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35. Schweitzer, Op. cit.

It is interesting that younger respondents tended to obtain higher scores on all the scales than older respondents. A finer age breakdown, looked at in conjunction with education level, might help to interpret this result.

The tendency for males to achieve higher scores than females cannot be explained due to sampling limitations. It would, for example, be useful to employ multivariate analysis to investigate how much of the variance on each scale is due to sex vs. age.

Similar analysis might be used to investigate the relative weight of each personal characteristic in contributing to Wildlife Attitudes.

LIMITATIONS AND SUGGESTIONS FOR FURTHER RESEARCH

The chief limitation of the study was the restrictiveness of the sample selected for pilot test procedures. While this sample size was adequate to meet the primary objectives of this study, i.e., the development and refinement of the survey instrument, it was not large enough to permit any more than restricted analysis of the sociodemographic commonalities or differences among persons comprising the sample.

Any tendency to generalize the results obtained from this sample to the population at large is premature. We cannot discount the possibilities that the sample was not representative of the general population and that the results may be biased due to non-response.

While the sample was randomly drawn, the arbitrarily-chosen small size of the sample in relation to the size of the Winnipeg population precluded true representativeness.

Further, Henderson's Directory represents an imperfect sampling frame, since all persons are not listed. Householders and employers "volunteer" the information that goes into the directory. The technique used in this pilot survey of cross-referencing names drawn from Henderson's Directory with listings in the 1975 Telephone Directory further served to cut down representativeness, i.e., persons without tele-

phones did not have the opportunity to participate.

In substantiation of the notion of non-representativeness, it is noted that only 5 of the 15 male respondents indicated that they were 35 years of age or older. According to census information, 54.4 percent of the male population in Winnipeg falls into this age category. While males of 35 years of age and older were under-represented in the sample, females of similar age were over-represented: the sample contained 66.7 percent females age 35 and over, while the census reports 57.0 percent in this age category.

A further source of sampling error may be due to nonresponse: 36.1 percent of the persons to whom questionnaires were mailed did not participate in the survey. Two of the non-respondents volunteered the information that they were unable to participate due to lack of time and language difficulty (respectively) while one other expressed disinterest in wildlife. No generalizations can be made to the remaining 23 non-respondents, who comprised 31.9 percent of the sample. Partial response is a possible source of bias in results, since the persons who did not answer the questions may not be similar in attitude to those who did participate in the survey.

While these sampling limitations do not detract from the usefulness of the survey instrument, they do prevent making inferences from this sample to the larger population.

We must also note that respondents were homogeneous inasmuch as they were all residents of a large city. Responses from rural residents might have been different from those of urban dwellers, expecially through familiarity with wildlife/agricultural conflicts. A representative "Manitoba" Wildlife Attitude might be quite different from a representative "Winnipeg" attitude.

The facts that wildlife-attitudes can be measured using the survey tool constructed in this study, and that individuals are willing to reveal their wildlife-attitudes by voluntarily responding to the questionnaire, attest to the potential usefulness of the questionnaire as a wildlife management tool. The following suggestions for further research are offered:

1) that a province-wide survey of attitudes toward wildlife be undertaken.

2) that the random sample of respondents be selected from a representative sampling frame, including both urban and rural residents.

3) that the sample size be sufficiently large to ensure representativeness and permit investigation of the personal characteristics and recreational preferences associated with particular attitudes.

4) that a random sample of non-respondents be drawn, and that personal interviews be arranged with this small sample in an endeavour to account for the possibility of non-response bias.

The participation rate demonstrated during this pilot study will facilitate estimates of the sample size to be drawn from Winnipeg area residents. Allowances will have to be made for a different response rate from rural residents.

BIBLIOGRAPHY

BIBLIOGRAPHY

BABBIE, EARL R.
1973 Survey Research Methods. Belmont, California: Wadsworth Publishing Company, Inc.

BLALOCK, HUBERT M., JR. AND ANN B. BLALOCK
1968 Methodology in Social Research. New York: McGray-Hill Book Company.

CANADA, BUREAU OF STATISTICS
1971 Census of Canada, Population by Specified Age Groups and Sex.

CANADA, CANADIAN WILDLIFE SERVICE
1964 Wildlife in Man's World. Cat. #R66-2365. Ottawa.

EDWARDS, ALLEN L.
1957 Techniques of Attitude Scale Construction. New York: Appleton-Century-Crofts, Inc.

ERICKSON, DAVID L.
1970 "Attitudes and Communications about Wildlife". Transactions of the Thirty-Fifth North American Wildlife and Natural Resources Conference.

GOODE, WILLIAM J. AND PAUL K. HATT
1952 Methods in Social Research. New York: McGray-Hill Book Co., Inc.

HEBERLEIN, THOMAS A.
1973 "Social Psychological Assumptions of User Attitude Surveys: The Case of the Wildernism Scale". J. of Leisure Research, 5.

HENDEE, JOHN C. AND CLAY SCHOENFELD, eds.
1973 Human Dimensions in Wildlife Programs. Washington, D.C.

HENDEE, J.C., W.R. CATTON, JR., L.D.MARLOW AND C.F.BROCKMAN
1968 "Wilderness Users in the Pacific Northwest - Their Characteristics, Values, and Management Preferences". Portland, Oregon: Pacific Northwest Forest and Range Experiment Station. U.S.D.A. Forest Service Research Paper PNW-61.

HILGARD, ERNEST R. AND RICHARD C. ATKINSON
1953 Introduction to Psychology, 4th ed. New York: Harcourt, Brace & World, Inc.

KERLINGER, FRED N.
1964 Foundations of Behavioral Research. New York: Holt, Rinehart & Winston, Inc.

KLESSIG, LOWELL L. AND JAMES B. HALE
1972 A Profile of Wisconsin Hunters. Tech. Bull. #60 Madison, Wisconsin: Dept. of Natural Resources.

MANITOBA, DEPARTMENT OF MINES, RESOURCES AND ENVIRONMENTAL MANAGEMENT
1974 Annual Report, Year ending March 31, 1974.

MILLER, DELBERT C.
1970 Handbook of Research Design and Social Measurement, 2nd ed. New York: David McKay Company, Inc.

NIEPOTH, WILLIAM
1973 "Users and Non-users of Recreation and Park Services", in David Gray & Donald A. Pelegrino (Eds.) Reflections on the Recreation and Park Movement. Wm. C. Brown Publishers.

RILEY, MATILDA WHITE
1963 Sociological Research: II. Exercises and Manual. New York: Harcourt, Brace & World.

ROSONKE, JEROME R., ROBERT T. WAGNER, ROBERT M. DIMIT AND RAYMOND L. LINDER
1974 "Attitudes of South Dakota Residents Toward Hunting, Hunters and Game Officials". Paper presented to the Midwest Sociological Meeting, Omaha, Nebraska.

RUNYON, RICHARD P. AND AUDREY HABER
1967 Fundamentals of Behavioral Statistics. Reading, Mass.: Addison-Wesley Publishing Co.

SCHWEITZER, DOUG
1973 "Socio-Economics in Migratory Bird Management". Paper prepared for the 37th Federal-Provincial Wildlife Conference. Ottawa, Ontario.

SCHWEITZER, DOUGLAS H., DAVID A. SCOTT, ARTHUR W. BLUE AND JONATHAN P. SECTER
1973 "Recreational Preferences for Birds in Saskatchewan" in John C. Hendee and Clay Schoenfeld (Eds.), Human Dimensions in Wildlife Programs. Washington, D.C.

SHAW, DALE L. AND D. L. GILBERT
1974 "Attitudes of College Students Toward Hunting". Transactions of the Thirty-Ninth North American Wildlife and Natural Resources Conference.

APPENDIX A

(1

SURVEY OF ATTITUDES TOWARD WILDLIFE

SECTION I

INSTRUCTIONS: Below are some statements about wildlife and nature, with which some people agree and others disagree. We would like you to give us your own opinion about these statements by showing whether you agree or disagree with each one.

Please read each statement and decide how you feel about it. You will agree with some statements, and you will disagree with others. You may be undecided about some. To help you show your opinion, five possible answers have been placed under each statement. Please choose the answer most like your own opinion and mark a cross in the box beside it. Please check only one answer, and do not make any changes to the statement.

This is not a test - there are no "right" answers and no "wrong" answers. It is your own, honest opinion that we want.

NATURE

1. Sport-hunting is a good way to get out and enjoy nature.
   Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

2. Nature study is fascinating.
   Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

3. There should be more places right near the city where people can go to walk around in nature all year around (hike, snowshoe, bike, ski).
   Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

4. Man is the NUMBER ONE creature on earth, and has the right to use animals and birds as he sees fit.
   Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

5. A wild creature that is not good for hunting, eating or trapping has no value to people.
   Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

6. Man disturbs the balance of nature - if nature were left alone, wildlife would be in balance.
   Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

7. It is too bad that so many wild animals are trapped each year so that rich people can buy fancy, expensive coats.
   Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

8. Humans ought to try to "fit-in" with nature, rather than trying to "conquer" nature.
   Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

9. Most hunters are good sportsmen.
   Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

(2

ANIMALS AND BIRDS

10. There should be a hunting season on mourning-doves.
Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

11. I don't like to hear coyotes and wolves howling at night.
Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

12. Wild animals breed so quickly, the ones that are trapped each year are soon replaced.
Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

13. The sight and sound of migrating flocks of Canada Geese delight me.
Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

14. Wildlife belongs to everyone - it is not fair that hunters are allowed to shoot wildlife, because then everyone else has less chance to see live birds and animals.
Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

15. There should be a bounty paid on wolves to encourage people to destroy them.
Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

16. Trappers are careful not to trap furbearing animals to the point where they are in danger of becoming extinct.
Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

17. It makes me happy to see the migrating birds returning from the South each spring.
Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

18. If I found a home of young predators (like coyotes), I would try to destroy them before they had a chance to grow up and become a problem.
Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

19. House-cats kill many wild birds and small animals; they should not be allowed outdoors without bells on their collars.
Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

20. Unlike human beings, animals don't feel pain.
Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

21. Cougars are dangerous animals; the province would be better off without them.
Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

22. Bats are horrible.
Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

23. The Polar Bears at Churchill are a great problem and we should find some way of getting rid of them.
Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

24. A fawn drinking at a quiet pool is wonderful to see.
Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

25. Because hawks are a danger to chickens, they should not be protected by law.
Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

26. A meadowlark does not have a particularly pleasing song.
Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

27. Hunting is not the main reason for the decreasing numbers of birds and animals in the Province.
Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

28. Since skunks smell bad and carry rabies, the entire species should be destroyed.
Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

29. I enjoy listening to songbirds.
Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

30. I see nothing wrong with hunting animals and birds for trophies.
Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

31. It doesn't bother me when I drive over a gopher on the road.
Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

32. If we didn't have hunting, there would be so many wild animals and birds they would become a problem to farmers.
Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

33. Loons are no good for anything; I would not miss them if there were no more loons.
Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

34. Given the choice, I would rather shoot an animal or bird with a camera than a gun.
Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

35. I am delighted at the return of the first robin in Spring.
Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

36. Deer hunting season has been closed for two years in this Province, and I don't think it should ever be re-opened.
Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

37. Trapping wastes wildlife, since many animals and birds that the trapper does not want are caught in the traps and die for no reason.
Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

38. Wolves are too dangerous to allow to roam the countryside.
Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

39. I wish that sport-hunting was not allowed in this Province.
Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

40. A moose is a magnificent creature.
Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

41. Youngsters should be encouraged to develop an interest in hunting.
Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

42. I very much enjoy eating a meal of wild goose or duck.
Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

43. I would like to have (would like my wife to have) a fur-coat made of the pelts of wild furbearing animals.
Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

44. Many birds and animals are wounded but not killed during hunting seasons and left to die painfully.
Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

45. Trapping wild animals for their fur should not be allowed in this Province.
Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

46. I would be very sad if the last wild animal in the world died.
Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

WILDLIFE

47. I enjoy watching wildlife shows on television.
Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

48. Wildlife is not very interesting.
Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

49. Pictures and paintings of wildlife are among my favourite types of art-work.
Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

50. It would be foolish not to allow hunting, since we would be wasting the game animals.
Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

51. In the winter, it is nice to know that wildlife is around, by the footprints left in the snow.
Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

52. Children should be encouraged to have an interest in wildlife.
Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

53. If I saw someone hurting a wild animal, I would ask them to stop.
Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

54. We should spend less time and money on wildlife, and more effort on helping poor people instead.

Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

55. If I saw someone breaking Wildlife Laws - like hunting out of season, I would report them to the authorities.

Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

56. Wild creatures are more of a problem than they're worth.

Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

57. People should be encouraged to protect wildlife.

Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

58. It is desirable that we encourage people to earn extra income by trapping.

Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

59. All wildlife should be saved from extinction, whether useful to man or not.

Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

60. There should be a wildlife clinic, where people can take hurt birds and animals for proper care and treatment.

Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

61. It would be foolish not to allow trapping, since we would be wasting the furbearing animals.

Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

62. A drive through the countryside is more enjoyable if one can see wildlife along the way.

Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

63. I could get along quite nicely without wildlife.

Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

64. There is no "humane" trap.

Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

65. I hope that there will still be wildlife around for future generations.

Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

66. Hunting scares wildlife away, so that there is less chance for people to see and enjoy them.

Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

67. Birdwatchers who go into the forest during hunting seasons should be required by law to wear hunting-type clothes, so that they can be recognized by hunters.

Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

68. I would like the opportunity to see wildlife more often.

Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

RURAL

69. I would like to know there are places with wildlife in the province, even if I don't go out to see these things myself.
Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

70. It is dangerous to walk alone through the forest without a gun.
Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

71. If I were going camping, I would not want to tent in a place where I might be kept awake at night by hooting owls.
Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

72. The government should encourage farmers not to drain potholes and marshes, so that wildlife may use these areas.
Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

73. Farmers should be encouraged to allow the public to hunt on their land during the hunting seasons.
Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

74. Hunting seasons should be shorter, so that people can enjoy walking in the countryside in the Fall without the danger of being shot at by hunters.
Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

75. There should be more refuges for wildlife in the Province.
Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

76. Marginal farmland (land with poor soil) should be left for wildlife, rather than being cleared and turned into farms.
Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

77. Parks are for people, rather than for animals and birds.
Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

78. Game birds and animals belong to everyone - it is unfair for farmers to keep people off who want to hunt on their land.
Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

79. I would enjoy being alone on a pleasant day in a natural park (like Bird's Hill).
Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

80. Farmers should have the right to destroy wild birds and animals that damage their crops or livestock.
Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

81. No person should be allowed to hunt on private property without the written permission of the landowner.
Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

82. Hunting should be allowed only in the northern part of the Province, if we must have hunting at all.
Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

83. Farmers should be encouraged to leave some natural vegetation - like brush and tall grass - on their land as a home for wildlife.

Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

84. If we didn't have trapping, there would be so many wild animals they would become a problem to farmers and ranchers.

Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

85. The government should encourage private landowners to have wildlife refuges on their property.

Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

86. Trappers should not be licensed to trap those furbearing animals that are in danger of becoming extinct.

Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

87. To help bring an end to the world food shortage, the government should see to it that all fertile land in the Province is put into farming.

Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

88. It is unfair to open an area for sport-hunting after it has been a refuge for wildlife for many years.

Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

89. If I were going camping, I would rather pitch my tent in a modern campground with lots of people and lights, than in an isolated spot where there might be wild animals around.

Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

90. Hunters who hunt on private property without the permission of the landowner should be fined, or have their hunting licenses suspended.

Strongly Agree( ) Agree( ) Undecided( ) Disagree( ) Strongly Disagree( )

SECTION II

INSTRUCTIONS: Here are five questions having to do with wildlife and the environment. Please read each question, and then read the answers that are given. Mark a cross in the box beside the one answer that is most like your own opinion.

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91. Should the City fog (or spray) for mosquitoes?

( ) Strongly Disapprove - mosquito-fogging does more harm than good, and should not be done, even if the mosquitoes carry disease.

( ) Disapprove - city-wide mosquito-fogging does not control mosquitoes because new ones hatch each day, so that the effort and cost is wasted.

( ) Approve - fogging should be done whenever there are so many mosquitoes they are a nuisance to people.

( ) Strongly Approve - fogging should be done frequently and regularly, starting in early spring and going on all summer.

( ) Undecided/Don't know.

92. Should licensed hunting be allowed in Provincial Parks?

( ) Strongly disagree - all wildlife should be left alone in provincial parks, for enjoyment by the public who visit the parks.

( ) Disagree - if there are too many game animals (deer, elk) for the park area, then park rangers should remove some of them.

( ) Agree - but licensed hunting in provincial parks should be allowed only in the years when there are too many game animals for the park area.

( ) Strongly agree - licensed hunting should be allowed every year, to control the numbers of game animals and provide recreation for hunters.

( ) Undecided/don't know.

93. Should snowmobiling be allowed in Provincial Parks?

( ) Strongly approve - snowmobiling is a fine way for Manitobans to get out and enjoy the winter, and should be as welcome in the provincial parks as any other type of outdoor family recreation.

( ) Approve - if use of snowmobiles in the parks is limited to certain areas and specially marked, supervised snowmobile trails.

( ) Disapprove - it is difficult to supervise snowmobilers to ensure that they stay on specially marked trails; when off the trails, they might bother widlife and destroy vegetation.

( ) Strongly disapprove - snowmobiling is a noisy type of recreation that interferes with quiet enjoyment of the park by other people, and is a threat to wildlife and vegetation.

( ) Undecided/don't know.

94. Should Indian people have special rights to hunt wildlife?

( ) Strongly agree - the Indians' right to hunt wildife at any time of the year is a privilege granted to them in treaty, and should be preserved.

( ) Agree - the life-style of many Manitoba Indians, especially those living on reserves, is such that they depend on wild game as a source of food.

( ) Agree - Indians are good hunters and kill only what they need for food.

( ) Disagree - Indians abuse their special hunting rights by killing game animals and then selling the meat to non-Indians.

( ) Disagree - in today's society, Indians do not have to depend on killing wild game animals for food.

( ) Strongly disagree - Indians should have no greater rights to hunt wildlife than anybody else in the Province.

( ) Undecided/don't know.

95. Should we have more hydro-electricity production in Manitoba?

( ) Strongly disapprove - we should not sacrifice the natural environment by building large dams which flood the countryside and criss-crossing the land with hundreds of miles of transmission lines, even if the Province can make money by selling hydro-electricity outside the Province.

( ) Disapprove - we should make wiser use of the hydro-electricity that is already being produced, or start using energy sources that do not damage the environment (like sun and wind), and we should not consider producing electricity for sale outside the Province.

( ) Approve - we need more hydro-electricity to keep up our standard-of-living in the Province, and there's nothing wrong with selling it outside the Province during times when we don't need it ourselves.

( ) Strongly approve - too bad about the changes to the countryside, but we can't stand in the way of progress; selling hydro-electricity outside the Province is a good way for Manitoba to make money.

( ) Undecided/don't know.

SECTION III

(10

INSTRUCTIONS: In this section, we would like to know a little about you, so we can see how different people feel about the issues we have been examining. For each question, please mark a cross in the box beside the answer that describes you. For questions #6 and #11, please fill in the blank space provided.

1. Do you take part in any of the following outdoor recreation activities? (Please put a check-mark beside the ones that you do take part in).

__ Back-packing
__ Bicycling
__ Bird-watching
__ Boating
__ Camping
__ Canoeing
__ Cross-Country Skiing
__ Downhill Skiing
__ Driving and Sight-seeing
__ Fishing
__ Golfing
__ Hiking and walking for pleasure
__ Horseback riding
__ Hunting
__ Nature Photography
__ Nature Study
__ Picnicking
__ Snowshoeing
__ Snowmobiling
__ Wildlife Photography
__ Swimming
__ Other (Specify) _____

2. Sex: Male ( ) Female ( )

3. What is your marital Status?

Single( ) Married( ) Other( )

4. What is your age?

14 - 19 ( )
20 - 24 ( )
25 - 34 ( )
35 - 44 ( )
45 - 64 ( )
Over 65 ( )

5. What is your employment status?

( ) Full-time employed
( ) Part-time employed
( ) Not employed
( ) Housewife
( ) Retired
( ) Student
( ) Other (please specify)_____

6. What is your occupation? (please specify)

_____

If housewife, what is your husband's occupation?

_____

If retired, what was your occupation before retirement?

_____

7. What is your own income? (annual)

Less than $3,000 ( )
$ 3,000 - 4,999 ( )
5,000 - 6,999 ( )
7,000 - 9,999 ( )
10,000 - 14,999 ( )
15,000 - 19,999 ( )
20,000 - 24,999 ( )
25,000 - 29,999 ( )
30,000 - 34,999 ( )
More than 35,000 ( )

8. How many persons in your household?

1 ( ) 3 - 4 ( )
2 ( ) 5 - 6 ( )
7 or more ( )

9. What is your approximate household income? (annual)

Less than $6,000 ( )
$ 6,000 - 7,999 ( )
8,000 - 9,999 ( )
10,000 - 14,999 ( )
15,000 - 19,999 ( )
20,000 - 24,999 ( )
25,000 - 29,999 ( )
30,000 - 34,999 ( )
35,000 - 39,999 ( )
More than 40,000 ( )

10. What is your education?

Grade 0 - 5 ( )
Grade 5 - 8 ( )
Grade 9 - 12 ( )
Some University ( )
University Degree ( )
Some Tech.School/ apprenticeship training ( )
Tech. school Diploma/ Journeyman Papers ( )

11. What is your ethnic background? (Please specify)

_____

12. In what Community type were you born?

Winnipeg ( )
Other City/Large Town ( )
Small Town/Rural ( )
Farm ( )

13. What Community type did you spend most of your life before age 18?

Winnipeg ( )
Other City/Large Town ( )
Small Town/Rural ( )
Farm ( )

14. In what Community type do you live now?

Winnipeg ( )
Other City/Large Town ( )
Small Town/Rural ( )
Farm ( )

(11

SECTION IV

INSTRUCTIONS: Thank you for taking part in this survey. In this section we welcome any comments you wish to make about the questions you have answered. Your comments will be appreciated, and given careful thought.

PLEASE RETURN THE QUESTIONNAIRE IN THE STAMPED ENVELOPE.

THANKS AGAIN!

KEY TO SCALES

Wildlife Protective	Wildlife-Appreciative (General)	Wildlife-Appreciative (Aesthetic)	Anti-Consumptive Hunting	Anti-Consumptive Trapping
Q#	Q#	Q#	Q#	Q#
4	2	11	1	7
6	3	13	9	12
15	5	17	10	16
18	8	24	14	37
19	20	26	27	43
23	21	29	30	45
25	22	34	32	58
28	31	35	36	61
53	33	40	39	64
55	38	49	41	84
57	46	62	42	
59	47	79	44	
60	48		50	
72	51		66	
75	52		67	
76	54		73	
80	56		74	
83	63		78	
85	65		81	
86	68		82	
87	69		88	
	70		90	
	71			
	77			
	89			
21 items	25 items	12 items	22 items	10 items

APPENDIX B

EXHIBIT 1

THE UNIVERSITY OF MANITOBA

NATURAL RESOURCE INSTITUTE

WINNIPEG, MANITOBA R3T 2N2

March 4, 1976

Dear

Is Wildlife important to Manitobans?

Because we do not know how people feel about wildlife, we cannot know that we are looking after our wildlife resources in ways that are agreeable to the citizens of the province.

We are conducting a survey to find out how people feel about Wildlife in Manitoba. The study has been designed at the Natural Resource Institute, University of Manitoba, with co-operation and support from the Manitoba Department of Renewable Resources and Transportation. Names of persons living in the province have been chosen at random from provincial directories, and your name has appeared on the list.

The purpose of this letter is to tell you about the survey and to ask for your co-operation in filling out a questionnaire about Wildlife, which will be mailed to you soon. Since we cannot send questionnaires to every person in the province, it is important that each person on the list answer the questions, so that we know we are getting the opinions of people of all ages, in all walks of life.

Along with the questionnaire, we will be sending a stamped envelope addressed to the Natural Resource Institute. We ask you to mail the questionnaire back to us after it is filled in. You will not be asked to put your name anywhere on the form, so that the answers you give will be confidential.

We would like to thank you in advance for taking the time to be a part of our Wildlife Survey.

Yours truly,

Gladys Pirt
Project Co-ordinator

EXHIBIT 2

THE UNIVERSITY OF MANITOBA

NATURAL RESOURCE INSTITUTE

WINNIPEG, MANITOBA R3T 2N2

March 10, 1976

Dear

As we wrote you last week, here is your copy of "Survey of Attitudes Toward Wildlife". We hope you find the questions interesting and easy. To make the project work, it is most important that the questions not be changed by yourself, and an honest answer given. On the last page of the questionnaire, you are invited to write down any comments you may have about the questions and the survey.

After filling in the questionnaire, would you please fold it once, put it in the smaller brown envelope and mail it back to us. You will note that the envelope is self-addressed and pre-stamped, so that you won't have to pay any postage.

You are not asked to put your name down on the questionnaire, so your answers will be confidential.

It would be most helpful if you would send back the survey as soon as possible, so that the students who are involved can complete the study before the end of March - their deadline.

Again, I would like to thank you very much for taking the time to be of help.

Yours truly,

Gladys Pirt
Project Co-ordinator

EXHIBIT 3

THE UNIVERSITY OF MANITOBA

NATURAL RESOURCE INSTITUTE

WINNIPEG, MANITOBA R3T 2N2

March 31, 1976

Dear

The Survey of Attitudes Toward Wildlife is now in its third week. At the time of this writing, 57% of the people who received questionnaires have completed them and returned them to us, and more are coming in every day.

Some people have sent the questionnaire back to us without completing it, and have explained that they were not familiar enough with the English language to understand the survey. We appreciate such explanation very much, and we also realize that there may be many other reasons why people have not filled in the questionnaire.

If you have already completed the questionnaire and returned it to us, we want to thank you very, very much for helping us in this research.

Because questionnaires are still coming in, the decision has been made to extend the deadline date for the return of questionnaires for two more weeks. Since many people may have lost their questionnaire in the past 3 weeks, we are enclosing a new copy.

We are enclosing a "form letter" giving many of the reasons why people may not have filled in the questionnaire. If you are one of the people who have not returned the survey to us, we ask you to fill in the form letter and send it back to us in the enclosed envelope. This information will be very helpful to us. If you wish to fill in the questionnaire at this time, please throw away the form letter and send only the completed questionnaire back.

Thank you sincerely for your co-operation.

Yours truly,

Gladys Pirt
Project Co-ordinator

FORM LETTER EXHIBIT 4

INSTRUCTIONS: Please put a check-mark beside the reason (or reasons) you have not completed the questionnaire.

_____ not familiar with English language

_____ too busy to fill in questionnaire

_____ not interested in wildlife

_____ do not have an opinion about wildlife

_____ do not like to take part in surveys

_____ did not like the questionnaire:

- ____ too many questions
- ____ too many personal questions
- ____ questions were biased
- ____ questions were silly

_____ lost the questionnaire

_____ Other reason: _____

EXHIBIT 5

THE UNIVERSITY OF MANITOBA

NATURAL RESOURCE INSTITUTE

WINNIPEG, MANITOBA R3T 2N2

March 31, 1976

Dear

The Survey of Attitudes Toward Wildlife is now in its third week. At the time of this writing, 57% of the people who received questionnaires have completed them and returned them to us, and more are coming in every day.

Some people have sent the questionnaire back to us without completing it, and have explained that they were not familiar enough with the English language to understand the survey. We appreciate such explanation very much, and we also realize that there may be many other reasons why people have not filled in the questionnaire.

Because questionnaires are still coming in, the decision has been made to extend the deadline date for the return of questionnaires for two more weeks.

If you have already completed the questionnaire and returned it to us, we want to thank you very, very much for helping us in this research.

If you have not completed the questionnaire, we ask you to fill in the enclosed "Form Letter" - it gives many of the reasons why people may not take part in the survey. This information will be very helpful to us.

Thank you sincerely for your co-operation.

Yours truly,

Gladys Pirt
Project Co-ordinator

EXHIBIT 6

FORM LETTER

INSTRUCTIONS: Please put a check-mark beside the reason (or reasons) you have not completed the questionnaire.

_____ not familiar with English language

_____ too busy to fill in questionnaire

_____ not interested in wildlife

_____ do not have an opinion about wildlife

_____ do not like to take part in surveys

_____ did not like the questionnaire:

____ too many questions

____ too many personal questions

____ questions were biased

____ questions were silly

_____ lost the questionnaire*

_____ Other reason: _____

* If you have lost your copy of the questionnaire and would like us to send another one, please fill in your name and address here:

NAME _____

ADDRESS _____

_____

(A stamped, self-addressed envelope is enclosed)

APPENDIX C

WILDLIFE-PROTECTIVE SCALE: RESPONSES BY FREQUENCY AND PERCENT

Statement	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree	no answer
15. There should be a bounty paid on wolves to encourage people to destroy them.	0 (0.0%)	2 (6.7%)	5 (16.7%)	14 (46.7%)	9 (30.0%)	0
18. If I found a home of young predators (like coyotes), I would try to destroy them before they had a chance to grow up and become a problem.	0 (0.0%)	1 (3.3%)	6 (20.0%)	11 (36.7%)	12 (40.0%)	0
25. Because hawks are a danger to chickens, they should not be protected by law.	1 (3.3%)	1 (3.3%)	3 (10.0%)	14 (46.7%)	11 (36.7%)	0
28. Since skunks smell bad and carry rabies, the entire species should be destroyed.	1 (3.3%)	2 (6.7%)	3 (10.0%)	15 (50.0%)	9 (30.0%)	0
53. If I saw someone hurting a wild animal, I would ask them to stop.	14 (46.7%)	11 (36.7%)	4 (13.3%)	1 (3.3%)	0 (0.0%)	0
55. If I saw someone breaking Wildlife Laws - like hunting out of season, I would report them to the authorities.	9 (30.0%)	15 (50.0%)	5 (16.7%)	1 (3.3%)	0 (0.0%)	0
59. All wildlife should be saved from extinction, whether useful to man or not.	16 (53.3%)	12 (40.0%)	2 (6.7%)	0 (0.0%)	0 (0.0%)	0
60. There should be a wildlife clinic, where people can take hurt birds and animals for proper care and treatment.	10 (33.3%)	18 (60.0%)	1 (3.3%)	1 (3.3%)	0 (0.0%)	0
83. Farmers should be encouraged to leave some natural vegetation - like brush and tall grass - on their land as a home for wildlife.	8 (26.7%)	15 (50.0%)	6 (20.0%)	0 (0.0%)	0 (0.0%)	1 (3.3%)
85. The government should encourage private landowners to have wildlife refuges on their property.	5 (16.7%)	13 (43.3%)	8 (26.7%)	3 (10.0%)	0 (0.0%)	1 (3.3%)

WILDLIFE-APPRECIATIVE (GENERAL) SCALE: RESPONSES BY FREQUENCY AND PERCENT

Statement	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree	no answer
5. A wild creature that is not good for hunting, eating or trapping has no value to people.	0 (0.0%)	1 (3.3%)	0 (0.0%)	13 (43.3%)	16 (53.3%)	0
21. Cougars are dangerous animals; the province would be better off without them.	0 (0.0%)	2 (6.7%)	7 (23.3%)	9 (30.0%)	12 (40.0%)	0
22. Bats are horrible.	3 (10.0%)	9 (30.0%)	7 (23.3%)	8 (26.7%)	3 (10.0%)	0
33. Loons are no good for anything; I would not miss them if there were no more loons.	0 (0.0%)	2 (6.7%)	5 (16.7%)	11 (36.7%)	12 (40.0%)	0
38. Wolves are too dangerous to allow to roam the countryside.	0 (0.0%)	5 (16.7%)	6 (20.0%)	9 (30.0%)	10 (33.3%)	0
47. I enjoy watching wildlife shows on television.	11 (36.7%)	16 (53.3%)	1 (3.3%)	1 (3.3%)	0 (0.0%)	1 (3.3%)
52. Children should be encouraged to have an interest in wildlife.	19 (63.3%)	11 (36.7%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0
56. Wild creatures are more of a problem than they're worth.	0 (0.0%)	0 (0.0%)	2 (6.7%)	17 (56.7%)	11 (36.7%)	0
63. I could get along quite nicely without wildlife.	0 (0.0%)	1 (3.3%)	3 (10.0%)	14 (46.7%)	12 (40.0%)	0
70. It is dangerous to walk alone through the forest without a gun.	1 (3.3%)	3 (10.0%)	4 (13.3%)	13 (43.3%)	8 (26.7%)	1 (3.3%)
71. If I were going camping, I would not want to tent in a place where I might be kept awake at night by hooting owls.	0 (0.0%)	6 (20.0%)	3 (10.0%)	12 (40.0%)	9 (30.0%)	0
89. If I were going camping, I would rather pitch my tent in a modern campground with lots of people and lights, than in an isolated spot where there might be wild animals around.	2 (6.7%)	4 (13.3%)	5 (16.7%)	13 (43.3%)	6 (20.0%)	0

WILDLIFE-PPRECIATIVE (AESTHETIC) SCALE: RESPONSES BY FREQUENCY AND PERCENT

Statement	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree	no answer
11. I don't like to hear coyotes and wolves howling at night.	1 (3.3%)	6 (20.0%)	5 (16.7%)	11 (36.7%)	5 (16.7%)	2 (6.7%)
13. The sight and sound of migrating flocks of Canada Geese delight me.	17 (56.7%)	11 (36.7%)	2 (6.7%)	0 (0.0%)	0 (0.0%)	0
24. A fawn drinking at a quiet pool is wonderful to see.	21 (70.0%)	9 (30.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0
26. A meadowlark does not have a particularly pleasing song.	0 (0.0%)	2 (6.7%)	6 (20.0%)	12 (40.0%)	10 (33.3%)	0
29. I enjoy listening to songbirds.	18 (60.0%)	11 (36.7%)	1 (3.3%)	0 (0.0%)	0 (0.0%)	0
35. I am delighted at the return of the first robin in spring.	20 (66.7%)	10 (33.3%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0
40. A moose is a magnificent creature.	17 (56.7%)	12 (40.0%)	1 (3.3%)	0 (0.0%)	0 (0.0%)	0
49. Pictures and paintings of wildlife are among my favourite types of art-work.	7 (23.3%)	12 (40.0%	4 (13.3%)	7 (23.3%)	0 (0.0%)	0
62. A drive through the countryside is more enjoyable if one can see wildlife along the way.	19 (63.3%)	11 (36.7%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0
79. I would enjoy being alone on a pleasant day in a natural park (like Bird's Hill).	9 (30.0%)	16 (53.3%)	1 (3.3%)	4 (13.3)	0 (0.0%)	0

ANTI-HUNTING SCALE: RESPONSES BY FREQUENCY AND PERCENT

Statement	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree	no answer
1. Sport-hunting is a good way to get out and enjoy nature.	1 (3.3%)	9 (30.0%)	2 (6.7%)	10 (33.3%)	8 (26.7%)	0
9. Most hunters are good sportsmen.	2 (6.7%)	9 (30.0%)	4 (13.3%)	13 (43.3%)	2 (6.7%)	0
14. Wildlife belongs to everyone - it is not fair that hunters are allowed to shoot wildlife, because then everyone else has less chance to see live birds and animals.	5 (16.7%)	14 (46.7%)	5 (16.7%)	2 (6.7%)	3 (10.0%)	1 (3.3%)
30. I see nothing wrong with hunting animals and birds for trophies.	0 (0.0%)	3 (10.0%)	3 (10.0%)	12 (40.0%)	12 (40.0%)	0
32. If we didn't have hunting, there would be so many wild animals and birds they would become a problem to farmers.	0 (0.0%)	5 (16.7%)	5 (16.7%)	13 (43.3%)	7 (23.3%)	0
36. Deer hunting season has been closed for two years in this Province, and I don't think it should ever be re-opened.	4 (13.3%)	13 (43.3%)	8 (26.7%)	3 (10.0%)	2 (6.7%)	0
39. I wish that sport-hunting was not allowed in this Province.	4 (13.3%)	8 (26.7%)	9 (30.0%)	7 (23.3%)	2 (6.7%)	0
41. Youngsters should be encouraged to develop an interest in hunting.	0 (0.0%)	4 (13.3%)	6 (20.0%)	11 (36.7%)	9 (30.0%)	0
44. Many birds and animals are wounded but not killed during hunting seasons and left to die painfully.	10 (33.3%)	17 (56.7%)	2 (6.7%)	0 (0.0%)	1 (3.3%)	0
50. It would be foolish not to allow hunting, since we would be wasting the game animals.	0 (0.0%)	5 (16.7%)	8 (26.7%)	11 (36.7%)	5 (16.7%)	1 (3.3%)

Statement	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree	no answer
66. Hunting scares wildlife away, so that there is less chance for people to see and enjoy them.	8 (26.7%)	17 (56.7%)	2 (6.7%)	3 (10.0%)	0 (0.0%)	0
73. Farmers should be encouraged to allow the public to hunt on their land during the hunting season.	1 (3.3%)	1 (3.3%)	2 (6.7%)	12 (40.0%)	14 (46.7%)	0
74. Hunting seasons should be shorter, so that people can enjoy walking in the countryside in the Fall without the danger of being shot at by hunters.	10 (33.3%)	18 (60.0%)	0 (0.0%)	1 (3.3%)	1 (3.3%)	0
78. Game birds and animals belong to everyone - it is unfair for farmers to keep people off who want to hunt on their land.	0 (0.0%)	0 (0.0%)	4 (13.3%)	14 (46.7%)	12 (40.0%)	0
81. No person should be allowed to hunt on private property without the written permission of the landowner.	16 (53.3%)	13 (43.3%)	0 (0.0%)	1 (3.3%)	0 (0.0%)	0
82. Hunting should be allowed only in the northern part of the Province, if we must have hunting at all.	1 (3.3%)	8 (26.7%)	7 (23.3%)	9 (30.0%)	4 (13.3%)	1 (3.3%)
88. It is unfair to open an area for sport-hunting after it has been a refuge for wildlife for many years.	15 (50.0%)	11 (36.7%)	2 (6.7%)	1 (3.3%)	0 (0.0%)	1 (3.3%)
90. Hunters who hunt on private property without the permission of the landowner should be fined, or have their hunting licenses suspended.	18 (60.0%)	11 (36.7%)	0 (0.0%)	1 (3.3%)	0 (0.0%)	0

ANTI-TRAPPING SCALE: RESPONSES BY FREQUENCY AND PERCENT

Statement	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree	no answer
7. It is too bad that so many wild animals are trapped each year so that rich people can buy fancy, expensive coats.	9 (30.0%)	13 (43.3%)	6 (20.0%)	2 (6.7%)	0 (0.0%)	0
16. Trappers are careful not to trap furbearing animals to the point where they are in danger of becoming extinct.	1 (3.3%)	10 (33.3%)	8 (26.7%)	9 (30.0%)	2 (6.7%)	0
37. Trapping wastes wildlife, since many animals and birds that the trapper does not want are caught in the traps and die for no reason.	9 (30.0%)	15 (50.0%)	2 (6.7%)	2 (6.7%)	2 (6.7%)	0
43. I would like to have (would like my wife to have) a fur-coat made of the pelts of wild furbearing animals.	1 (3.3%)	6 (20.0%)	7 (23.3%)	11 (36.7%)	4 (13.3%)	1 (3.3%)
45. Trapping wild animals for their fur should not be allowed in this Province.	5 (16.7%)	11 (36.7%)	7 (23.3%)	7 (23.3%)	0 (0.0%)	0
58. It is desirable that we encourage people to earn extra income by trapping.	0 (0.0%)	0 (0.0%)	8 (26.7%)	15 (50.0%)	7 (23.3%)	0
64. There is no "humane" trap.	6 (20.0%)	16 (53.3%)	4 (13.3%)	4 (13.3%)	0 (0.0%)	0

SECTION II: RESPONSES BY FREQUENCY AND PERCENT

#91. SHOULD THE CITY FOG (OR SPRAY) FOR MOSQUITOES?

2 (6.7%)	Strongly Disapprove - mosquito-fogging does more harm than good, and should not be done, even if the mosquitoes carry disease.
5 (16.7%)	Disapprove - city-wide mosquito-fogging does not control mosquitoes because new ones hatch each day, so that the effort and cost is wasted.
5 (16.7%)	Undecided/Don't know.
10 (33.3%)	Approve - fogging should be done whenever there are so many mosquitoes they are a nuisance to people.
8 (26.7%)	Strongly Approve - fogging should be done frequently and regularly, starting in early spring and going on all summer.

#92. SHOULD LICENSED HUNTING BE ALLOWED IN PROVINCIAL PARKS?

19 (63.3%)	Strongly disagree - all wildlife should be left alone in provincial parks, for enjoyment by the public who visit the parks.
5 (16.7%)	Disagree - if there are too many game animals (deer, elk) for the park area, then park rangers should remove some of them.
0 (0.0%)	Undecided/don't know.
5 (16.7%)	Agree - but licensed hunting in provincial parks should be allowed only in the years when there are too many game animals for the park area.
0 (0.0%)	Strongly agree - licensed hunting should be allowed every year, to control the numbers of game animals and provide recreation for hunters.
1 (3.3%)	no answer.

#93. SHOULD SNOWMOBILING BE ALLOWED IN PROVINCIAL PARKS?

3 (10.0%)	Strongly approve - snowmobiling is a fine way for Manitobans to get out and enjoy the winter, and should be as welcome in the provincial parks as any other type of outdoor family recreation.
11 (36.7%)	Approve - if use of snowmobiles in the parks is limited to certain areas and specially marked, supervised snowmobile trails.
1 (3.3%)	Undecided/don't know.
5 (16.7%	**Disapprove** - it is difficult to supervise snowmobilers to ensure that they stay on specially marked trails; when off the trails, they might bother wildlife and destroy vegetation.
10 (33.3%)	Strongly disapprove - snowmobiling is a noisy type of recreation that interferes with quiet enjoyment of the park by other people, and is a threat to wildlife and vegetation.

#94. SHOULD INDIAN PEOPLE HAVE SPECIAL RIGHTS TO HUNT WILDLIFE?

7 (23.3%)	Strongly agree - the Indians' right to hunt wildlife at any time of the year is a privilege granted to them in treaty, and should be preserved.
10 (33.3%)	Agree - the life-style of many Manitoba Indians, especially those living on reserves, is such that they depend on wild game as a source of food.
1 (3.3%)	Agree - Indians are good hunters and kill only what they need for food.
2 (6.7%)	Undecided/don't know.
4 (13.3%)	Disagree - in today's society, Indians do not have to depend on killing wild game animals for food.
2 (6.7%)	Disagree - Indians abuse their special hunting rights by killing game animals and then selling the meat to non-Indians.
4 (13.3%)	Strongly disagree - Indians should have no greater rights to hunt wildlife than anybody else in the Province.

#95. SHOULD WE HAVE MORE HYDRO-ELECTRICITY PRODUCTION IN MANITOBA?

5 (16.7%)	Strongly disapprove - we should not sacrifice the natural environment by building large dams which flood the countryside and criss-crossing the land with hundreds of miles of transmission lines, even if the Province can make money by selling hydro-electricity outside the Province.
14 (46.7%	Disapprove - we should make wiser use of the hydro-electricity that is already being produced, or start using energy sources that do not damage the environment (like sun and wind), and we should not consider producing electricity for sale outside the Province.
5 (16.7%)	Undecided/don't know.
6 (20.0%)	Approve - we need more hydro-electricity to keep up our standard-of-living in the Province, and there's nothing wrong with selling it outside the Province during times when we don't need it ourselves.
0	Strongly approve - too bad about the changes to the countryside, but we can't stand in the way of progress; selling hydro-electricity outside the Province is a good way for Manitoba to make money.

PERSONAL DATA

Number of Respondents	Characteristic
	Sex
15	Male
15	Female
	Marital Status
10	Single
18	Married
2	Other
	Age
1	14-19
8	20-24
6	25-34
2	35-44
11	45-64
2	over 65
	Employment Status
20	Full-time employed
2	Part-time employed
0	not employed
2	Housewife
2	Retired
3	Student
1	n/a
	Own Income
7	Less than $3,000
2	3,000 - 4,999
3	5,000 - 6,999
5	7,000 - 9,999
6	10,000 - 14,999
4	15,000 - 19,999
1	20,000 - 24,999
0	More than $25,000
2	n/a

Number of Respondents	Characteristic
	Persons in Household
4	1
7	2
13	3-4
4	5-6
1	7 or more
1	n/a
	Household Income
2	Less than $6,000
1	6,000 - 7,999
2	8,000 - 9,999
2	10,000 - 14,999
6	15,000 - 19,999
5	20,000 - 24,999
5	25,000 - 29,999
3	30,000 - 34,999
0	More than $35,000
4	n/a
	Education
0	Grade 0 - 5
3	Grade 5 - 8
15	Grade 9 - 12
4	Some University
6	University Degree
2	some tech.school/apprentice.
0	tech.sch. dipl./journeyman

APPENDIX D

CALCULATION OF Q-COEFFICIENTS[36]

Procedure: absolute numbers of respondents are placed in the cells of a 2 X 2 table keyed as follows:

a	b
c	d

FORMULA: $Q = \frac{ad - bc}{ad + bc}$

	Wildlife Protective	Wildlife-Appreciative (General)	Wildlife-Appreciative (Aesthetic)	Anti-Consumptive Hunting	Anti-Consumptive Trapping
Sex	M F	M F	M F	M F	M F
High	11 8	7 7	6 9	9 8	9 6
Low	4 7	8 8	9 6	6 7	6 9
	Q = 0.4128	Q = 0.0000	Q = -0.3846	Q = 0.1351	Q = 0.3846
Age	Y O	Y O	Y O	Y O	Y O
High	12 7	9 5	9 6	9 8	9 6
Low	3 8	6 10	6 9	6 7	6 9
	Q = 0.6410	Q = 0.5000	Q = 0.3848	Q = 0.1351	Q = 0.3846

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36. Riley, Matilda White; Sociological Research: II. Exercises and Manual; New York: Harcourt, Brace & World, 1963, pp.141-143.

CODE
High = high score (greater than mean)
Low = low score (less than mean)
M = male
F = female
Y = less than 35
O = 35 or more

SIGN TEST
ATTITUDE-TOWARD-WILDLIFE SCALE SCORES AND SIGNS OF DIFFERENCES
BY SEX AND AGE CATEGORY OF RESPONDENTS

Wildlife Protective Total Scores			Wildlife-Appreciative (General) Total Scores			Wildlife-Appreciative (Aesthetic) Total Scores			Anti-Consumptive Hunting Total Scores			Anti-Consumptive Trapping Total Scores		
Sex			Sex			Sex			Sex			Sex		
M	F	D	M	F	D	M	F	D	M	F	D	M	F	D
49	45	+	54	52	+	48	48	(0)	78	84	-	33	32	+
42	43	-	48	49	-	41	48	-	56	72	-	23	22	+
40	41	-	44	52	-	37	39	-	70	71	-	27	26	+
41	46	-	43	58	-	41	50	-	53	78	-	18	25	-
41	48	-	55	60	-	*44.5	49	-	59	*49.2	+	18	16	+
41	48	-	50	56	-	*42.5	44	-	*81.4	76	+	26	26	(0)
35	41	-	37	47	-	36	39	-	75	61	+	29	28	+
48	37	+	53	47	+	47	47	(0)	84	82	+	31	28	+
45	31	+	59	38	+	47	36	+	82	66	+	30	24	+
40	30	+	50	35	+	41	33	+	66	63	+	32	21	+
39	30	+	42	35	+	38	38	(0)	74	70	+	25	24	+
46	*37.8	+	42	*44.1	-	47	35	+	86	*70.7	+	35	*27.3	+
41	41	(0)	48	50	-	42	46	-	62	57	+	22	25	-
49	38	+	57	44	+	48	44	+	*39.4	66	-	21	25	-
41	35	+	44	47	-	40	45	-	74	64	+	26	20	+
Age			Age			Age			Age			Age		
Y	O	D	Y	O	D	Y	O	D	Y	O	D	Y	O	D
41	45	-	52	52	(0)	39	48	-	71	84	-	26	32	-
49	43	+	54	49	+	48	48	(0)	78	72	+	33	22	+
48	42	+	56	48	+	44	41	+	76	56	+	26	23	+
30	46	-	35	58	-	33	50	-	63	78	-	21	25	-
41	48	-	55	60	-	*44.5	49	-	59	*49.2	+	18	16	+
41	41	(0)	50	47	+	*42.5	39	+	*81.4	61	+	26	28	-
41	37	+	50	47	+	46	47	-	57	82	-	25	28	-
38	40	-	44	44	(0)	44	37	+	66	70	-	25	27	-
35	31	+	37	38	-	36	36	(0)	75	66	+	29	24	+
48	30	+	53	35	+	47	38	+	84	70	+	31	24	+
45	*37.8	+	59	*44.1	+	47	35	+	82	*70.7	+	30	*27.3	+
46	41	+	42	43	-	47	41	+	86	53	+	35	18	+
41	35	+	48	47	+	42	45	-	62	64	-	22	20	+
49	40	+	57	50	+	48	41	+	*39.4	66	-	21	32	-
41	39	+	44	42	+	40	38	+	74	74	(0)	26	25	+

CODE
M = male
F = female
Y = less than 35
O = 35 or more

* Score includes "no answer" responses, which were given the mean score for the item.

CALCULATION OF Z-SCORES FOR SIGN TESTS
USING NORMAL APPROXIMATION TO BINOMIAL PROBABILITY DISTRIBUTION [37]

Wildlife Protective	Wildlife-Appreciative (General)	Wildlife-Appreciative (Aesthetic)	Anti-Consumptive Hunting	Anti-Consumptive Trapping
sex	sex	sex	sex	sex
X = 8	X = 6	X = 4	X = 10	X = 11
N = 14	N = 15	N = 12	N = 15	N = 14
P = ½	P = ½	P = ½	P = ½	P = ½
Q = ½	Q = ½	Q = ½	Q = ½	Q = ½
NP = 7	NP = 7.5	NP = 6	NP = 7.5	NP = 7
$\sqrt{NPQ}$ = 1.8708	$\sqrt{NPQ}$ = 1.9265	$\sqrt{NPQ}$ = 1.7321	$\sqrt{NPQ}$ = 1.9265	$\sqrt{NPQ}$ = 1.8708
Z = 0.2673	Z = -1.0328	Z = -1.4433	Z = 1.0328	Z = 1.8709*
pr. = .787	pr. = .603	pr. = .384	pr. = .303	pr. = .061
age	age	age	age	age
X = 10	X = 9	X = 8	X = 8	X = 9
N = 14	N = 13	N = 13	N = 14	N = 15
P = ½	P = ½	P = ½	P = ½	P = ½
Q = ½	Q = ½	Q = ½	Q = ½	Q = ½
NP = 7	NP = 6.5	NP = 6.5	NP = 7	NP = 7.5
$\sqrt{NPQ}$ = 1.8708	$\sqrt{NPQ}$ = 1.8028	$\sqrt{NPQ}$ = 1.8028	$\sqrt{NPQ}$ = 1.8708	$\sqrt{NPQ}$ = 1.9265
Z = 1.3363	Z = 1.1094	Z = 0.5547	Z = 0.2673	Z = 0.5164
pr. = .180	pr. = .267	pr. = .582	pr. = .787	pr. = .603

Formula: $Z = \frac{(X-NP) - 0.5}{\sqrt{NPQ}}$

X = number of '+' scores
N = number of pairs having differences in scores
P = probability that there will be more '+' scores than '-' scores
Q = probability that there will be more '-' scores than '+' scores
pr= probability of observed difference in scores occurring by chance.

H_o: $P = Q = \frac{1}{2}$

H_1: $P \neq Q \neq \frac{1}{2}$

* significant at 0.10 level.

37. Runyon & Haber; op. cit., pp.203-204.